

Project Manual and Specifications

**Roof Replacement and Related Work
Western Elementary School
Naugatuck, CT**

**Issued for BID
January 26, 2016
State Project No. TMP-088-GZCK**

K^AESTLE BOOS
a s s o c i a t e s , i n c

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NAUGATUCK, CT

ROOF REPLACEMENT AND RELATED WORK
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KBA #15037.00

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PROJECT TEAM AND LOCAL OFFICIALS LIST

ROOF REPLACEMENT AND RELATED WORK

WESTERN ELEMENTARY SCHOOL

Naugatuck, CT

KBA #15037.00 | STATE PROJECT # TMP-088-GZCK

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BOUROUGH OF NAUGATUCK

Town Hall

229 Church Street, 4th Floor

Naugatuck, CT 06770

P: (203) 720-7009 | F:

Email: bmezzo@naugatuck-ct.gov

Mayor

Robert A. Mezzo

NAUGATUCK BOARD OF EDUCATION

CENTRAL ADMINISTRATION OFFICE

380 Church Street

Naugatuck, CT 06770

P: (203) 720-5265 | F: (203) 720- 5272

Email: LockeS@naugatuck.k12.ct.us

lynchm@naugy.net

rbutler@naugatuck-ct.gov

rizkb@naugy.net

Superintendent of Schools

Ms. Sharon Locke

Director of Facilities Engineering

Michael Lynch (860) 836-8757; 543 Rubber Avenue

Business Manager & Controller

Robert Butler

Assistant Business Manager

Bernice Rizk

WESTERN ELEMENTARY SCHOOL

100 Pine Street

Naugatuck, CT 06770

P: (203) 720-5244 | F: (203) 720-5220

Principal

Mrs. Brenda Goodrich

LOCAL BUILDING OFFICIAL & ADA COMPLIANCE OFFICER

Town Hall

229 Church Street, 3rd Floor

Naugatuck, CT 06770

P: (203) 720-7065 | F: (203) 720-7034

Email: bherzman@naugatuck-ct.gov

Building Inspector

Bill Herzman

FIRE CHIEF/FIRE MARSHAL

41 Maple Street

Naugatuck, CT 06770

P: (203) 720-7080 | F: (203) 720-1348

Email: khanks@naugatuck-ct.gov

wscanlon@naugatuck-ct.gov

Fire Chief

Ken Hanks (203) 720-7081

Fire Inspector

William P. Scanlon

PROJECT TEAM AND LOCAL OFFICIALS LIST

ROOF REPLACEMENT AND RELATED WORK WESTERN ELEMENTARY SCHOOL

Naugatuck, CT

KBA #15037.00 | STATE PROJECT # TMP-088-GZCK

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PUBLIC HEALTH DEPARTMENT

Naugatuck Valley Health District

98 Bank Street

Seymour, CT 06483

P: (203) 881-3255 | F: (203) 881-3259

Director

Karen N. Spargo

ARCHITECT, LANDSCAPE, STRUCTURAL,

Kaestle Boos Associates, Inc.

416 Slater Road, PO Box 2590

New Britain, CT 06050-2590

P: (860) 229-0361 | F: (860) 229-5303

Email: (first initial, full last name)@kba-architects.com

Principal-In-Charge – David W. King

Project Manager – Richard Kirby

Structural Engineer – John Chipko

MECH/PLUMBING/ELECTRICAL ENGINEER

Consulting Engineering Services, Inc.

811 Middle Street

Middletown, CT 06457

P: (860) 632-1682 | F: (860) 632-1768

Email: lgrabinsky@ceset.com

Project Manager

Loren M. Grabinsky

ASBESTOS ABATEMENT

TRC Environmental Corporation

21 Griffin Road, North

Windsor, CT 06095

P: 860-289-8631 | F: 860-298-6380/6399

Email: hlaliberte@trcsolutions.com

Project Manager

Henry J. Laliberte

INVITATION TO BID
ROOF REPLACEMENT AND RELATED WORK
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CT

Sealed bids for the **Roof Replacement and Related Work to Western Elementary School, Naugatuck, CT** addressed to **Robert Butler, Controller, c/o Wendy Hozer, Purchasing Agent** will be received in the **Purchasing Office, Naugatuck Town Hall, 229 Church Street, Naugatuck, CT 06770** until but no later than **11:00 a.m.** local time on **Tuesday, February 16, 2016** at which time they will be publicly opened and read aloud. Late bids will be rejected.

A **Mandatory** Pre-Bid Walk Through will be held on **Tuesday, February 2, 2016**, at **10:30 a.m.** local time at the **Site of Western Elementary School, 100 Pine Street, Naugatuck, CT 06770**.

Drawings and Specifications may be obtained directly from the printer, Joseph Merritt & Company, 650 Franklin Avenue, Hartford, CT **upon a non-refundable fee in the form of a check or money order payable to the Borough of Naugatuck in the amount of \$60.00 for EACH SET. The Bid Documents will be available after 12:00 p.m. on Tuesday, January 26, 2016.**

Drawings and Specifications can also be obtained at no cost from the Borough of Naugatuck web site: <http://www.naugatuck-ct.gov/content/bids> please contact Wendy Hozer, Purchasing Agent for any questions at whozer@naugatuck-ct.gov.

Addenda will be issued to all Bidders who have secured Drawings and Specifications from Joseph Merritt & Company. Faxes or emails of Addenda will not be provided by the Architect.

The Proposal, Specifications and Contract Documents, may be examined at the following locations:

NAUGATUCK TOWN HALL
WENDY HOZER, PURCHASING AGENT
229 CHURCH STREET
NAUGATUCK, CT 06770
VOICE: 203-720-7025
FAX: 203-720-7031

JOSEPH MERRITT & CO.
650 FRANKLIN AVENUE
HARTFORD, CT 06114
VOICE: 860-296-2500
FAX: 860-947-3288

Federal Express orders will only be considered if accompanied by a properly filled out Federal Express form (one form for each set ordered), charging the order to the Contractor's account.

As Security, each Bid must be accompanied by a Certified Check or Cashier's Check drawn upon either a State Bank and Trust Company or a National Banking Association, to the order of the **Borough of Naugatuck**, or the Bid must be accompanied by a Bid Bond having as surety thereto, such Surety Company or Companies as are authorized to do business in the State of Connecticut of an amount not less than **(10%)** of the Bid. NO BID WILL BE ACCEPTED UNLESS ACCOMPANIED BY THE REQUIRED BID DEPOSIT.

Upon award and prior to any work being performed a 100% Performance, Labor and Material Payment Bond and other Bonds subject to the conditions provided for in the Bid Specifications are required. A Certificate of Insurance will also be required naming the **Borough of Naugatuck Board** as an additional insured.

All Bidders shall refer to *AIA Document A701-1997 – Instructions to Bidders*, Article 4 – Bidding Procedures, paragraph 4.1.1 “Preparation of Bids.”

All Requests for Information (RFI) are to be emailed or faxed to the attention of Richard Kirby at rkirby@kba-architects.com or faxed at (860) 229-5303. RFIs must be received by the Architect by February 12, 2016 – Last day to receive RFIs.

All Bidders must submit a Contractors Qualification Statement AIA Document A305 with the bid.

Bidders shall not include Federal Excise Taxes or State of Connecticut Sales Taxes on which Public Buildings are exempt.

The Bidder must submit with the bid package a copy of the appropriate Connecticut Department of Administrative Services (DAS) prequalification in their classification. DAS prequalification for General Building Construction Group B is required.

All bidders, General Contractors (GC) and subcontractors of (GC) must be pre-qualified with the State of Connecticut Department of Administrative Services (DAS). Any bidders not on the pre-qualification list with DAS at the time of the bid opening shall be disqualified from bidding. Bids will not be opened if the contractor's name does not appear on the DAS pre-qualified list.

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5. An Affirmative Action Plan must be filed with and approved by the Commission on Human Rights and Opportunities prior to the commencement of construction. State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services (“DAS”) under the provisions of CONN. GEN. STAT. § 4a-60g, as amended. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals. For municipal public works contracts and quasi-public agency projects, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at:
http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806

All Bidders should make an effort to consider the use of local trade contractors.
Bids must be held firm and may not be withdrawn for ninety (90) days after the bid opening.

The **Borough of Naugatuck** reserves the right to waive any informalities in Bids, to reject any or all Bids, or to accept any proposal that in their judgment will be in the best interest of the Town.

The **Borough of Naugatuck** does not discriminate on the basis of sex, race, age, physical disability, religion or national origin.

The **Borough of Naugatuck** is an Affirmative Action/Equal Opportunity Employer. Minority/Women's Business Enterprises are encouraged to apply.



Document A701™ – 1997

Instructions to Bidders

for the following PROJECT:

(Name and location or address)

Roof Replacement and Related Work - Western Elementary School
100 Pine Street
Naugatuck, CT 06770

THE OWNER:

(Name, legal status and address)

Naugatuck Board of Education
380 Church Street
Naugatuck, CT 06770

THE ARCHITECT:

(Name, legal status and address)

Kaestle Boos Associates, Inc.
416 Slater Road, P.O. Box 2590
New Britain, CT 06050-2590

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement or Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders, the bid form, and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and all Addenda issued prior to execution of the Contract.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201, or in other Contract Documents are applicable to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 The Bidder by making a Bid represents that:

§ 2.1.1 The Bidder has read and understands the Bidding Documents or Contract Documents, to the extent that such documentation relates to the Work for which the Bid is submitted, and for other portions of the Project, if any, being bid concurrently or presently under construction.

§ 2.1.2 The Bid is made in compliance with the Bidding Documents.

§ 2.1.3 The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

§ 2.1.4 The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 COPIES

§ 3.1.1 Bidders may obtain complete sets of the Bidding Documents from the issuing office designated in the Advertisement or Invitation to Bid in the number and for the non-refundable deposit sum, if any, stated therein.

§ 3.1.2 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the Advertisement or Invitation to Bid, or in supplementary instructions to bidders.

§ 3.1.3 Bidders shall use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

§ 3.1.4 The Owner and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

§ 3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

§ 3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall at once report to the Architect errors, inconsistencies or ambiguities discovered.

§ 3.2.2 Bidders and Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request which must be received by the Architect at **BY FEBRUARY 12, 2016– LAST DAY TO RECEIVE REQUEST FOR INFORMATION (RFI'S)**. Written requests shall be emailed or faxed to the attention of Richard Kirby at rkirby@kba-architects.com or faxed at (860) 229-5303.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. The Addendum will be faxed or emailed to all prospective bidders, who have secured drawings and specifications from the printer- Joseph Merritt & Company, no later than three (3) days prior to the date for receipt of bids. Faxes or emails of Addenda will not be provided by the Architect. Interpretations, corrections and changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon them.

§ 3.3 SUBSTITUTIONS

§ 3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

§ 3.3.2 No substitution will be considered prior to receipt of Bids unless written request for approval has been received by the Architect at least ten days prior to the date for receipt of Bids. Such requests shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, including changes in the work of other contracts that incorporation of the proposed substitution would require, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.3 If the Architect approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

§ 3.3.4 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 ADDENDA

§ 3.4.1 Addenda will be transmitted to all who are known by the issuing office to have received a complete set of Bidding Documents.

§ 3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

§ 3.4.3 Addenda will be issued no later than three days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 PREPARATION OF BIDS

§ 4.1.1 Bids shall be submitted on the forms included with the Bidding Documents. **Bidders are to submit one (1) original and one (1) copy of their Bid.**

§ 4.1.2 All blanks on the bid form shall be legibly executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and figures. In case of discrepancy, the amount written in words shall govern.

§ 4.1.4 Interlineations, alterations and erasures must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change."

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall make no additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name of the Bidder and the nature of legal form of the Bidder. The Bidder shall provide evidence of legal authority to perform within the jurisdiction of the Work. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.

§ 4.2 BID SECURITY

§ 4.2.1 Each Bid shall be accompanied by a bid security in the form and amount required if so stipulated in the Instructions to Bidders. The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and will, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. The amount of the bid security shall not be forfeited to the Owner in the event the Owner fails to comply with Section 6.2.

§ 4.2.2 If a surety bond is required, it shall be written on AIA Document A310, Bid Bond, unless otherwise provided in the Bidding Documents, and the attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of the power of attorney.

§ 4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either (a) the Contract has been executed and bonds, if required, have been furnished, or (b) the specified time has elapsed so that Bids may be withdrawn or (c) all Bids have been rejected.

§ 4.3 SUBMISSION OF BIDS

§ 4.3.1 All copies of the Bid, the bid security, if any, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.2 Bids shall be deposited at the designated location prior to the time and date for receipt of Bids. Bids received after the time and date for receipt of Bids will be returned unopened.

§ 4.3.3 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.4 Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

§ 4.4 MODIFICATION OR WITHDRAWAL OF BID

§ 4.4.1 A Bid may not be modified, withdrawn or canceled by the Bidder during the stipulated time period following the time and date designated for the receipt of Bids, and each Bidder so agrees in submitting a Bid.

§ 4.4.2 Prior to the time and date designated for receipt of Bids, a Bid submitted may be modified or withdrawn by notice to the party receiving Bids at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written confirmation over the signature of the Bidder shall be received, and date- and time-stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be so worded as not to reveal the amount of the original Bid.

§ 4.4.3 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids provided that they are then fully in conformance with these Instructions to Bidders.

§ 4.4.4 Bid security, if required, shall be in an amount sufficient for the Bid as resubmitted.

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 OPENING OF BIDS

At the discretion of the Owner, if stipulated in the Advertisement or Invitation to Bid, the properly identified Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids may be made available to Bidders.

§ 5.2 REJECTION OF BIDS

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

§ 5.3 ACCEPTANCE OF BID (AWARD)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest qualified Bidder provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's own best interests.

§ 5.3.2 The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 CONTRACTOR'S QUALIFICATION STATEMENT

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted as a prerequisite to the issuance of Bidding Documents.

§ 6.2 OWNER'S FINANCIAL CAPABILITY

The Owner shall, at the request of the Bidder to whom award of a Contract is under consideration and no later than seven days prior to the expiration of the time for withdrawal of Bids, furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Unless such reasonable evidence is furnished, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 SUBMITTALS

§ 6.3.1 The Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, after notification of selection for the award of a Contract, furnish to the Owner through the Architect in writing:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 BOND REQUIREMENTS

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be secured through the Bidder's usual sources.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 If the Owner requires that bonds be secured from other than the Bidder's usual sources, changes in cost will be adjusted as provided in the Contract Documents.

§ 7.2 TIME OF DELIVERY AND FORM OF BONDS

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond. Both bonds shall be written in the amount of the Contract Sum.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ARTICLE 8 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum.



Document A310™ – 2010

Bid Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Borough of Naugatuck
229 Church Street
Naugatuck, CT 06770

BOND AMOUNT: \$**PROJECT:**

(Name, location or address, and Project number, if any)

Roof Replacement and Related Work- Western Elementary School
100 Pine Street
Naugatuck, CT 06770

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of ,

	<hr/>	<i>(Contractor as Principal)</i>	<i>(Seal)</i>
<hr/>	<i>(Witness)</i>	<hr/>	<i>(Title)</i>
		<hr/>	<i>(Surety)</i>
			<i>(Seal)</i>
<hr/>	<i>(Witness)</i>	<hr/>	<i>(Title)</i>



AIA[®]

Document A305[™] – 1986

Contractor's Qualification Statement

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading.

GENERAL CONTRACTORS (GC) AND SUBCONTRACTORS OF GC SHALL MEET ALL PREQUALIFICATION REQUIREMENTS OF THE DEPARTMENT OF ADMINISTRATIVE SERVICES (DAS).

SUBMITTED TO:

ADDRESS:

SUBMITTED BY:

NAME:

ADDRESS:

PRINCIPAL OFFICE:

- ☐ Corporation
- ☐ Partnership
- ☐ Individual
- ☐ Joint Venture
- ☐ Other

NAME OF PROJECT (*if applicable*): Roof Replacement and Related Work – Western Elementary School

TYPE OF WORK (file separate form for each Classification of Work):

- ☐ General Construction
- ☐ HVAC
- ☐ Electrical
- ☐ Plumbing
- ☐ Other (please specify)

§ 1. ORGANIZATION

§ 1.1 How many years has your organization been in business as a Contractor?

§ 1.2 How many years has your organization been in business under its present business name?

§ 1.2.1 Under what other or former names has your organization operated?

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This form is approved and recommended by the American Institute of Architects (AIA) and The Associated General Contractors of America (AGC) for use in evaluating the qualifications of contractors. No endorsement of the submitting party or verification of the information is made by AIA or AGC.

§ 1.3 If your organization is a corporation, answer the following:

§ 1.3.1 Date of incorporation:

§ 1.3.2 State of incorporation:

§ 1.3.3 President's name:

§ 1.3.4 Vice-president's name(s)

§ 1.3.5 Secretary's name:

§ 1.3.6 Treasurer's name:

§ 1.4 If your organization is a partnership, answer the following:

§ 1.4.1 Date of organization:

§ 1.4.2 Type of partnership (if applicable):

§ 1.4.3 Name(s) of general partner(s)

§ 1.5 If your organization is individually owned, answer the following:

§ 1.5.1 Date of organization:

§ 1.5.2 Name of owner:

§ 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

§ 2. LICENSING

§ 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

§ 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

§ 3. EXPERIENCE

§ 3.1 List the categories of work that your organization normally performs with its own forces.

§ 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)

§ 3.2.1 Has your organization ever failed to complete any work awarded to it?

§ 3.2.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

§ 3.2.3 Has your organization filed any law suits or requested arbitration with regard to construction contracts within the last five years?

§ 3.3 Within the last five years, has any officer or principal of your organization ever been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)

§ 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date. Projects listed completed in the last five years must be of a similar size and scope to this project and must be completed under the same company name/corporate structure for a minimum of five years.

§ 3.4.1 State total worth of work in progress and under contract:

§ 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces. Demonstrate to the Owner's satisfaction that these projects were completed in a timely manner. Failure to comply may be grounds for disqualification.

§ 3.5.1 State average annual amount of construction work performed during the past five years:

§ 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization.

§ 4. REFERENCES

§ 4.1 Trade References:

§ 4.2 Bank References:

§ 4.3 Surety:

§ 4.3.1 Name of bonding company:

§ 4.3.2 Name and address of agent:

§ 5. FINANCING

§ 5.1 Financial Statement.

§ 5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses);

Net Fixed Assets;

Other Assets;

Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries and accrued payroll taxes);

Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

§ 5.1.2 Name and address of firm preparing attached financial statement, and date thereof:

§ 5.1.3 Is the attached financial statement for the identical organization named on page one?

§ 5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidary).

§ 5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

§ 6. SIGNATURE

§ 6.1 Dated at this day of

Name of Organization:

By:

Title:

§ 6.2

M being duly sworn deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

Subscribed and sworn before me this day of

Notary Public:

My Commission Expires:

FORM OF PROPOSAL

**ROOF REPLACEMENT AND RELATED WORK
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CT**

**TO: Mr. Robert Butler, Business Manager/Controller
c/o Ms. Wendy Hozer, Purchasing Agent
Purchasing Office, Naugatuck Town Hall
229 Church Street
Naugatuck, CT 06770**

Pursuant to and in compliance with your "Invitation to Bid" relating thereto, the undersigned,

(Name of Firm)

having visited the site and carefully examined the Drawings, Bidding Documents and complete Specifications **dated January 26, 2016** together with all Addenda issued and received prior to scheduled closing time for recipient of Bids as prepared by the Architects, KAESTLE BOOS ASSOCIATES, INC., 416 Slater Road, New Britain, Connecticut, hereby offers and agrees as follows:

To provide all labor, materials, and all else whatsoever necessary to erect and properly finish all work in connection with the

**ROOF REPLACEMENT AND RELATED WORK
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CT**

to the satisfaction of the Architect and Owner for the sum of:

_____ (**\$** _____)

to provide all labor, materials, and all else whatsoever necessary to construct all improvements described in the specifications.

If awarded this Contract, we will execute a Contract with the **Borough of Naugatuck**, Owner of the property.

OPTIONAL BASE BID – Combined Base Bid for both Roof Replacement and Related Work to Hillside Elementary School and Roof Replacement and Related Work to Western Elementary School, Naugatuck, CT

_____ (**\$** _____)

NOTE: Both Base Bids must be submitted separately in order to submit combined Base Bid.

UNIT PRICES

Should the amount of improvements required be increased or decreased due to special considerations found at the site or because of a request of the **Naugatuck Board of Education**, the undersigned agrees that the following supplemental UNIT PRICES will be the basic price in place for computing the EXTRA or CREDIT.

Each UNIT PRICE shall include all equipment, tools, labor, permits, fees, etc., incidental to the installation and completion of the work involved.

The amounts shown are net changes to the Contract for additional work and include the Contractor's and any Subcontractor's amounts for overhead and profit. For deleted work, the net credit to the Contract shall be 10% less.

All work is to be accomplished in accordance with applicable Sections of the Specifications.

C.Y. = cubic yard	S.F. = square foot
S.Y. = square yard	V.F. = vertical foot
L.F. = linear foot	EA = Each

ITEMS

1. Metal Deck – Metal deck replacement according to Division 07 Section “Roof Accessories”. \$ _____/S.F.
2. Wood Blocking – Replace damaged 2 x 6 wood blocking. \$ _____/L.F.
3. Wood Blocking – Replace damaged 2 x 8 wood blocking. \$ _____/L.F.
4. Wood Blocking – Replace damaged 2 x 10 wood blocking. \$ _____/L.F.
5. Trenching, Backfill, Patching and Pipe Installation – Trenching, backfill, patching and pipe installation. \$ _____/L.F.
6. Roof Drain Bowl and Roof Drain Insulation – Remove all mudded roof drain bowl insulation and roof drain insulation as ACM, according to Division 02 Section “Asbestos Removal. \$ _____/EA.

ALLOWANCES

1. Allowance No. 1: Include 400 s.f. of metal deck replacement. \$ _____
2. Allowance No. 2: Remove and replace damaged 500 linear feet of 2 x 6 wood blocking. \$ _____
3. Allowance No. 3: Remove and replace damaged 500 linear feet of 2 x 8 wood blocking. \$ _____
4. Allowance No. 4: Remove and replace damaged 500 linear feet of 2 x 10 wood blocking. \$ _____
5. Allowance No. 5: 15 l.f. of trenching, backfill, patching and pipe installation. \$ _____
6. Allowance No. 6: Five (5) mudded drains and associated Insulation as ACM. \$ _____

ALTERNATES

The undersigned Bidder further proposed and agrees that should the following Alternates be accepted and included in the Contract, the amount of the Lump sump Bid, as heretofore stated, shall be adjusted by the amount of said Alternates. All materials and workmanship shall be in strict accordance with the Drawings and specification and shall be in place prices.

Alternate No. 1: At all base coat and skim coat ceiling plaster, install polyethylene at ceiling on all floors of the original building, according to Division 02 Section "Asbestos Removal."

Add \$ _____

CONTRACT TIME

The undersigned Bidder hereby certifies that Substantial Completion and Final Completion will be achieved in accordance with the time designated in the General Conditions of the Contract for Construction.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work. The Bid includes Addenda listed below and they are hereby acknowledged:

Addendum No. # _____

Dated _____

Addendum No. # _____

Dated _____

Addendum No. # _____

Dated _____

ATTACHMENTS

Enclosed herewith, is the Bid Security which is in the form of:

Bid Bond ()

Certified Check ()

In the Amount of

\$ _____ Dollars

SIGNATURE

Contractor Firm

Authorized Signature

Printed Name and Title

Business Address

City and State

Telephone Number

Telephone Fax Number



Document A101™ – 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year Two Thousand Sixteen
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Borough of Naugatuck
229 Church Street
Naugatuck, CT 06770

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Roof Replacement and Related Work - Western Elementary School
100 Pine Street
Naugatuck, CT 06770

The Architect:
(Name, legal status, address and other information)

Kaestle Boos Associates, Inc.
416 Slater Road, P.O. Box 2590
New Britain, CT 06050-2590
Telephone Number: (860) 229-0361
Fax Number: (860) 229-5303

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™–2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS
- 10 INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than () days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

Portion of Work
Entire Job

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 4.3 Unit prices, if any: Form of Proposal as set forth in Exhibit A

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.4 Allowances included in the Contract Sum, if any: Form of Proposal as set forth in Exhibit A

(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price
------	-------

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the First day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the Thirtieth day of the same month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than Thirty (30) days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract

Init.

Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of Five percent (5.00 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™-2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of Five percent (5.00 %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201-2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201-2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201-2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201-2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201-2007, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

☐ Arbitration pursuant to Section 15.4 of AIA Document A201-2007

☐ Litigation in a court of competent jurisdiction

☒ Other *(Specify) Refer to Section 15.3 Mediation of AIA Document A201-2007*

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

%

§ 8.3 The Owner's representative:

(Name, address and other information)

Robert Butler, Business Manager & Controller c/o Wendy Hozer, Purchasing Agent – Purchasing Office
Naugatuck Town Hall
229 Church Street
Naugatuck, CT 06770
Telephone Number: 203-720-2500
Fax Number: 203-720-7031

Init.

§ 8.4 The Contractor's representative:
(Name, address and other information)

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101-2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201-2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

§ 9.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Title of Specification exhibit: Table of Contents – as set forth in Exhibit B

Section	Title	Date	Pages
---------	-------	------	-------

§ 9.1.5 The Drawings:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Title of Drawings exhibit: List of Drawings – as set forth in Exhibit C

Number	Title	Date
--------	-------	------

§ 9.1.6 The Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

- 1 AIA Document E201™-2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

Init.

.2 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201-2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

Bid Proposal – submitted by _____ as set forth in Exhibit A

All Documents Enumerated in the Table of Contents – contained in the Project Manual as set forth in Exhibit B

List of Drawings – contained in the Project Manual as set forth in Exhibit C

Performance, Labor and Material Payment Bond – submitted by _____ as set forth by Exhibit D

Certificate of Insurance – submitted by _____ as set forth by Exhibit E

AIA Document A701 and the Invitation to Bid – contained in the Project Manual as set forth in Exhibit F

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201-2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201-2007.)

Type of insurance or bond

See Exhibits D & E

Limit of liability and bond amount

See Exhibits D & E

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

David Heller, Board of Education, Chair

(Printed name and title)

CONTRACTOR (Signature)

(Printed name and title)

**DO NOT REMOVE
THIS PAGE INTENTIONALLY LEFT BLANK**



Document A201™ – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Roof Replacement and Related Work- Western Elementary School
100 Pine Street
Naugatuck, CT 06770

THE OWNER:

(Name and address)

Borough of Naugatuck
229 Church Street
Naugatuck, CT 06770

THE ARCHITECT:

(Name and address)

Kaestle Boos Associates, Inc.
416 Slater Road
New Britain, CT 06050

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect.

§ 1.1.1.1 Owner and Contractor recognizing that other rights, duties and obligations with respect to public construction contracts are also provided by statute, notwithstanding the fact that they are not specifically enumerated herein. Accordingly, any provision required by statute to be included in this Contract shall be deemed to be so included as though fully set forth herein. However, compliance with a statute does not diminish the Contractor's responsibilities hereunder. A reference to some statutes which are applicable to the Project are contained herein and are specifically incorporated by reference as Contract Documents.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the Architect unless there is another person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.1.9 AWARDED AUTHORITY

Where the term "Awarding Authority" appears in any statutory provision, it shall mean "the Owner".

§ 1.1.10 THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding information, bidding requirements, sample forms, schedules, Conditions of the Contract, Drawings, and Specifications.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

(Paragraph deleted)

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. **All Work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of the Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others.**

§ 1.2.1.1 In the event of conflict in or between the Contract Documents, the Contractor shall be held to the higher quality or greater quantity as set forth therein as determined by the Architect.

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

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

§ 1.2.4 Test boring and soil test information provided in the Project Manual was obtained by the Owner for use by the Architect in the design of the Project. The Owner does not hold out such information to the Contractor as an accurate or approximate indication of subsurface conditions, and no claim for extra cost or extension of time resulting from the Contractor's reliance upon such information shall be permitted.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish available surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The **Owner makes no warranties as to the accuracy or completeness of such material**. The Contractor shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 The Low Bidder will be furnished, free of charge with five (5) copies of the Drawings and Project Manuals. The Low Bidder will be furnished, at its sole cost and expense, any additional copies.. **Upon request by the Contractor, the Owner shall furnish the Contractor with additional copies of the Contract Documents which were printed for bidding that will not be retained for use by the Owner. The Owner does not warrant that such printed Contract Documents are complete or are free from marks and/or notations that may have been made by bidders.**

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may **in addition to any other remedy it may have herein terminate in accordance with Article 14** issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to **to immediately correct** such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, **including terminate in accordance with Article 14**, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. . If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. **In the event that the**

Contractor's failure to prosecute the Work causes (in the opinion of the Owner), a risk of harm to the public, the Owner shall have the right to carry out the Work without notice at the Contractor's cost and/or deduct such sums from amounts due the Contractor.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect, **in writing**, any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect **in writing** any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 The Contractor shall reimburse the Owner for costs incurred by the Architect for design and construction administration services which are caused by the Contractor's inefficient or otherwise faulty administration or execution of its Work. These may include but are not limited to the cost of the Architect to perform:

§ 3.2.4.1 Repeated review of the Contractor's submittals and submittals, substantially incomplete or out of sequence from the submittal schedule provided by the Contractor and agreed to by the Architect.

§ 3.2.4.2 An extensive number of responses to the Contractor's requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination drawings, or prior correspondence or documentation.

§ 3.2.4.3 An extensive number of Change Orders and Construction Change Directives requiring evaluation of proposals and the preparation or revision of instruments of service and not otherwise caused by the design defects of the Architect.

§ 3.2.4.4 Consultation regarding replacement of Work resulting from fire or other such causes during construction.

§ 3.2.4.5 Evaluation of an extensive number of claims not otherwise caused by design defects.

§ 3.2.4.6 Evaluation of substitutions proposed by the Contractor and making subsequent revisions to Instruments of Services resulting therefrom.

§ 3.2.4.7 Contract Administration services provided forty-five (45) days or more after Substantial Completion.

§ 3.2.5 Preconstruction Inspection: The Contractor shall notify the Owner and the Architect in writing of any existing damage to the property or any unsafe conditions at the site prior to commencing the Work

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing or supplying portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor shall, upon written request of the Owner, remove and replace workers where the Owner deems such worker(s) to be disorderly, careless or incompetent, or to be employed in violation of the terms of the Contract Documents, at no increase in the Contract Sum or the Contract Time.

§ 3.4.4. During the progress of the Work and at all times prior to the date of Substantial Completion or occupancy of the Work by the Owner, whichever is earlier, the Contractor shall provide temporary heat, ventilation, and enclosure, adequate to permit the Work to proceed in a timely fashion and to prevent damage to completed Work and Work in progress, and to materials stored on the premises. As a minimum, and not as a limitation, enclosed areas shall be heated from November 1 through March 31. The permanent heating and ventilation system may be used for these purposes when available, subject to conditions as forth in Division 1 of the Specifications.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new and of recent manufacture unless the Contract Documents require otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects. Work, materials, or equipment not conforming to these requirements may be considered defective. All warranties and guarantees shall commence on the Date of Substantial Completion unless otherwise defined in the Contract Documents. Warranties and guarantees shall extend for a minimum of one year. Notwithstanding the foregoing, any special warranties as required by the Contract Documents or manufacturer's standard warranties extending longer than one year shall remain in effect for the full warranty period.

§ 3.5.2 The Contractor shall be solely responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Architect may require the Contractor to furnish at the Contractor's expense, reasonable evidence that a material meets such requirements.

§ 3.5.3 The Warranty provided in this Paragraph 3.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law..

§ 3.5.4 The Contractor shall procure and deliver to the Architect, no later than Substantial Completion, all special warranties required by the Contract Documents. Delivery of such warranties shall constitute the Contractor's guarantee to the Owner that the warranties will be performed in accordance with their terms and conditions.

§ 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. However, the Contractor shall not pay, and the Owner shall not reimburse, or pay the Contractor for, any sales taxes for building supplies or materials for which an exemption is provided by law. The Owner's tax exemption number, to be used by the Contractor in this regard, will be provided by the Owner.

§ 3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.1.1 [INSERT PROVISION FOR WAIVER OF ANY/OR ALL PERMIT FEES AND/OR INSPECTIONS HERE]

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders and directives of public authorities and governmental inspection agencies applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work which it should know to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction in addition to any other damages incurred by the Owner.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately

suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent full time superintendent who does not work with the tools and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.1.2 The Contractor's Superintendent and similar authorized representative of any Subcontractor, supplier or any other person or organization shall attend all meetings as required by the Owner.

§ 3.9.1.3 When the presence of a Subcontractor or Sub-subcontractor is required at a job meeting, the Contractor shall require that the Subcontractor or Sub-subcontractor be represented by an authorized representative who is empowered to make binding commitments on all matters to be discussed as such meetings, including costs, payments, Change Orders, time schedules and manpower. Notices required under the Contract may be served on such representatives.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent and necessary assistants. The Architect may reply to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. If the Owner or Architect objects to the Contractor's Superintendent or any assistant, whether initially or otherwise, the Contractor shall submit a competent replacement Superintendent or assistant at no increase in the Contract Sum or the Contract Time.

§ 3.9.3 The Contractor shall not employ a proposed superintendent or necessary assistants to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent or necessary assistants without providing written notice to the Owner through the Architect, and receiving the Owner's or Architect's written consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits

current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect **sufficient** time to review submittals **in accordance with Specifications**. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 Time is of the essence of the Contract. Accordingly, the Contractor shall perform the Work in strict accordance with the approved construction schedule. The Contractor's compliance with the construction schedule shall be a material obligation of this Contract. **If each of three successive applications for payment, as certified by the Architect, indicate that the actual work completed is less than 90% of the values estimated to be completed by the respective trades as shown or listed on Specification Section 01 32 00, titled "Construction Progress Documentation", the cost correlation line of the Construction Schedule, the Owner may, at the Owner's option, treat the Contractor's delinquency as a default and the Owner may pursue any remedy in light of such default, including but not limited to the action permitted under Section 14.2.**

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. **Submittals that are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.**

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.12.11 When professional certification of materials, systems or equipment is required by the Contract Documents, the Owner shall be entitled to rely upon such certifications, and neither the Owner nor the Architect shall be expected to make an independent examination with respect to the performance of such materials systems or equipment.

§ 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. **The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times in the Owner. The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine the Contractor's apparatus, the storage of materials and the operations of the Contractor's workers to limits indicated by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, the Contractor Documents, and/or directions of the Architect and shall not unreasonably encumber the premises with the Contractor's materials. The Owner shall not be liable to the Contractor, the Subcontractors, their employees or anyone else with respect to the conditions of the premises, except only for a condition caused directly and solely by the negligence of the Owner.**

§ 3.13.1 Following the date of Substantial Completion, the Contractor shall notify the Owner prior to each entry to the site, and neither the Contractor nor its Subcontractors shall enter the site without the express permission of the Owner

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, coring, fitting and patching required to complete the Work or to make its parts fit together properly as described in Division 01 Specification Section titled "CUTTING AND PATCHING". All areas requiring cutting, coring, fitting and patching shall be restored to the condition existing prior to the cutting, coring, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, coring, fitting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall on a daily basis keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner, and Architect access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a new Architect whose status under the Contract Documents shall be that of the former Architect.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate For Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be

taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review, **which may take up to 28 days for any one submittal or resubmittal depending on the complexity of the submittal.** Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive from the Contractor and forward to the Owner, for the Owner's review and records, record drawings, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner, will employ a Resident Project Representative for the Project. The Resident Project Representative shall have no authority to approve Work, to approve changes, or to exercise any or the power and authority of the Owner or the Architect. The Resident Project Representative will be required to be on site at all times when the Contractor is on site. Should the Contractor perform work outside of, or in addition to normal working hours, or in excess of 40 hours per week in order to keep the Project on schedule, or for any other reason, then the Resident Project Representative will work the same hours as the Contractor, and the Contractor shall reimburse the Owner for any additional costs for such services. This reimbursement shall be by means of a credit Change Order executed at the time of Substantial Completion.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner, or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Within 15 days after receipt of the Notice to Proceed, the Contractor shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom neither the Owner nor Architect has no reasonable objection. No increase in the Contract Sum or Contract Time shall be allowed for such change.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.1.1 **The Owner reserves the right to access any part of the Project at any time to install material or services other than the Work, either with its own forces or with separate contractors hired by the Owner. Such access is in not to be construed as partial occupancy by the Owner. The Contractor shall permit the Owner to place, and install furniture, equipment and other materials during the progress of the Work, and agrees that the installation of such items shall not be construed as acceptance of the Work or any portion thereof.**

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Upon request of the Owner or the Architect, the Contractor shall without cost to the Owner, submit to the Architect in such form that the Architect may require a written proposal for a Change in the Work. The proposal shall include the quantity and unit cost of each item of material, and the number of hours of work and the hourly rate for each class of labor, as well as the description and amounts of all other costs sought by the Contractor to perform the proposed change. The Contractor shall also furnish to the Architect bona fide proposals for Subcontractor and suppliers for all labor, materials and equipment to be incorporated into such Work. The Contractor, when requested, shall furnish in a form satisfactory to the Owner, itemized statements of the cost of Work, including, but not limited to, certified payrolls and copies of accounts, bills and vouchers to substantiate the estimates. The proposal shall be furnished promptly so as not to delay the Work and shall include an estimate of any additional time required to complete the Work. Percentages of or overhead and profit shall be accordance with paragraph 7.2.4.

§ 7.2.2.1 Change Order Proposals shall be complete and all inclusive. The amount of the adjustment in the Contract Sum and Contract Time, if any, shall be stated in the proposal for all Work Affected by the proposed change. Once a Change Order is executed, the Contractor shall be required to perform all of the Work required therein (including incidental work and changes to related Work which may be required to complete the Change Order) in accordance with the Contract Documents, for the amount stated in the Change Order.

§ 7.2.2.2 Contractor's requests for changes or substitutes shall be subject to the same requirements as a change initiated by the Architect or Owner.

§ 7.2.3 The cost or credit to the Owner resulting from a Change in the Work, absent the applicability of a unit price for such item(s) set forth in the Contract shall be determined as follows:

§ 7.2.3.1 The cost of material and equipment incorporated into the Work.

§ 7.2.3.2 The cost of wages, including fringe benefits mandated by collective bargaining agreements.

§ 7.2.3.3 Cost of Workers' Compensation, employer Liability Insurance, Federal Social Security (FICA), Federal Unemployment Compensation *FUTA), Commonwealth of Massachusetts Unemployment Compensation (SUTA).

§ 7.2.3.4 Cost of Builder's Risk Insurance. Actual cost for builders risk associated with the value of all the change orders at the end of the project and supported by a written documentation from the bonding company and or insurance company that the change order (final) requires an increase to the original premium for builders risk will be processed. No overhead and profit for this change order will be allowed.

§ 7.2.3.5 Cost of Performance and Payment Bonds. Actual cost for payment and performance bond associated with the value of all the change orders at the end of the project and supported by a written documentation from the bonding company and or insurance company that the change order (final) requires an increase to the original premium for payment and performance bond will be processed. No overhead and profit for this change order will be allowed.

§ 7.2.3.6 Cost of rental of equipment whose purchase price is greater than two hundred fifty dollars (\$250.00). Cost of rental shall be substantiated by invoice for the actual rental cost; or in the case where the equipment is owned, the cost shall include the daily, weekly and monthly rates for such equipment. The applicable rate shall be as mutually agreed by the Contractor and Owner.

§ 7.2.3.6.1 Cost of fuel consumed by equipment used in the performance of the Work if not included in the publicized rate.

§ 7.2.3.7 Cost of pro rata share of debris removal and dumpster rental. This cost shall be allowed only when the debris removal is associated with Work such as demolition but shall not be allowed as part of general cleanup.

§ 7.2.3.8 Cost of a foreman that does not work with the tools. This cost shall be allowed if the crew size of a respective traded exceeds a combined total of six journeymen and apprentices. In such instances the total foremen hours may not exceed one sixth of the hours of the working crew.

§ 7.2.3.9 Cost of project management, site management field office personnel, superintendence, field coordination, superintendent's truck, foremen's truck, uniforms, mileage, mailings/copying, and as-build drawings shall be included in overhead and profit, and shall not be allowed as separate line items.

§ 7.2.3.10 Costs of small tools whose individual cost is less than two hundred fifty dollars (\$250.00) shall be included in overhead and profit, and shall not be allowed as separate line items.

§ 7.2.3.11 Cost of cleanup shall be included in overhead and profit, and shall not be allowed as a separate line item unless the Work is performed in a portion of the building or site that has been previously cleaned, inspected by the Architect, and is ready for occupancy by the Owner.

§ 7.2.3.12 Cost of revisions to shop drawings shall not be allowed as a separate line item unless the shop drawings have been previously submitted and approved by the Architect.

§ 7.2.3.13 All other costs which are not specifically enumerated in Article 7.2.3 shall be included in overhead and profit, and shall not be allowed as separate line items.

§ 7.2.4 The percentage for overhead and profit on allowable costs enumerated in Article 7.2.3 shall be determined as follows and shall be expressed as a percentage of costs:

§ 7.2.4.1 On the Work performed by the Contractor with its own forces, the Contractor shall be allowed ten percent (10%) for overhead and profit.

§ 7.2.4.2 On the Work performed by a Subcontractor with its own forces, the Subcontractor shall be allowed ten percent (10%) for overhead and profit.

§ 7.2.4.3 On the Work performed by a Sub-subcontractor with its own forces, the Sub-subcontractor shall be allowed ten percent (10%) for overhead and profit.

§ 7.2.4.4 On the Work performed by a Subcontractor, the Contractor shall be allowed five percent (5%) for overhead and profit.

§ 7.2.4.5 On the Work performed by a Sub-subcontractor, the Sub contractor shall be allowed five percent (5%) for overhead and profit.

§ 7.2.4.6 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the contract Sum shall be the actual net cost as confirmed by the Architect. When both additions and credit covering related Work or substitutions are involved in the change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.2.5 A Change Order signed by the Contractor indicates the Contractor's agreement therewith, including any adjustment in the Contractor Sum and Contract Time.

§ 7.2.6 Change Orders, whether initiated by the Contractor or Owner, shall include all adjustments to the Contract Sum and Contract Time resulting from the change in the Work. Except with the mutual agreement of the Owner, the Contractor shall not be permitted to reserve its right to recover additional time or money on account of Work that is included in a Change Order.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
 - .1.1 Such itemization shall include the quantity and unit cost of each item of material, and the number of hours worked and the hourly rate of each class of labor, as well as a description and amounts of all other costs sought by the Contractor to perform the proposed Change. The Contractor shall furnish to the Architect, bona fide proposals from Subcontractors and suppliers for all labor, materials, and equipment, to be incorporated into such Work. The Contractor, when requested, shall furnish in a form satisfactory to the Owner, itemized statements of the cost of Work, including, but not limited to certified payrolls and copies of accounts, bills and vouchers to permit evaluation.
 - .1.2 Allowable costs shall be in accordance with Section 7.2.3
 - .1.3 Allowance for overhead and profit shall be in accordance with Section 7.2.4.
- .2 unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 cost to be determined in a manner agreed upon by the parties and an allowance for overhead and profit in accordance with Section 7.2.4.
- .4

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted. **NO CHANGES MADE BUT THIS ONE WAS MOVED FROM A DIFFERENT ARTICLE IN THE 1997.**

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7

§ 7.3.8

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may **not** request payment for Work completed under the Construction Change Directive in Applications for Payment.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. **The Contractor and Subcontractors shall perform and coordinate all Work without delay.** By executing the Agreement the Contractor confirms **that it has reviewed the Contract Documents and** the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.2.4 Unless specifically required by law, no payment under the Contract shall become due until the Construction Schedule as described in Section 3.10 herein and in Specification Division 01 Section titled "CONSTRUCTION PROGRESS DOCUMENTATION" has been approved.

§ 8.2.5 If the Architect determines that the amount of Work properly completed for any phase is less than 90% of the Work required to be performed for that phase pursuant to the Construction Schedule, or that there have been delays to critical paths and that in the Owner's sole discretion, there is reasonable concern that one of the phased completion dates will not be met, or that the Project will not be Substantially Completed by the date described in the Agreement, the Owner may, in addition to any other remedy it may have direct the Contractor to submit a written description of the steps the Contractor intends to take to put the Project back on schedule. At the Owner's sole discretion, the Owner may also in addition to any other remedy it may have, direct the Contractor to take some or all of the following actions at no additional costs to the Owner (a) increase the number of workers in such quantities and trades as the Owner directs; (b) increase the number of working hours per shift, shifts per day, working days per week, amount of construction equipment, or any combination of the foregoing in addition with the Owner's direction; and/or (c) reschedule activities at the Owner's direction.

§ 8.2.6 Nothing contained herein shall limit the Owner's right to withhold or recover liquidated or other damages for delays caused by the Contractor or any other remedy in which the Owner is entitled pursuant to the Contract.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine. The Contractor shall have no claim for damages on account of any delay. The Contractor's sole remedy for any delay shall be an extension of time, provided that the Contractor complies with the Notice requirements contained in Section 15.1.2.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3

§ 8.3.4 The Owner shall not extend the Contract Time due to a delay until all contract float is identified and used.

§ 8.3.5 No extension of time, or increase in the Contract Sum shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. **If the Architect or subsequently determines that the schedule of values is inaccurate, the Contractor shall revise and resubmit schedule of values that is satisfactory to the Architect. No payment shall be made to the Contractor, unless the Schedule of Values has been approved by the Architect.**

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2., for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents. **In order to expedite monthly payment during the course of the Project, the Contractor shall review with the Architect a preliminary draft of each Application for Payment before final copies of the Application are formally submitted. The draft copy shall be typed and include the application date and application number. The draft copy shall include the total of each column and extension of each row on the Application as if this was the formal submission. The cover sheet shall include the Original Contract Sum and a summary of Changes to the Contract Sum, retainage, and payments to date as if this was the formal submission. The Architect shall then review the Contractor's formal notarized Application for Payment, supported by such data sustaining the Contractor's Application for Payment as the Owner or Architect may require, and verify in writing in accordance with Section 9.4 the total value of Work completed, including an allowance for the value of materials delivered and suitably stored at the site at the time of such Application. The Owner shall retain amounts described in Article 5 of the Form of Agreement as amended.**

§ 9.3.1.1 As provided in Section 7.3.9., such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

(Paragraph deleted)

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment **that are finished, ready for shipment, and** suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site. Services of the Architect or Project Manager required to verify compliance with these requirements, including costs of travel, shall be paid by the Contractor. Payment for materials stored off site shall be at the sole discretion of the Owner.

§ 9.3.2.1 In no case will payment be made for materials or equipment stored outside the United States.

§ 9.3.3 The Contractor warrants that title to all Work (including stored materials and equipment) covered by an Application for Payment will pass to the Owner either by incorporation into the Work or upon receipt of payment by the Contractor, whichever occurs first, free and clear of all claims, security interests or encumbrances.

§ 9.3.4 Each Application for Payment shall be on a form acceptable to the Owner and Architect and shall be accompanied by a certificate from each Subcontractor stating that the Subcontractor has been paid all amounts due the Subcontractor on the basis of all previous Applications for Payment.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 Subject to the Owner's approval, the Architect will, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.
- .8 failure to comply with mandatory requirements for maintaining record drawings per Division 01 Specification Section titled "Project PROJECT RECORD DOCUMENTS". The Contractor shall confirm in writing, with each monthly Application for Payment, that the Contractor has checked the record drawings and that they accurately describe the work in place;
- .9 costs incurred by the Owner as described under Section 10.2.5; or
- .10 liquidated damages incurred by the Owner pursuant to Article 3 of the Form of Agreement as amended.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the

Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner **provided it first approves the Certificate of Payment**, shall make payment in the manner and within the time provided **I** in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

(Paragraphs deleted)

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use **and only minor items which can be corrected or completed without any material interference with the Owner's use of the Work remain to be corrected or completed.**

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect **with the input of the I** Owner will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is **determined by the Architect to be** substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. **The Contractor shall promptly proceed to complete or correct the Work on this list.** Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect, **and Owner** will promptly make such inspection and, when the Architect, **and Owner** finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due **the Contractor**.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in

addition to the Contractor's obligations under Section 3.18. Where the damage or loss presents an immediate danger to the public, the Owner, in its sole discretion and at the Contractor's expense, may promptly remedy such damage or loss without prior notice to the Contractor.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8

The Contractor shall be responsible for the adequate strength and safety of all scaffolding, staging and hoisting equipment and for temporary shoring, bracing and tying.

§ 10.2.9 The Contractor shall provide approved hard hats, other personal protective equipment as required, approved first aid supplies, name of first aid attendant and a posted list of emergency facilities.

§ 10.2.10 The Contractor shall take immediate action to correct any dangerous conditions that result from the reopening of any portion of the Work.

§ 10.2.11 No visitors shall be allowed on the work site without permission from the Owner .

§ 10.2.12 The Contractor shall comply with the requirements of the Occupational Safety and Health Act and the Construction Safety Act of 1969, which are incorporated hereby by reference, and all standard and regulations promulgated by the governmental and regulatory bodies responsible for administration thereof. The Contractor shall be responsible for compliance with such Acts, standards and regulation by its officers, agents, employees, Subcontractors, Sub-subcontractors, suppliers and materialmen. All employees at the worksite shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work. The Contractor and all Subcontractors shall furnish documentation of successful completion of said course with the first certified payroll report for each employee. The Contractor shall indemnify and hold harmless the Owner from any and all fines, costs and expenses, including but not limited to reasonable attorney's fees, incurred by Owner due to the Contractor's violation of such Acts, standards and/or regulations. Such indemnity shall not be construed to limit the indemnity required under Subparagraph 3.18.1.

§ 10.2.13 In the event the Owner determines that conditions present an immediate danger, the Owner shall have the right but not the obligation to suspend the Work in the unsafe area immediately upon its discovery. All costs of any nature (including without limitation, overtime pay, acceleration, liquidated damages or other costs arising out of delays) resulting from the suspension by whomever incurred, shall be paid by the Contractor.

§ 10.2.14 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.2.15 MOLD GROWTH

The Contractor shall establish and maintain a program and safeguards to prevent growth of mold.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death

to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. **If the Contractor encounters on the site any material or substance which is considered to be a biological pollutant, or is classified as hazardous under any federal, state or local law or regulations, or any underground storage tank, the Contractor shall immediately stop work in the affected area and report the condition to the Owner and the Architect for appropriate action. The Contractor shall comply with all applicable federal, state, and local environmental laws regarding the use, handling, transportation and disposal of oil, hazardous waste or hazardous substances.**

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. **All insurances shall be written on an occurrence basis unless the Owner approves in writing coverage on a claims made basis.** Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment **and without limitation of the foregoing, shall be written with minimum coverages as follows:**

The Vendor/Contractor shall agree to maintain in force, at all times during which services are to be performed, the following coverages placed with company (ies) licensed by the State of Connecticut which have at least an "A"-VIII policyholders' rating according to BEST Publication's latest edition Key Rating Guide:

.1 Workers' Compensation: Coverage A – Statutory; Coverage B - \$500,00 per insuring Agreement	
.2 Commercial General Liability	
a.) Worker's Compensation	
b.) Employer's Liability	\$1,000,000 Each Accident \$500,000 Disease, Each Employee \$500,000 Disease, Policy Limit
c.) Commercial General Liability Insurance: Written on an occurrence basis, with general aggregate limit applicable to this Project only:	
Each Occurrence	\$1,000,000 per Occurrence
Fire Property Damage	
Medical Expenses (any one person)	\$10,000
Personal and Adv. Injury	\$1,000,000
General Aggregate	\$1,000,000
Products and Completed Operations Aggregate	\$3,000,000
d.) Automobile Liability (owned, non-owned, and hired vehicles):	

Bodily Injury	\$1,000,000 per Person \$1,000,000 per Accident
Property Damage	\$1,000,000 per Accident
Combined Single Limit	\$1,000,000 per Accident
e.) Umbrella Insurance	\$1,000,000 each Occurrence \$5,000,000 Aggregate
f.) Additional Terms:	
i.)	General Aggregate must apply solely to the Project;
ii.)	Products and Completed Operations coverage must continue for 12 months beyond the date of acceptance of the Project by the Owner;
iii.)	The Owner, Architect and the School Building Committee shall be added as additional insureds, with the Owner named as loss payee on all policies;
iv.)	The Contractor shall provide the Owner with thirty (30) days written notice of cancellation, non-renewal of coverage or material change of coverage.

§ 11.1.3 Certificates of insurance acceptable to the Owner confirming the insurance coverage required by Section 11.1 shall be filed with the Owner prior to the execution of the Contract, and thereafter upon renewal or replacement of each required policy of insurance. The Owner shall have no obligation to execute the Contract, and may award the Contract to the next lowest responsible and eligible bidder, if such insurance certificates have not been provided to the Owner within five (5) business days after presentation of the Contract to Contractor for execution. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. These certificates shall set forth evidence of all coverage required by Sections 11.1.1 and 11.1.2. The form of certificate shall be the ACCORD form, supplemented as necessary by AIA Documents G715. The Contractor shall furnish to the Owner copies of any endorsement that are subsequently issued amending limits of coverage. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's Consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.1.5 Neither the Owner's authority to review certificate and policies of insurance, nor their decision to raise or not to raise any objections about those certificates and policies, shall in any way give rise to any duty or responsibility on the part of the Owner to exercise this authority for the benefit of the Contractor, any Subcontractor, Sub-subcontractor or supplier, or any other party.

§ 11.1.6 The Contractor's liability insurance shall remain in effect until the end of the Correction period as defined in Article 12 and in Division 01, General Requirements, and at all times that when the Contractor may be correcting, removing or replacing defective Work.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Contractor shall procure and pay for an Owner's policy of Owner's Protective Liability Insurance insuring the Owner and its officers, employees and agents, the Architect and the Architect's Consultants against claims arising from or relating to the Contract.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. Coverage for such property insurance shall be provided by a company or companies reasonably acceptable to the Owner and which have, and shall maintain throughout the pendency of this contract, a minimum financial rating of not less the A+ according to A.M. Best or AAA according to

Moody's. Contractor shall furnish to Owner written confirmation as to the insurance carrier's most current financial ratings prior to commencing work. Such insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the work and shall insure against the perils of fire and extended coverage and shall include "all risks" insurance for physical loss or damage including with duplication, theft, vandalism and malicious mischief. This insurance shall also cover portions of the Work stored off the site or in transit. If this insurance is written with stipulated amounts deductible, the Owner shall not be responsible for any difference between the payments made by the insurance carrier and the claim. The policy shall contain a provision that coverages afforded under policies will not be canceled or allowed to expire until at least 30 days' written notice has been given to the Owner. The Owner shall be named insured within the policy. The Contractor shall provide a copy of Builder's Risk insurance policy to the Owner and the Architect before commencing performance of the Contract. The Contractor shall require the insurance company to provide the Owner and the Architect a minimum of 30 day notice prior to cancellation of the Policy.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2

§ 11.3.1.3

§ 11.3.1.4

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE

The Contractor shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds

§ 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards

§ 11.3.4

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 The Contractor shall file two certified copies of all policies and Certificates of Insurance with the Owner prior to execution of the Contract.

§ 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Contractor's property insurance shall be adjusted by the Owner and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9

§ 11.3.10 The Owner shall have power to adjust and settle any loss with insurers for which the Contractor has obtained insurance.

§ 11.3.11 Upon the occurrence of an insured loss, the Owner and Contractor shall cooperate with each other and with each other's insurer in the submission of claims and related information and the distribution of any insurance proceeds. If, after such a loss no other special agreement is made, replacement of damaged Work shall be covered by an appropriate Change Order.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost

of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, and any cost, loss or damages to the Owner resulting from such non-conformance shall be at the Contractor's expense.

§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.1.1 However, if the correction or repair of this Work is required to avoid impacts to the maintenance, operation or safety of the facilities, the Owner reserves the right to undertake the repairs, prior to notifying the Contractor or without waiting for the Contractor to respond, without waiving the Owner's right under the warranties and Owner's right to correct Work under Section 2.4. The Contractor shall notify the Owner and Architect in writing sixty (60) days prior to the end of the one (1) year period for correction of work that sixty (60) days remain in the applicable warranty period.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor or its surety has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. The Owner's acceptance of Work under this provision must be in writing, signed by the Owner's authorized representative identified in Article 7 of the parties' AIA A101 Form of Agreement as amended. No acceptance by any other person or entity is authorized. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located .

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 . The Contractor shall obtain and deliver promptly to the Architect any Occupancy Permit and any certificates of final inspection of any part of the Contractor's Work and operating permits for any mechanical apparatus, such as elevators, escalators, boilers and air compressors, which may be required by law to permit full use and occupancy of the premises by the Owner. Receipt of such permit or certificates by the Architect shall be a condition precedent to determining that the Work is Substantially Complete.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law

ARTICLE 14. TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2

§ 14.1.3

§ 14.1.4

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract

Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

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§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

Init.

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and approved by the Architect.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.2.1 The Contractor's failure to provide written notice in strict accordance with this Paragraph will result in the Contractor having waived its claim. Written notice submitted by the Contractor must include pricing of the Claim in accordance with Article 7.

§ 15.1.2.2 The Contractor shall furnish the Initial Decision Maker with such additional documentation as the Initial Decision Maker may request to evaluate the Claim.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Regardless of the status of a Claim, except as otherwise agreed in writing or as provided in Article 9 and Article 14, the Contractor shall proceed diligently with performance of the Contract. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 CLAIMS FOR ADDITIONAL COST

Contractor hereby acknowledges that the Owner has the contractual right to delay the Work. Such right may not be exercised unreasonably. In addition, Contractor shall not be entitled to additional compensation as a result of a delay, even if caused by the Owner or those for whom the Owner is responsible. The Contractor's sole remedy for any delay is an extension of time, notwithstanding the above. If the Contractor wishes to make a Claim for an increase in the Contract Sum for reasons other than delay or hindrance, written notice as provided herein in Subsection 15.1.2 shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein Subsection 15.1.2 shall be given.

§ 15.1.5.2 Adverse weather conditions shall not be allowed as a basis for a Claim for additional time.

§ 15.1.5.3 No increase in Contract Time shall be allowed for Work which is delayed as a result of Contractor's failure to timely submit, revise or resubmit shop drawings, product data and/or samples.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor shall waive Claims against the Owner for consequential damages arising out of or relating to this Contract. This waiver includes

- .1
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This waiver is applicable, without limitation, to all consequential damages due to the Contractor's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. .

§ 15.2.2 The Initial Decision Maker will review Claims and within twenty one days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may require the Claimant to authorize retention of such persons at the Claimant's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to Sections 15.3 and 15.6.

§ 15.2.6 Subject to the discretion of the Owner, the Contractor may request that it be allowed to file for mediation of an initial decision, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 The Contractor may, within 30 days from the date of an initial decision, request in writing that the Owner file for mediation within 60 days of the initial decision. If such a request is made and the Owner receiving the request fails to file for mediation within the time required, then both parties waive their rights to mediate with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

| § 15.2.8

| § 15.3 MEDIATION

| § 15.3.1

| § 15.3.2 The parties **intend to** endeavor to resolve their Claims and all other matters in question between them by mediation and negotiation, if requested by the Owner .

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

| § 15.4 ARBITRATION

| § 15.4.1

| § 15.4.1.1

| § 15.4.2

| § 15.4.3

| § 15.4.4 CONSOLIDATION OR JOINDER

| § 15.4.4.1

| § 15.4.4.2

| § 15.4.4.3 .

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Document A312™ – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Borough of Naugatuck
229 Church Street
Naugatuck, CT 06770

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Roof Replacement and Related Work - Western Elementary School
100 Pine Street
Naugatuck, CT 06770

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____

Name and

Title: _____

Signature: _____

Name and

Title: _____

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY --- Name, address and telephone)

AGENT or BROKER:**OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party:)

Robert Butler, Business Manager &
Controller c/o Wendy Hozer,
Purchasing Agent – Purchasing Office
Naugatuck Town Hall
229 Church Street
Naugatuck, CT 06770
Telephone Number: 203-720-2500
Fax Number: 203-720-7031

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title: _____

Address: _____

Signature: _____

Name and Title: _____

Address: _____



Document A312™ – 2010

Performance Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

Borough of Naugatuck
229 Church Street
Naugatuck, CT 06770

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Roof Replacement and Related Work - Western Elementary School
100 Pine Street
Naugatuck, CT 06770

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

SURETY

Company: (Corporate Seal)

Signature: _____
Name and
Title:

Signature: _____
Name and
Title:

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:**OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party.)

Robert Butler, Business Manager &
Controller c/o Wendy Hozzer,
Purchasing Agent -- Purchasing Office
Naugatuck Town Hall
229 Church Street
Naugatuck, CT 06770
Telephone Number: 203-720-2500
Fax Number: 203-720-7031

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Init.

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User Notes:

(896484714)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

Init.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

SURETY

Company: _____
(Corporate Seal)

Signature: _____
Name and Title: _____
Address: _____

Init.

Project: Roof Replacement And Related Work At Western Elementary School

**Minimum Rates and Classifications
for Building Construction**

ID# : B 21569

**Connecticut Department of Labor
Wage and Workplace Standards Division**

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

Project Number: 15037.00

Project Town: Naugatuck

State#:

FAP#:

Project: Roof Replacement And Related Work At Western Elementary School

CLASSIFICATION	Hourly Rate	Benefits
1a) Asbestos Worker/Insulator (Includes application of insulating materials, protective coverings, coatings, & finishes to all types of mechanical systems; application of firestopping material for wall openings & penetrations in walls, floors, ceilings	35.75	28.82
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	37.15	27.56

As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

2) Boilermaker	35.24	25.01
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3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	32.50	28.74 + a
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3b) Tile Setter	33.75	24.21
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3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
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3d) Tile, Marble & Terrazzo Finishers	26.26	20.69
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3e) Plasterer	32.50	29.45
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As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

-----LABORERS-----

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

As of: **Wednesday, January 20, 2016**

Project: Roof Replacement And Related Work At Western Elementary School

4e) Group 6: Blasters, nuclear and toxic waste removal.	30.85	18.30
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4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	28.85	18.30
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4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	28.38	18.30
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4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	27.86	18.30
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4i) Group 10: Traffic Control Signalman	16.00	18.30
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5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	31.45	23.54
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As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

5a) Millwrights	31.84	23.99
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6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	37.62	23.00 + 3% of gross wage
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7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	47.96	28.385+a+b
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-----LINE CONSTRUCTION-----

Groundman	24.99	6.25%+11.81
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Linemen/Cable Splicer	45.43	6.25%+20.70
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As of: **Wednesday, January 20, 2016**

Project: Roof Replacement And Related Work At Western Elementary School

8) Glazier (Trade License required: FG-1,2)	35.08	19.35 + a
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9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	34.47	31.09 + a
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----OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over); work boat 26 ft. and over. (Trade License Required)	37.55	23.05 + a
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Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	37.23	23.05 + a
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Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	36.49	23.05 + a
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As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

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

Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder).	34.03	23.05 + a
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Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	31.99	23.05 + a
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Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	31.99	23.05 + a
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Group 12: Wellpoint operator.	31.93	23.05 + a
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Group 13: Compressor battery operator.	31.35	23.05 + a
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Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	30.21	23.05 + a
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As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

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

10a) Brush and Roller	31.52	19.35
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As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

10b) Taping Only/Drywall Finishing	32.27	19.35
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10c) Paperhanger and Red Label	32.02	19.35
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10e) Blast and Spray	34.52	19.35
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11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	40.62	28.91
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12) Well Digger, Pile Testing Machine	33.01	19.40 + a
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Roofer: Cole Tar Pitch	39.00	14.75 + a
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As of: **Wednesday, January 20, 2016**

Project: Roof Replacement And Related Work At Western Elementary School

Rofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	37.50	14.75 + a
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15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	35.74	33.22
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16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	40.62	28.91
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-----TRUCK DRIVERS-----

17a) 2 Axle	28.58	20.24 + a
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17b) 3 Axle, 2 Axle Ready Mix	28.68	20.24 + a
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As of: **Wednesday, January 20, 2016**

Project: Roof Replacement And Related Work At Western Elementary School

17c) 3 Axle Ready Mix	28.73	20.24 + a
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17d) 4 Axle, Heavy Duty Trailer up to 40 tons	28.78	20.24 + a
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17e) 4 Axle Ready Mix	28.83	20.24 + a
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17f) Heavy Duty Trailer (40 Tons and Over)	29.03	20.24 + a
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17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	28.83	20.24 + a
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18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	41.37	20.37 + a
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As of: **Wednesday, January 20, 2016**

Project: Roof Replacement And Related Work At Western Elementary School

19) Theatrical Stage Journeyman	25.76	7.34
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Project: Roof Replacement And Related Work At Western Elementary School

Welders: Rate for craft to which welding is incidental.

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

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

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

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

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

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

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

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

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

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

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

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

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

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

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

As of: Wednesday, January 20, 2016

Project: Roof Replacement And Related Work At Western Elementary School

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

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

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

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

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

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

As of: Wednesday, January 20, 2016

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THIS PAGE INTENTIONALLY LEFT BLANK**



Opportunity ★ Guidance ★ Support



THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

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

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

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

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

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

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

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

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

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

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

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

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

November 29, 2006

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

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

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

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

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

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

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

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

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STATUTE 31-55a

- SPECIAL NOTICE -

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

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

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

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

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


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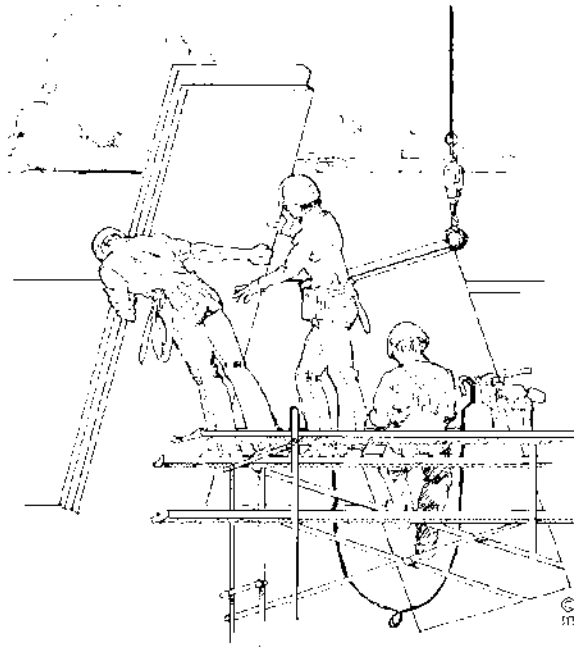
~NOTICE~

TO ALL CONTRACTING AGENCIES

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

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

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



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

CONTRACTING AGENCY CERTIFICATION FORM

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

for _____, located at _____,
contracting agency address

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

_____, located at _____,
project name and number address

shall be \$_____, which includes all work, regardless of whether such project
consists of one or more contracts.

CONTRACTOR INFORMATION

Name: _____

Address: _____

Authorized Representative: _____

Approximate Starting Date: _____

Approximate Completion Date: _____

Signature

Date

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

Date Issued: _____

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CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

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

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

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

Signed

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

Notary Public

Return to:

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

Rate Schedule Issued (Date): _____

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

In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.												PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS										Connecticut Department of Labor Wage and Workplace Standards Division 200 Folly Brook Blvd. Wethersfield, CT 06109							
CONTRACTOR NAME AND ADDRESS:												SUBCONTRACTOR NAME & ADDRESS						WORKER'S COMPENSATION INSURANCE CARRIER POLICY # EFFECTIVE DATE: EXPIRATION DATE:											
PAYROLL NUMBER		Week-Ending Date		PROJECT NAME & ADDRESS																									
PERSON/WORKER, ADDRESS and SECTION		APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION		DAY AND DATE						Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY								
						S	M	T	W	TH	F	S				Total O/T Hours	TOTAL FRINGE BENEFIT PLAN CASH	FICA	FEDERAL			STATE	LIST OTHER						
				Trade License Type & Number - OSHA 10 Certification Number		HOURS WORKED EACH DAY																							
												\$ Base Rate	1. \$ 2. \$ 3. \$																
												\$ Cash Fringe	4. \$ 5. \$ 6. \$																
												\$ Base Rate	1. \$ 2. \$ 3. \$																
												\$ Cash Fringe	4. \$ 5. \$ 6. \$																
												\$ Base Rate	1. \$ 2. \$ 3. \$																
												\$ Cash Fringe	4. \$ 5. \$ 6. \$																
												\$ Base Rate	1. \$ 2. \$ 3. \$																
												\$ Cash Fringe	4. \$ 5. \$ 6. \$																
12/9/2013												*IF REQUIRED																	
WWS-CP1												*SEE REVERSE SIDE												PAGE NUMBER ____OF					

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***FRINGE BENEFITS EXPLANATION (P):**

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

Please specify the type of benefits provided:

- 1) Medical or hospital care _____
- 4) Disability_____
- 2) Pension or retirement _____
- 5) Vacation, holiday_____
- 3) Life Insurance _____
- 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____ of _____, (hereafter known as Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

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

a) The records submitted are true and accurate;

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

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

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

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

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

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

(Signature)

(Title)

Submitted on (Date)

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Weekly Payroll Certification For Public Works Projects (Continued)				PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS										Week-Ending Date: Contractor or Subcontractor Business Name:					
WEEKLY PAYROLL																			
PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION	DAY AND DATE						Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				S	M	T	W	TH	F	S				FICA	FEDERAL	STATE	OTHER		
			Trade License Type & Number - OSHA								Total	TOTAL FRINGE BENEFIT PLAN							
			10 Certification Number	HOURS WORKED EACH DAY						O/T Hours	CASH								
											\$ Base Rate	1. \$							
												2. \$							
												3. \$							
												4. \$							
												5. \$							
												6. \$							
										\$ Cash Fringe	1. \$								
											2. \$								
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										\$ Base Rate	1. \$								
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										\$ Cash Fringe	1. \$								
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											6. \$								

12/9/2013
WWS-CP2

*IF REQUIRED

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

PAGE NUMBER ____ OF

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

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS										Connecticut Department of Labor Wage and Workplace Standards Division 200 Folly Brook Blvd. Wethersfield, CT 06109										
In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.										WEEKLY PAYROLL										
CONTRACTOR NAME AND ADDRESS: Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472										SUBCONTRACTOR NAME & ADDRESS XYZ Corporation 2 Main Street Yantic, CT 06389					WORKER'S COMPENSATION INSURANCE CARRIER Travelers Insurance Company POLICY # #BAC8888928 EFFECTIVE DATE: 1/1/09 EXPIRATION DATE: 12/31/09					
PAYROLL NUMBER 1	Week-Ending Date 9/26/09	PROJECT NAME & ADDRESS DOT 105-296, Route 82																		
PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/ FEMALE AND RACE*	WORK CLASSIFICATION Trade License Type & Number - OSHA 10 Certification Number	DAY AND DATE							Total ST Hours Total O/T Hours	BASE HOURLY RATE TOTAL FRINGE BENEFIT PLAN CASH	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS				GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY
				S	M	T	W	TH	F	S					FICA	FEDERAL	STATE	LIST OTHER		
				20	21	22	23	24	25	26					WITH- HOLDING	WITH- HOLDING	WITH- HOLDING	LIST OTHER		
Robert Craft 81 Maple Street Willimantic, CT 06226		M/C	Electrical Lineman E-1 1234567 Owner OSHA 123456		8	8	8	8	8		S-TIME 40 O-TIME	\$ 30.75 Base Rate \$ 8.82 Cash Fringe	1. \$ 5.80 2. \$ 3. \$ 2.01 4. \$ 5. \$ 6. \$	\$1,582.80				P-xxxx	\$1,582.80	#123 \$ xxx.xx
Ronald Jones 212 Elm Street Norwich, CT 06360	65%	M/B	Electrical Apprentice OSHA 234567		8	8	8	8	8		S-TIME 40 O-TIME	\$ 19.99 Base Rate \$ 16.63 Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	\$1,464.80	xx.xx	xxx.xx	xx.xx	G-xxx	\$1,464.80	#124 \$xxx.xx
Franklin T. Smith 234 Washington Rd. New London, CT 06320 SECTION B		M/H	Project Manager			8					S-TIME 8 O-TIME	\$ Base Rate \$ Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	\$1,500.00	xx.xx	xx.xx	xx.xx	M-xx.x		#125 xxx.xx
											S-TIME O-TIME	\$ Base Rate \$ Cash Fringe	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$							

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

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***FRINGE BENEFITS EXPLANATION (P):**

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

Please specify the type of benefits provided:

- 1) Medical or hospital care Blue Cross 4) Disability _____
2) Pension or retirement _____ 5) Vacation, holiday _____
3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

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

I, Robert Craft of XYZ Corporation, (hereafter known as

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

Section A:

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

a) The records submitted are true and accurate;

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

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

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

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

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

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

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

Section B: Applies to CONNDOT Projects ONLY

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

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

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

THIS IS A PUBLIC DOCUMENT
DO NOT INCLUDE SOCIAL SECURITY NUMBERS

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CONNECTICUT DEPARTMENT OF LABOR

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Misclassification \(JEC\)](#)[Stop Work Orders](#)[Reports of Activities](#)[FAQs](#)[Newsroom](#)[Contact Us](#)**OCCUPATIONAL CLASSIFICATION BULLETIN**

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

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

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

- **ASBESTOS WORKERS**

- Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

- Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

- Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

- Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

- Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **CLEANING LABORER**

- The clean up of any construction debris and the general cleaning, including sweeping, wash down, mopping, wiping of the construction facility, washing, polishing, dusting, etc., prior to the issuance of a certificate of occupancy falls under the *Labor classification*.

- **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator,

electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer/tradesman and not a delivery personnel.

• **ELECTRICIANS**

- Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ***License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.**

• **ELEVATOR CONSTRUCTORS**

- Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1,2,5,6.**

• **FORK LIFT OPERATOR**

- Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.
- Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

• **GLAZIERS**

- Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce.

• **IRONWORKERS**

- Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which requires either a blended rate or equal composite workforce. Insulated metal and insulated composite panels are still installed by the Ironworker.

• **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings. Past practice using the applicable licensed trades, Plumber, Sheet Metal, Sprinkler Fitter, and Electrician, is not inconsistent with the Insulator classification and would be permitted.

• **LABORERS**

- Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

• **PAINTERS**

- Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hanging+ for any and all types of building and residential work.

• **LEAD PAINT REMOVAL**

- Painter's Rate
 1. Removal of lead paint from bridges.
 2. Removal of lead paint as preparation of any surface to be repainted.
 3. Where removal is on a Demolition project prior to reconstruction.
- Laborer's Rate
 1. Removal of lead paint from any surface NOT to be repainted.
 2. Where removal is on a *TOTAL* Demolition project only.

• **PLUMBERS AND PIPEFITTERS**

- Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ***License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.**

• POWER EQUIPMENT OPERATORS

- Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ***License required, crane operators only, per Connecticut General Statutes.**

• ROOFERS

- Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (tear-off and/or removal of any type of roofing and/or clean-up of any and all areas where a roof is to be relaid)

• SHEETMETAL WORKERS

- Fabricate, assemble, install and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, wall panel siding, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Insulated metal and insulated composite panels are still installed by the Iron Worker. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers.

• SPRINKLER FITTERS

- Installation, alteration, maintenance and repair of fire protection sprinkler systems. ***License required per Connecticut General Statutes: F-1,2,3,4.**

• TILE MARBLE AND TERRAZZO FINISHERS

- Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

• TRUCK DRIVERS

• Definitions:

- 1) "Site of the work" (29 Code of Federal Regulations (CFR) 5.2(l)(b) is the physical place or places where the building or work called for in the contract will remain and any other site where a significant portion of the building or work is constructed, provided that such site is established specifically for the performance of the contract or project;
 - (a) Except as provided in paragraph (l) (3) of this section, job headquarters, tool yards, batch plants, borrow pits, etc. are part of the "site of the work"; provided they are dedicated exclusively, or nearly so, to the performance of the contract or project, and provided they are adjacent to "the site of work" as defined in paragraph (e)(1) of this section;
 - (b) Not included in the "site of the work" are permanent home offices, branch plant establishments, fabrication plants, tool yards etc. of a contractor or subcontractor whose location and continuance in operation are determined wholly without regard to a particular State or political subdivision contract or uncertain and indefinite periods of time involved of a few seconds or minutes duration and where the failure to count such time is due to consideration justified by industrial realities (29 CFR 785.47)
- 2) "Engaged to wait" is waiting time that belongs to and is controlled by the employer which is an integral part of the job and is therefore compensable as hours worked. (29 CFR 785.15)
- 3) "Waiting to be engaged" is waiting time that an employee can use effectively for their own purpose and is not compensable as hours worked. (29 CFR 785.16)
- 4) "De Minimus" is a rule that recognizes that unsubstantial or insignificant periods of time which cannot as a practical administrative matter be precisely recorded for payroll purposes, may be disregarded. This rule applies only where there are uncertain and indefinite periods of time involved of a short duration and where the failure to count such time is due to consideration justified by worksite realities. For example, with respect to truck drivers on prevailing wage sites, this is typically less than 15 minutes at a time.

• Coverage of Truck Drivers on State or Political subdivision Prevailing Wage Projects

- Truck drivers **are covered** for payroll purposes under the following conditions:
 - Truck Drivers for time spent working on the site of the work.
 - Truck Drivers for time spent loading and/or unloading materials and supplies on the site of the work, if such time is not de minimus
 - Truck drivers transporting materials or supplies between a facility that is deemed part of the site of the work and the actual construction site.

- Truck drivers transporting portions of the building or work between a site established specifically for the performance of the contract or project where a significant portion of such building or work is constructed and the physical places where the building or work outlined in the contract will remain.

For example: Truck drivers delivering asphalt are covered under prevailing wage while "engaged to wait" on the site and when directly involved in the paving operation, provided the total time is not "de minimus"

- Truck Drivers **are not** covered in the following instances:
 - Material delivery truck drivers while off "the site of the work"
 - Truck Drivers traveling between a prevailing wage job and a commercial supply facility while they are off the "site of the work"
 - Truck drivers whose time spent on the "site of the work" is de minimus, such as under 15 minutes at a time, merely to drop off materials or supplies, including asphalt.

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

For example:

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

Any questions regarding the proper classification should be directed to:

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

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

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

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

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

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

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

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

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

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

Ironworkers

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

Laborers (Tunnel Construction)

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

Roofers

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

Sprinkler Fitters

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

Truck Drivers

(Heavy and Highway Construction & Building Construction)

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

SECTION 01 10 00 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, General Conditions, Supplementary General Conditions, and Division 01 General Requirements are bound herein, are hereby made a part of this Section, and shall be binding on the Contractor and all Subcontractors who perform this work.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Project information.
 - 2. Work covered by the Contract Documents.
 - 3. Use of premises.
 - 4. Coordination with occupants.
 - 5. Work restrictions.
 - 6. Specification formats and conventions.
 - 7. Miscellaneous provisions.
- B. Related Sections include the following:
 - 1. Division 01 Section “Alternates” for alternate bidding requirements.
 - 2. Division 01 Section “Temporary Facilities and Controls” for limitations and procedures governing temporary use of Owner’s facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Western Elementary School Roof Replacement and Related Work.
 - 1. Project Location: 100 Pine Street, Naugatuck, CT.
- B. Owner: Naugatuck Board of Education.
- C. Architect Identification: The Contract Documents were prepared for Project by Kaestle Boos Associates, Inc.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work consists of the following:
 - 1. Removal of existing roofing system and installation of new EPDM membrane roofing system.

B. The Work includes, but is not necessarily limited to:

1. Selective demolition (roof removals); miscellaneous rough carpentry; metal ladders; EPDM membrane roofing, and roof accessories.

1.5 WORK SEQUENCE

A. General: The Contractor shall provide a detailed construction schedule, to be submitted to the Owner, Architect, and Owner's Representative for review and approval.

1.6 CONTRACTOR USE OF PREMISES

- A. General: The Contractor shall have limited use of premises for construction operations as determined by the Owner.
- 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.
- C. Building Security: Continuously maintain the security of the building and the Work. Cooperate with the Owner in particularly sensitive areas where security and special safeguards are required.

1.7 COORDINATION WITH OCCUPANTS

- A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's 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 authorities having jurisdiction.
 2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 6:30 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.
 1. Weekend Hours: Coordinate with Owner's Representative.
 2. Early Morning Hours: Coordinate with Owner's Representative.
 3. Hours for Utility Shutdowns: Coordinate with Owner's Representative.

- B. 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.
- C. 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.
- D. Nonsmoking Building: Smoking is not permitted within the building or on site.
- E. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.9 CODES, STANDARDS AND PERMITS

- A. All work under this contract shall conform to all codes and standards in effect as of the date of receipt of Bids which are applicable to this Project. All work shall further conform to specific requirements and interpretations of local authorities having jurisdiction over the Project. These Codes, standards, and authorities are referred to collectively as “the governing codes and authorities”, and similar terms, throughout the Specifications. Determination of applicable codes and standards and of the authorities having jurisdiction, shall be the responsibility of each Contractor, as shall be the analysis of all such codes and standards in regard to their applicability to the Project for the purposes of determining necessary construction to conform to such code requirements, for securing all approvals and permits necessary to proceed with construction, and to obtain all permits necessary for the Owner to occupy the facilities for their intended use. In the case of conflicts between the requirements of different codes and standards, the most restrictive or stringent requirements shall be met.
- B. The codes that were used in the design of the Project are as follows:
 - 1. Connecticut State Building Code, 2005 Edition, including all referenced standards, and the 2009, 2011 and 2013 CT Amendments.
 - 2. Connecticut State Fire Safety Code, 2005 Edition, including all referenced standards, and the 2009 CT Amendment.
 - 3. Connecticut General Statutes.
 - 4. Current OSHA – Title 29/Labor.
 - 5. ICC/ANSI A117.1 – 2003 American National Standard, Accessible and Usable Buildings and Facilities.
 - 6. The Americans with Disabilities Act, Title III, including 2010 ADA Standards.
 - 7. Section 504, Rehabilitation Act 1973 including 504 Regulations.

- C. Code Enforcement and Approvals: Secure the general building permit for the work, for which all fees will be paid by the Owner. Conform to all conditions and requirements of the permit and code enforcement authorities. Provide names and license numbers of its responsible representatives to complete application for permit.
 - 1. Upon receipt of the permit, promptly distribute copies thereof to Owner, Owner's Representative, and Architect.
- D. Construction Occupancy and Classifications: The building and its various sections are of varying construction classifications and occupancy requirements. Summary building code information is presented on the Drawings.
- E. Identify all permits (other than general building permit) required from authorities having jurisdiction over the Project for the construction and occupancy of the work. Prepare the necessary applications and submit required plans and documents to obtain such permits in a timely manner.
 - 1. Display all permit cards as required by the authorities, and deliver legible photocopies of all permits to the Owner, Owner's Representative, and Architect promptly upon their receipt.
 - 2. Arrange for all inspections, testing and approvals required for all permits. Notify the Owner, Owner's Representative, and Architect at least three business days in advance, so they may arrange to observe.
 - 3. Comply with all conditions and provide all notices required by all permits.
 - 4. Perform and/or arrange for and pay for all testing and inspections required by the governing codes and authorities, and notify the Owner, Owner's Representative, and Architect of such inspections at least three business days in advance, so they may arrange to observe.
 - 5. Where inspecting authorities require corrective work in conjunction with applicable codes and authorities, promptly comply with such requirements, except in cases where such requirements clearly exceed the requirements of the Contract Documents, in which case proceed in accordance with the procedures for modifications or change to the Work established in the Contract Documents, as amended.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

- A. These Specifications with the accompanying Drawings are intended to describe and illustrate all material, labor, and equipment necessary to complete the work.
- B. Specification Format: The Specifications are organized into Divisions and Sections using the 48-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
 - 2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

- C. 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. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. 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.
- D. In general, the Specifications will describe the “quality” of the work and the Drawings, the “extent” of the work. The Drawings and Specifications are cooperative and supplementary, however, and each item of the work is not necessarily mentioned in both the Drawings and the Specifications. All work necessary to complete the project, so described, is to be included in this Contract.
- E. In case of disagreement between Drawings and Specifications, or within either document itself, the Architect shall construe the Documents to require the better quality or greater quantity of work for the Owner that can reasonably be construed therefrom. Any work done by the Contractor without consulting the Architect, when the same requires a decision, shall be done at the Contractor’s risk.

1.11 SOCIAL SECURITY TAXES

- A. The Contractor and each Subcontractor shall pay the taxes measured by the wages of all their employees as required by the Federal Social Security Act all amendments thereto, and accept the exclusive liability for said taxes. The Contractor shall also indemnify and hold the Owner, and its respective officers, agents and servants, the Owner’s Representative and the Architect harmless on account of any tax measured by the wages aforesaid of employees of the Contractor and his Subcontractors, assessed against the Owner under authority of said law.

1.12 UNEMPLOYMENT INSURANCE

- A. The Contractor and each Subcontractor shall pay unemployment insurance measured by the wages of his employees as required by law and accept the exclusive liability for said contributions. The Contractor shall also indemnify and hold harmless the Owner, the Owner’s Representative and the Architect on account of any contribution measured by the wages of aforesaid employees of the Contractor and his Subcontractors, assessed against the Owner under authority of law.

1.13 OCCUPATIONAL SAFETY AND HEALTH ACT

- A. The Contractor shall comply with the requirements of the Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, including all standards and regulations which have been promulgated by the Governmental Authorities which administer such Acts and said requirements, standards and regulations are incorporated herein by reference.
 - 1. In accordance with Connecticut General Statutes Sec. 31-53b, all employees on the Project site must show proof of completing and maintaining the OSHA 10 hour certification requirements in accordance with federal OSHA Training Institute standards.
- B. The Contractor shall comply with said regulations, requirements and standards and require and be directly responsible for compliance therewith on the part of his agents, employees material men and Subcontractors; and shall directly receive and be responsible for all citations, assessments, fines or penalties which may be incurred by reason of his agents, employees, material men or Subcontractors failing to so comply.
- C. The Contractor shall indemnify the Owner, the Owner's Representative and Architect and save them harmless from any and all losses, costs and expenses, including fines and reasonable attorney's fees incurred by the Owner, and Architect by reason of the real or alleged violation of such laws. Ordinances, regulations and directives, Federal, State, and Local, which are currently in effect or which become effective in the future, by the Contractor, his Subcontractors or material men.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

END OF SECTION 01 10 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Quantity allowances.
- C. Related Sections include the following:
 - 1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.
 - 2. Division 01 Section "Unit Prices" for procedures for using unit prices.
 - 3. Divisions 02 through 08 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner under allowance and shall include taxes, freight, and delivery to Project site.
- B. Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner under allowance shall be included as part of the Contract Sum and not part of the allowance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Include 400 s.f. of metal deck replacement.
- B. Allowance No. 2: Remove and replace damaged 500 linear feet of 2 x 6 wood blocking.
- C. Allowance No. 3: Remove and replace damaged 500 linear feet of 2 x 8 wood blocking.
- D. Allowance No. 4: Remove and replace damaged 500 linear feet of 2 x 10 wood blocking.
- E. Allowance No. 5: 15 l.f. of trenching, backfill, patching and pipe installation.
- F. Allowance No. 6: Five (5) mudded drains and associated insulation as ACM.

WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CT

ROOF REPLACEMENT AND RELATED WORK
STATE PROJECT NO. TMP-088-GZCK
KBA #15037.00

END OF SECTION 01 21 00

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SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for unit prices.
- B. Related Sections include the following:
 - 1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Division 01 Section "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.
- B. Abbreviations: The following abbreviations for units of measurement are used in unit prices:
 - 1. S.F.: square foot
 - 2. L.F.: linear foot

1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead and profit.
 - 1. Unit price amounts are net changes in the Contract Sum for additional work and include the Contractor's and any Subcontractor's amount for overhead and profit.
 - 2. For deleted work, the net credit to the Contract Sum shall be 10% less.
- B. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

- C. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

- A. Provide the following unit prices as listed on the Bid Form:

1. Metal Deck:
 - a. Description: Metal deck replacement, according to Division 07 Section "Roof Accessories."
 - b. Unit of Measurement: S.F.
2. Wood Blocking:
 - a. Description: Replace damaged 2 x 6 wood blocking.
 - b. Unit of Measurement: L.F.
3. Wood Blocking:
 - a. Description: Replace damaged 2 x 8 wood blocking.
 - b. Unit of Measurement: L.F.
4. Wood Blocking:
 - a. Description: Replace damaged 2 x 10 wood blocking.
 - b. Unit of Measurement: L.F.
5. Trenching, Backfill, Patching and Pipe Installation:
 - a. Description: Trenching, Backfill, Patching and Pipe Installation.
 - b. Unit of Measurement: L.F.
6. Roof Drain Bowl and Roof Drain Insulation:
 - a. Description: Remove all mudded roof drain bowl insulation and roof drain insulation as ACM, according to Division 02 Section "Asbestos Removal."
 - b. Unit of Measurement: Each

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: At all base coat and skim coat ceiling plaster, install polyethylene at ceiling on all floors of the original building, according to Division 02 Section "Asbestos Removal".

END OF SECTION 01 23 00

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
 - 1. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, as follows:
 - 1. **"Architect's Supplemental Instruction" (ASI)** form, included at end of Part 3, is an Owner/Architect-initiated supplemental instruction.
 - a. Architect's Supplemental Instructions, including attachments, will be issued to the contractor electronically via email, in the form of a "portable document file" (.PDF).

1.4 CONTRACTOR REQUEST FOR INFORMATION

- A. Contractor-Initiated Requests for Information: If clarification is required to the Contract Documents, the Contractor may submit a "Request for Information" (RFI) to the Architect. This request will be responded to by the Architect with a "Response to Request for Information" (RRFI) form.
 - 1. RFI forms shall be submitted in a typewritten, standardized format, including title and description, and sequentially numbered.
 - 2. Submit RFI, including attachments, electronically in the form of a "portable document file" (.PDF).
 - 3. RFI forms are not to be submitted as requests for shop drawing approval. Comply with requirements in Division 01 Section "Submittal Procedures."
 - 4. **"Response to Request for Information" (RRFI)**, included at the end of Part 3, will be issued in response to Contractor's Request for Information (RFI).

- a. A Response to Request for Information (RRFI), including attachments, will be issued to the contractor electronically via email, in the form of a “portable document file” (.PDF).
- b. If the RRFI directs the Contractor to carry out the Work with no change in Contract Sum or Contract Time, but the Contractor anticipates a change associated with the Work, the Contractor must submit to the Architect in writing within 5 days of receipt of the RRFI, the reason for the anticipated change in Contract Sum and/or Contract Time. A change in Contract Time must be submitted with a revised CPM Schedule in accordance with Division 01 Section “Construction Progress Documentation.”

1.5 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 1. **“Proposal Requests” (PR)** included at the end of Part 3, including attachments, will be issued to the contractor electronically via email, in the form of a “portable document file” (.PDF).
 2. **“Proposal Requests” (PR)** issued by the Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 3. Within **21 days** after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by first submitting a “Request for Information” (RFI) to Architect. This request will be responded to by the Architect with a “Response to Request for Information” form, wherein the Contractor may submit a Change Order Proposal.
 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 5. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- C. Change Order Proposal Form: Use **AIA Document G709**, or similar document, for Change Order Proposals.
1. Submit Change Order Proposals (COP), including attachments, electronically in the form of a "portable document file" (.PDF).
 2. Each Change Order Proposal is to include reference to the initiating document (PR, RRFI, etc.), a title and description, and be sequentially numbered.
 3. **"Response to Change Order Request" (RCOR)**, included at the end of Part 3, will be issued in response to Contractor's Change Order Request (COR).
 - a. A Response to Change Order Request (RCOR) will be issued to the Contractor electronically via email, in the form of a "portable document file" (.PDF).
 - b. Following review of a COR by the Architect, if corrections are required prior to inclusion in a Change Order, resubmit revised COR with revision number and include all backup documentation.

1.6 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701**.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on **AIA Document G714**. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records of time and material for work required by the Construction Change Directive.
1. After completion of change, submit a Change Order Proposal associated with the Work of a Construction Change Directive, including an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.
 2. The Architect will prepare a Change Order upon approval by the Architect and Owner of a Change Order Proposal.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 FORMS

A. The following forms referenced in this Section are attached:

1. ASI – Architect’s Supplemental Instructions, 1 page.
2. RRFI – Response to Request for Information, 1 page.
3. PR – Proposal Request, 1 page.
4. RCOR – Response to Change Order Request, 1 page.

END OF SECTION 01 26 00

ASI - ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

PROJECT

City, State

KBA #

Page: 1 of 1

CONTRACTOR: **GENERAL CONTRACTOR OR CM**
(or CM)

Address
City, State, Zip
Attn: M.

ASI NO. (3 digit)-(2 digit)

ISSUED BY: (Name and Credentials)
 (Project Architect, Landscape Architect, etc.)

DATE: (Month, Day, Year)

COPIES TO:

- ☐ KBA – CT/MA
- ☐ Owner
- ☐ Official
- ☐ Consultant
- ☐ Consultant

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time. If the Contractor believes that additional cost or time is involved, the Contractor shall make Claims as provided in the General Conditions of the Contract.

Description: ASI Title

Description of work.....

Attachments: Sketches, Bulletins, etc.

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RRFI – RESPONSE TO REQUEST FOR INFORMATION

PROJECT

City, State

KBA #

Page: 1 of 1

**CONTRACTOR:
(or CM)**

GENERAL CONTRACTOR OR CM

Address
City, State, Zip
Attn: M.

RRFI NO.: (3 digit)-(2 digit)

ISSUED BY:

(Name and Credentials)
(Project Architect, Landscape Architect, etc.)

DATE:

(Month, Day, Year)

COPIES TO:

- ☐ KBA – CT/MA
- ☐ Owner
- ☐ Official
- ☐ Consultant
- ☐ Consultant

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time. If the Contractor believes that additional cost or time is involved, the Contractor shall make Claims as provided in the General Conditions of the Contract.

Description: RRFI Title

Response.....

Attachments: RFI #

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PR – PROPOSAL REQUEST

PROJECT

City, State

KBA #

Page: 1 of 1

**CONTRACTOR:
(or CM)**

GENERAL CONTRACTOR OR CM

Address
City, State, Zip
Attn: M.

PR NO. (3 digit)-(2 digit)

ISSUED BY:

(Name and Credentials)
(Project Architect, Landscape Architect, etc.)

DATE:

(Month, Day, Year)

COPIES TO:

- ☐ KBA – CT/MA
- ☐ Owner
- ☐ Official
- ☐ Consultant
- ☐ Consultant

Please submit an itemized quotation for changes in the Contract Sum and/or Contract Time for proposed modifications to the Contract Documents described herein. Notify the Architect in writing of the date on which you anticipate submitting your proposal.

THIS IS NOT A CHANGE ORDER, CONSTRUCTION CHANGE DIRECTIVE, OR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED IN THE PROPOSED MODIFICATIONS.

Description: PR Title

Response

Attachments:

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SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 2. Division 01 Section "Unit Prices" for administrative requirements governing use of unit prices.
 - 3. Division 01 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with Continuation Sheets.
 - b. Submittals Schedule.
 - c. Contractor's Construction Schedule.
 - 2. Submit the Schedule of Values to Architect at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section. For major trades with line item values exceeding \$25000, provide separate line items for identifiable units of work within such trade with a value not exceeding \$25000. Provide separate line items for labor and material.

1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
2. Submit draft of AIA Document G702 and AIA Document G703 Continuation Sheets.
3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Change Orders (numbers) that affect value.
 - d. Dollar value.
 - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 5 percent of the Contract Sum. Include the following mandatory line items:
 - a. Mobilization
 - b. Demobilization
 - c. Builders Risk Insurance
 - d. Bonds
 - e. Coordination Drawings
 - f. Scheduling
 - g. Construction Photographic Documentation
 - h. Field Engineering
 - i. Daily Building Cleanup
 - j. Daily Site Cleanup
 - k. Safety Program
 - l. Full-Time Project Manager
 - m. Full-Time Project Superintendent
 - n. Field Offices
 - o. DumpstersGeneral Contract O & P (not to be included in each line item).

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
 7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
 10. Schedule Updating: Update and resubmit the Schedule of Values monthly with the Application for Payment.
- C. Hourly Rates: Include with the Schedule of Values, a detailed breakdown of the total hourly cost for each journeyman, foreman, and apprentice of the Contractor and each Subcontractor, filed and non-filed.
1. Provide a detailed breakdown of wages, fringe benefits, payroll taxes, and insurance.
 2. Provide hourly cost for straight time, time and one-half, and double time. Hourly cost may not include overhead or profit.
 3. If the combined total of payroll taxes and insurance exceeds thirty percent of the wages, provide a notarized letter from the insurance agent or underwriter stating the percentage of payroll for each type of insurance for each construction trade classification. The cost of payroll taxes and insurance that are a function of payroll are allowed only on compensation that is paid in the form of wages and is not allowed on compensation that is paid in the form of fringe benefits.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

1. In order to expedite monthly payment during the course of the Project, the Contractor shall review with the Architect a preliminary draft of each Application for Payment before final copies of the Application are formally submitted. The draft copy shall be typed and include the application date and application number. The draft copy shall include the total of each column and extension of each row on the Application as if this was the formal submission. The cover sheet shall include the Original Contract Sum and a summary of Changes to the Contract Sum, retainage, and payments to date as if this was the formal submission.
- C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders issued before last day of construction period covered by application.
 - a. List each Change Order at the end of the Schedule of Values. Under each Change Order number, list each Change Order Proposal by number with a brief description of the Work and its value.
- E. Transmittal: Submit five signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products list.
 5. Schedule of unit prices.
 6. Submittals Schedule (preliminary if not final).
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 6. AIA Document G707, "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.
 8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

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SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Administrative and supervisory personnel.
 - 2. Project meetings.
- B. The Contractor shall participate in coordination requirements.
- C. Related Sections include the following:
 - 1. Division 01 Section "Execution" for procedures for coordinating general installation.
 - 2. Division 01 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with subcontractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
 - 5. No claim for extra compensation or extension of Contract time will be allowed for conditions resulting from a lack of said coordination.
- B. Prepare memoranda outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
 9. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
- B. Key Personnel Names: Within 7 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
 2. Agenda: Prepare the meeting agenda, and distribute the agenda to all invited attendees.

3. Minutes: Record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including the Owner and Owner's Representative, within 3 days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner, Owner's Representative, and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Architect; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Critical work sequencing and long-lead items.
 - c. Designation of key personnel and their duties.
 - d. Procedures for processing field decisions and Change Orders.
 - e. Procedures for requests for information (RFIs).
 - f. Procedures for testing and inspecting.
 - g. Procedures for processing Applications for Payment.
 - h. Distribution of the Contract Documents.
 - i. Submittal procedures.
 - j. Preparation of Record Documents.
 - k. Use of the premises and existing building.
 - l. Work restrictions.
 - m. Owner's occupancy requirements.
 - n. Responsibility for temporary facilities and controls.
 - o. Parking availability.
 - p. Office, work, and storage areas.
 - q. Equipment deliveries and priorities.
 - r. First aid.
 - s. Security.
 - t. Progress cleaning.
 - u. Working hours.
 3. Minutes: The Architect will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

- a. The Contract Documents.
 - b. Options.
 - c. Related requests for information (RFIs).
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: The Contractor shall distribute minutes of the meeting to everyone concerned, including the Owner, Owner's Representative, and Architect within 3 days of the meeting.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Schedule progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so.

Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Requests for information (RFIs).
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
 3. Minutes: The Architect will record and distribute the meeting minutes.
- E. Coordination Meetings: Schedule Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: In addition to representatives of the Contractor, each subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- b. Schedule Updating: Revise Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Change Orders.
3. Reporting: The Contractor shall record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Field condition reports.
 - 7. Special reports.
 - 8. Certified payroll records.
- B. Related Sections include the following:
 - 1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.

- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.
- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to Owner.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A story of construction, a separate building, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 SUBMITTALS

- A. Submittals Schedule: Submit three copies of schedule within 15 days of Notice to Proceed, prior to commencement of work other than preparation of temporary facilities. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Architect's final release or approval.
- B. Preliminary Network Diagram: Submit two opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.
 - 1. Include project calendar.

- C. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
 - 1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. CPM Reports: Concurrent with CPM schedule, submit three copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- E. Daily Construction Reports: Submit three copies at weekly intervals, to the Architect.
- F. Material Location Reports: Submit three copies at monthly intervals, to the Architect.
- G. Field Condition Reports: Submit three copies at time of discovery of differing conditions, to the Architect.
- H. Special Reports: Submit three copies at time of unusual event to the Architect.
- I. Certified Payroll Records: Submit two copies at weekly intervals to the Owner's Representative.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Within 10 days following Notice to Proceed, conduct conference with Owner's Representative at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - a. Provide example of CPM schedule format.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.
 - 4. Review delivery dates for Owner-furnished products.
 - 5. Review schedule for work of Owner's separate contracts.
 - 6. Review time required for review of submittals and resubmittals.

7. Review requirements for tests and inspections by independent testing and inspecting agencies.
8. Review time required for completion and startup procedures.
9. Review and finalize list of construction activities to be included in schedule.
10. Review submittal requirements and procedures.
11. Review procedures for updating schedule.
12. Establish mandatory milestone dates and finish dates within each phase.

- B. Approval of Contractor's Construction Schedule and network is advisory only and does not relieve the Contractor of the responsibility for completing the work within the Contract Time. Approval by the Owner's Representative is not an endorsement of the success of the construction schedule, nor shall it make the Owner's Representative liable for time or cost overruns as a result of potential shortcomings.

1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
1. In the case of interference between the operations of separate Contractors, Owner, through Owner's Representative, will determine the work priority of each Contractor and the sequence of work necessary to expedite completion of Project.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
1. Secure time commitments for performing critical elements of the Work from all filed sub-bidders and subcontractors.
 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
- C. Calendar: Compile a project calendar for use in scheduling. Incorporate all limitations on working days and working hours, including the following:
1. Legal Holidays.
 2. Non-working day and periods designated by the Owner for special activities.
 3. Other non-working days determined by the Contractor.
 4. Optional working days determined by the Contractor.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal: Submit concurrently with preliminary network diagram. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.
4. Update the submittals schedule periodically as the work progresses. Submit concurrently with each Application for payment.
5. Utilize a computerized program such as Primavera Expedition or Prolog for tracking submittals. Submit the following reports bi-weekly:
 - a. Complete list of reviewed submittals.
 - b. Listing of submittals to date.
 - c. Listing of approved submittals.
 - d. Listing of rejected submittals.
 - e. Listing of submittals returned for correction.
 - f. List of outstanding submittals.
6. At the request of the Architect or Owner's Representative provide reports capable of being sorted by the following criteria:
 - a. Approved status.
 - b. Subcontractor/Supplier.
 - c. Submission date.
 - d. Number of days late for return.
 - e. Number of days under review.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each phase or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities so no activity is longer than 10 days, unless specifically allowed by Architect.
 2. Procurement Activities: Include procurement process activities for the long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals,

- approvals, purchasing, fabrication, and delivery. Procurement activity duration may exceed 10 days, subject to review by Owner's Representative.
3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 1 day for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
 2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.

2. Contractor shall assign cost to construction activities on the CPM schedule. Costs shall not be assigned to submittal activities unless specified otherwise but may, with Architect's approval, be assigned to fabrication and delivery activities. Costs shall be under required principal subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
 3. Each activity cost shall reflect an accurate value subject to approval by Architect.
 4. Total cost assigned to activities shall equal the total Contract Sum.
- G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.
- H. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.
1. Utilize current versions of Primavera or Prolog programs compatible with Owner's Representative's scheduling program for Windows based software. Scheduling capabilities to include the following:
 - a. Unique activity identification number permanently associated with each activity.
 - b. Ability to track critical path through subprojects and overall schedule.
 - c. Predecessor and successor reporting.
 - d. Information content associated with each activity.
 - e. Views of network, cost loading, resource allocation and leveling.
 - f. Float analysis and handling.
 - g. Cost tracking.
 - h. Progress reporting and revisions.
 - i. Reporting content.
 - j. Flexibility and formatting.
 - k. Electronic data export.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Preliminary Network Diagram: Submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work. Schedule each activity in the proper sequence.
- C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.
 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for commencement of the Work.

- a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule or review of the schedule by the Owner's Representative.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by Owner that may affect or be affected by Contractor's activities.
 - i. Testing and commissioning.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 - a. Except where earlier completion dates are specified, CPM schedules which show completion of the Work prior to the Contract completion date may be approved by the Owner's Representative, but will not be allowed as a basis of a claim for delay against the Owner.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
 5. Indicate the following items on the note representing each activity on the network.

- a. Duration and remaining duration for those activities in progress.
 - b. A four character (or less) code indicative of party responsible for activity.
 - c. A brief description of activity.
 - d. A four character (or less) code.
 - e. A four character (or less) code indicating the Phase area. (Area code).
 - f. A four character (or less) code indicating the type of activity (type code), including but not limited to the following:
 - 1) Submittal
 - 2) Construction
 - 3) Testing
 - 4) Fabrication
- E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
1. Activity numbers, responsibility codes, Phase codes, Area Codes and Type Codes.
 2. Description of activity.
 3. Principal events of activity.
 4. Immediate preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or free float.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the Schedule of Values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or free float.
 7. Changes in the Contract Time.
- G. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

- a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
- b. Submit value summary printouts one week before each regularly scheduled progress meeting.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. Approximate count of personnel at Project site.
 3. Equipment at Project site.
 4. Material deliveries.
 5. High and low temperatures and general weather conditions.
 6. Accidents.
 7. Meetings and significant decisions.
 8. Unusual events (refer to special reports).
 9. Stoppages, delays, shortages, and losses.
 10. Meter readings and similar recordings.
 11. Emergency procedures.
 12. Orders and requests of authorities having jurisdiction.
 13. Change Orders received and implemented.
 14. Construction Change Directives received and implemented.
 15. Services connected and disconnected.
 16. Equipment or system tests and startups.
 17. Partial Completions and occupancies.
 18. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with any recommendations to resolve the differing conditions.
- D. Deficiency Report: Prepare a detailed deficiency report weekly. The status of the correction of deficient items will be discussed at every progress meeting. The report shall be in "Excel" or similar spreadsheet format. The report shall include the following information:
 1. Date that the deficiency was identified.
 2. Specific instrument by which the deficiency was identified such as Field Report, Field Notes, Job Meeting.
 3. Date by which a remedial plan of action is anticipated to be submitted.
 4. Date by which remedial plan of action was submitted.

5. Date by which remedial work is anticipated to be started.
6. Date by which remedial work was started.
7. Date by which remedial work is anticipated to be completed.
8. Date by which remedial work was completed.
9. Date that person authorized by the Owner to inspect the remedial work accepted the work.
10. Name of person authorized by the Owner that inspected and accepted the remedial work.

2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

2.6 CERTIFIED PAYROLL RECORDS

- A. The General Contractor and each Subcontractor is required to submit a certified payroll with a statement of compliance on a weekly basis.
- B. The Owner has the authority to verify payroll reports by checking employees' pay stubs and personal identification.
- C. The Owner may withhold a portion of the Application for Payment if payroll reports have not been submitted for a portion of the Work.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.
 1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before submission of Application for Payment.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
 4. Update schedule weekly during period of time between June 1 and September 15, or as determined by Owner's Representative.
 5. Evaluate progress of the work jointly with the Owner's Representative at the end of each week to show progress and identify conflicts.
- C. Distribution: Distribute two copies each of approved schedule to Architect, Owner's Representative, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 SCHEDULE COMPLIANCE

- A. Whenever it becomes apparent from the current CPM schedule that delays to the critical path have resulted and Contract completion date will not be met, or when so directed by the Owner's Representative, take some or all of the following actions at no additional cost to the Owner:
1. Submit to the Owner's Representative, a written recovery statement of proposed methods to remove or arrest delay to critical path in approved schedule, and a proposed schedule with the corresponding revisions in activities and logic ties.
 2. Increase construction manpower as necessary to substantially eliminate backlog of work.
 3. Increase the number of working hours per shift, shifts per day, working days per week, amount of construction equipment, or any combination therefore, sufficiently to substantially eliminate backlog of work.
 4. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with revised schedule.
- B. If Contractor fails to submit a written statement of proposed methods or fails to take such steps as requested and approved by the Owner's Representative, the Owner may direct the Contractor to increase the level of effort in manpower (trades), equipment and work schedule including overtime, weekend and holiday work, to be employed by Contractor in order to remove or arrest delay to the critical path in approved schedule.
1. The Contractor shall promptly provide such level of effort at no additional cost to the Owner.
- C. Contractor's failure, refusal or neglect to promptly comply with these schedule recovery requirements shall be reasonable evidence that Contractor is not prosecuting the Work with due diligence. Any such failure, refusal or neglect shall give sufficient basis to the Owner to elect any of the following:

1. Demand adequate written assurance of due performance, as provided in the General Conditions;
2. Withhold liquidated damages, and;
3. At the Owner's sole discretion, direct alternate schedule recovery actions.

3.3 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

- A. If Contractor desires to make changes in its method of operating which affect the approved CPM schedule, notify the Owner's Representative in writing, stating the nature of and reason for the proposed changes. Revise and resubmit the CPM schedule only after proposed changes are approved by the Owner's Representative. Adjustment may consist of changing portions of the activity sequence, activity durations, division of approved activities, or other adjustments as may be approved by the Owner's Representative.
 1. Addition of extraneous, nonworking activities, or activities which add unapproved constraints to the CPM schedule will not be approved.
 2. Make all revisions to the CPM schedule without any additional cost to the Owner.
- B. If completion of any activity, whether or not critical, falls more than 100 percent behind its approved duration, submit a schedule adjustment to the Owner's Representative for approval, showing each activity divided into two activities reflecting completed and uncompleted work.
- C. Immediately reschedule with added activities shown on the schedule, Shop Drawings which are not approved on the first submittal or within schedule time, and equipment which does not pass specified tests.
- D. Submit requests for any extension of Contract completion date to Owner's Representative for approval, including such justification and supporting evidence as Owner's Representative may deem necessary to determine whether Contractor is entitled to an extension of time under provisions of this Contract. The Owner's Representative will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof.
 1. The total number of days of extension to which the Contractor is entitled, if any, will be determined by the Owner's Representative, based upon the currently approved CPM schedule and on all data relevant to extension.
 2. Actual delays in activities which, according to the CPM schedule, do not affect any Contract completion date shown by critical path in the network will not constitute basis for a change therein.
- E. Subject to the provisions of the General Conditions of the Contract and other Division 01 Sections, submit each request for change in Contract completion date to the Owner's Representative within 20 calendar days after beginning of delay for which a time extension is requested but before date of final payment under this Contract. No extension will be granted for requests which are not submitted within the aftermentioned time limit.
 1. In the case of Contractor claims for delays in the work due to causes beyond the Contractor's control, demonstrate by recalculating the progress schedule to indicate the actual effect on related activities. Only interferences with specific work activities that, through correct network analysis, result in a net increase in the critical path will be allowed. Extension of time shall be determined through analysis of the progress schedule.

2. From time to time it may be necessary for the project schedule or completion time to be adjusted, as directed by the Owner, to reflect affects of job conditions, weather, technical difficulties, strikes, unavoidable delays on part of the Owner or its representatives, and other unforeseeable conditions which may indicate schedule adjustments or completion time extensions. Under such conditions, Owner's Representative will direct the Contractor to reschedule the work or Contract completion time to reflect changed conditions.
 - a. Revise and recalculate the schedule accordingly to indicate the actual effect on related activities.
- F. Float: If the Progress Schedule anticipates early completion of entire Work or any portion of the Work with a separate Contract Time, Contract Float is the number of days between the anticipated date for completion of the Work, or any such portion of the Work, and the corresponding Contract Time. Proceed with the Work according to early start dates. Owner's Representative shall have the right to apportion float time according to the needs of the Project.
 1. Contractor agrees that actual delays affecting paths of activities containing float time will not have any affect upon Contract completion times, providing that actual delay does not exceed float time associated with those activities.

END OF SECTION 01 32 00

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
 - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
 - 2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 01 Section "Photographic Documentation" for submitting construction photographs.
 - 5. Division 01 Section "Quality Requirements" for submitting test and inspection reports and for mockup requirements.
 - 6. Division 01 Section "Closeout Procedures" for submitting warranties.
 - 7. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 8. Division 01 Section "Operation and Maintenance Data" for submitting maintenance manuals.
 - 9. Divisions 02 through 33 Sections for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.
 - g. Scheduled date of fabrication.
 - h. Scheduled dates for purchasing.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided by Architect for Contractor's use in preparing submittals.
 - 1. Refer to Division 01 Section "Project Management and Coordination" for submitting Coordination Drawings and Contractor's use of Architect's digital data files.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow two (2) weeks for initial review of each submittal. Allow two (2) additional weeks for review of architectural submittals that require plumbing, HVAC, or electrical work to complete the installation, with the exception of Food Service Equipment if specified for this Project. Allow four (4) additional weeks for the review of Food Service Equipment. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow two (2) weeks for review of each resubmittal. Allow two (2) additional weeks for review of architectural submittals that require plumbing, HVAC, or electrical work to complete the installation, with the exception of Food Service Equipment if specified for this Project. Allow four (4) additional weeks for the review of Food Service Equipment.
 - a. Resubmittals will be reviewed no more than 2 times at the Owner's expense. Resubmittals which fail to comply with Contract requirements will be reviewed at the Contractor's expense, based on an hourly rate of \$75 per hour, not to exceed \$600 for each subsequent submittal.
 - b. The Owner reserves the right to deduct said reimbursement from the Contractor's application for payment on a monthly basis.
 4. Direct transmission of submittals to Consultants: Submittals may be transmitted directly to the Architect's consultants, with the approval of the Architect. Allow 2 weeks for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 - a. The Contractor shall request approval from the Architect prior to transmitting submittals to the Architect's consultants for each Specification Section that the Contractor intends to submit directly to a consultant.

- D. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a stamp approximately 4 by 4 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - a. The stamp must contain information as indicated on the "Combined Contractor and KBA Inc. Shop Drawing Review Stamp" attached to this section following Part 3.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.
 - 1) Submittal number shall include the Specification Section number followed by a hyphen and the sequence number for that Specification Section, followed by a hyphen and the review number (i.e. the fourth item submitted under Section 06 10 53 which is being resubmitted after an initial review by the Architect would be numbered as 06 10 53 – 004 - Rev 02).
 - 2) Submittals that are required by Specification Sections included in Division 01 shall include the Division 01 Section number, followed by a hyphen and the construction Specification Section number, followed by a hyphen and the sequence number for that Specification Section, followed by a hyphen and the review number. (i.e. If the Maintenance Manual for the Hydraulic Elevator were the first item being submitted as a closeout document in Section 14 24 00, it would be numbered as 01 78 23 - 14 24 00 – 01 - Rev 01).
 - i. Paragraph number from Part 2 of the appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, and/or proposed use of the product, as appropriate.
 - l. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals. Differentiate in writing the identified deviations from the products and options which are not in compliance with the Contract Documents.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. If the Architect approves direct transmission of a submittal to a consultant, the Contractor shall simultaneously transmit one (1) copy of the submittal to the Architect in addition to

- the required number of submittals. This additional copy will be used as a reference by the Architect during the review and will not be returned to the Contractor. This submittal shall be accompanied by a copy of the transmittal that was sent to the consultant and shall note that it has been transmitted directly to the Architect's consultant for review.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Specification Section number and title.
 - i. Drawing number and detail references, as appropriate.
 - j. Transmittal number numbered consecutively.
 - k. Submittal and transmittal distribution record.
 - l. Remarks.
 - m. Signature of transmitter.
 2. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.
 3. Prepare each transmittal separately for the work of a single specification section.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked "Approved" or "Approved as Corrected."
 4. The Contractor shall resubmit submittals that are returned from the Architect as "Revise and Resubmit" or "Not Approved" using the same submittal number as the original submittal. The Contractor shall revise the Review number, as appropriate.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating "Approved" or "Approved as Corrected" taken by Architect.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- B. Product Schedule: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
 - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 - 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
 - 3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 4. Completed List: Within 90 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 5. Architect's Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.

- d. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operation and maintenance manuals.
 - k. Compliance with specified referenced standards.
 - l. Testing by recognized testing agency.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
- 4. Submit Product Data before or concurrent with Samples.
 - 5. Number of Copies: Submit a sufficient number of copies of Product Data, for the Contractor's use and for the Architect to retain three (3) copies for the Architect's, and Owner's Representative's use. Mark up and retain one returned copy as a Project Record Document and additional copies as required for operation and maintenance manuals.
- D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 - m. Relationship to adjoining construction clearly indicated.
 - n. Seal and signature of professional engineer if specified.
 - o. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
 - 3. Number of Copies: Submit a sufficient number of copies of each submittal, for the Contractor's use and for the Architect to retain three (3) copies for the Architect's, and Owner's Representative's use. Mark up and retain one returned copy as a Project Record Document and additional copies as required for operation and maintenance manuals.

- E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 - b. Color charts for HVAC equipment, electrical accessories, and light fixtures shall be submitted separately from the product data. Each color chart shall reference the Product Data submittal number, be submitted under a separate transmittal and have its own submittal number.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample set; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

- 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation" for Project Manager's action.
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
1. Name of evaluation organization.
 2. Date of evaluation.
 3. Time period when report is in effect.
 4. Product and manufacturers' names.
 5. Description of product.
 6. Test procedures and results.
 7. Limitations of use.
- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- X. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
1. Preparation of substrates.
 2. Required substrate tolerances.
 3. Sequence of installation or erection.
 4. Required installation tolerances.
 5. Required adjustments.
 6. Recommendations for cleaning and protection.
- Y. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
1. Name, address, and telephone number of factory-authorized service representative making report.
 2. Statement on condition of substrates and their acceptability for installation of product.
 3. Statement that products at Project site comply with requirements.

4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 6. Statement whether conditions, products, and installation will affect warranty.
 7. Other required items indicated in individual Specification Sections.
- Z. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- AA. Construction Photographs: Comply with requirements specified in Division 01 Section "Photographic Documentation."
- BB. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect except as required in "Action Submittals" Article.

2.2 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Provide "Combined Contractor/KBA Inc. Shop Drawing Review Stamp" attached after this Section.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
1. "Approved": The portion of Work covered by the submittal may proceed provided it complies with the Contract Documents.
 2. "Approved as Corrected": The portion of Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal, and with the Contract Documents.
 3. "Not Approved" or "Revise and Resubmit": Revise or prepare a new submittal in accordance with notations; resubmit. Do not proceed with that portion of the Work covered by the submittal.
- C. Informational Submittals: Where a submittal is for information, record purposes or special processing or other activity, the Architect will review each submittal, and mark it "Reviewed" or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Unsolicited Submittals: Submittals not required by the Contract Documents may not be reviewed and may be discarded.
- F. Return of Submittals: Architect will return submittals to Contractor via standard USPS mail or standard rate for private delivery. If the Contractor requires expedited delivery, the Contractor must provide the Architect with an active shipping account number and forms in order to pay for expedited delivery.

3.3 FORMS

- A. The following form referenced in this Section is attached:
1. Combined Contractor and KBA Inc. Shop Drawing Review Stamp, 1 page.

END OF SECTION 01 33 00

COMBINED CONTRACTOR AND K.B.A. INC. SHOP DRAWING REVIEW STAMP

CONTRACTOR: _____	
PROJECT: _____	
PARAGRAPH. NO.: _____	SUBMITTAL NO.: _____
CONTRACTOR HAS DETERMINED AND VERIFIED MATERIALS, FIELD MEASUREMENTS AND FIELD CONSTRUCTION CRITERIA AND HAS CHECKED AND COORDINATED THE INFORMATION CONTAINED IN THIS SUBMITTAL WITH THE REQUIREMENTS OF THE WORK AND OF THE CONTRACT DOCUMENTS AND RECOMMENDS APPROVAL BY THE ARCHITECT/ENGINEER.	
BY: _____ DATE: _____	
KAESTLE BOOS ASSOC. PROJECT NO.: _____	
ARCHITECTS/ENGINEERS DATE RECEIVED: _____	
COMMENTS MADE ON THE SUBMITTALS DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS. REVIEWING IS ONLY FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND COMPLIANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR DIMENSIONS TO BE CONFIRMED AND CORRELATED AT THE SITE; FOR INFORMATION THAT PERTAINS SOLELY TO THE FABRICATION PROCESSES OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR COORDINATION OF THIS WORK WITH THE WORK OF ALL TRADES.	
<input type="checkbox"/> APPROVED	<input type="checkbox"/> APPROVED AS CORRECTED
IF CHECKED ABOVE, FABRICATION MAY BE UNDERTAKEN. APPROVAL DOES NOT AUTHORIZE CHANGES TO THE CONTRACT SUM OR CONTRACT TIME UNLESS STATED IN A SEPARATE LETTER.	
<input type="checkbox"/> REVISE AND RESUBMIT	<input type="checkbox"/> NOT APPROVED
BY: _____ DATE: _____	

↑
TO BE FILLED IN BY THE CONTRACTOR

↓
TO BE FILLED IN BY KAESTLE BOOS ASSOC., INC.

**DO NOT REMOVE
THIS PAGE INTENTIONALLY LEFT BLANK**

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
 - 1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2. Division 01 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 3. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect or Project Manager.

- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as

appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

- A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Description of test and inspection.
 - 3. Identification of applicable standards.
 - 4. Identification of test and inspection methods.
 - 5. Number of tests and inspections required.
 - 6. Time schedule or time span for tests and inspections.
 - 7. Entity responsible for performing tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- C. Reports: Prepare and submit certified written reports that include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of Connecticut and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
 - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

- c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
 - g. Payment for preconstruction testing is the responsibility of the Contractor.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
 2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
 - a. Allow seven days for initial review and each re-review of each mockup.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made by the Owner.
 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.
- B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.

6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
1. Distribution: Distribute schedule to Owner, Project Manager, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections as set forth in the Engineer of Record's statement of Special Inspections, in accordance with the requirements of the Connecticut State Building Code, as the responsibility of Owner, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.

2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
 2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.
- D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section specifies requirements for temporary utilities, support facilities, and security and protection facilities.
 - 1. Temporary utilities required include but are not limited to:
 - a. Water service and distribution.
 - b. Temporary electric power.
 - 2. Temporary support facilities required include but are not limited to:
 - a. Storage containers.
 - b. Sanitary facilities, including drinking water.
 - c. Hoists and manlifts.
 - d. Temporary Project identification signs.
 - e. Waste disposal services.
 - f. Construction aids and miscellaneous services and facilities.
 - g. Scaffolding.
 - 3. Security and protection facilities required include but are not limited to:
 - a. Temporary fire protection.
 - b. Barricades, warning signs, lights.
 - c. Environmental protection.
 - d. Traffic control as required at public streets.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary" for limitations on utility interruptions and other work restrictions.

1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum and paid for by the Contractor unless explicitly stated otherwise in the Contract Documents. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
- C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.5 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
 - 1. Building Code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police and Fire Department rules.
 - 5. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", OSHA Part 1926, Construction Safety and Health Regulations, and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits. All associated costs are the responsibility of the Contractor.

1.6 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

- C. Prevention of Fire: Take all necessary precautions for the prevention of fire during construction. Keep the area within the contract limits orderly and clean and promptly remove combustible rubbish from the site.
 - 1. Store combustible materials on the site only as established in the Contractor=s approved Safety Plan.
 - 2. Comply with all suggestions, official recommendations, and lawful requirements of the local fire department regarding fire protection.
 - 3. Contractor to arrange and pay for fire watch as required.
- D. Provide and maintain in good working order under all conditions, suitable and adequate fire protection equipment and services.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- C. Water: Provide potable water approved by local health authorities.

2.2 TEMPORARY FACILITIES

- A. Common-Use Field Office:
 - 1. The Owner will provide the Contractor with a space to accommodate a temporary field office within the building for the duration of the project, in accordance with the project schedule indicated in Division 01 Section "Summary."
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.
- C. Sanitary Facilities: Provide self-contained, single-occupant toilet units of the chemical type, properly ventilated and fully enclosed with a glass-fiber reinforced polyester shell, or equivalent.

2.3 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

- B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress outside of the building, or lengths of electric cords less than 50 ft. are used within the building.
- D. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the work, at no additional cost to the Owner.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company for a time when service can be interrupted, where necessary, to make connections for temporary services.
- B. Sanitary Facilities: The Contractor shall provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Locate field offices, storage containers, sanitary facilities and other temporary construction and support facilities for easy access.
 - 1. Confine apparatus, storage materials, equipment, supplies and operations to the areas bounded by the Contract and as directed by the Architect and Owner's Representative.
 - 2. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and containers located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
 - 1. Trailer Installation: Securely support on temporary masonry or preservative treated wood piers, set level throughout office areas, and anchor against overturning due to wind or other cause.
 - a. Installation on trailer wheels will not be accepted.
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
 - 3. Make all necessary arrangements and pay for the services of police officers and firefighters at the prevailing wage for such services as may be required for traffic control or fire watch for the performance of any portion of the Work.
- D. Parking: Use designated areas of Owner's existing parking areas, as directed by Owner's Representative, for construction personnel.
- E. Temporary Lifts and Hoists: The Contractor shall provide, operate and maintain in safe operating order facilities for hoisting materials, rubbish, employees and to otherwise carry out the Work. The Contractor shall only provide temporary hoists and lifts where the capacity of truck cranes and similar devices cannot be used due to height, weight, and/or lateral distance limitations of truck cranes and similar devices. Temporary hoists and lifts shall be limited to stationary tower cranes, stationary hoists, and steel track crawler cranes. Truck cranes, fork lifts, man lifts and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
 - 1. Provide temporary lifts and hoists that comply in all respects with the most stringent of all applicable Federal (including OSHA), state and local laws, rules, regulations, codes and ordinances, and provisions of Division 01 of this Specification.
- F. Project Identification and Temporary Signs: Prepare one project identification and other signs of the size indicated; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood. Do not permit installation of unauthorized signs.

1. Project Identification Sign: Erect a 4' x 8' x 3/4" plywood sign. Frame with 2 x 4 center cross bracing, and three 4 x 4 x 12' long posts in 12" diameter by 4' deep concrete piers. Mount sign to framing with four 3/8" diameter lug bolts and washers on each side of the sign.
 2. Engage an experienced sign painter to apply graphics, provided by the Architect. Apply three coats to the sign face, and one coat to the sides and rear.
 3. Temporary Signs: Erect 12"W x 18"H x 3/4" plywood signs as required to provide directional information to construction personnel and visitors.
- G. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.
1. Provide sufficient quantity of dumpsters at strategic locations within the Contract limit lines for collection of waste from the work of all subcontractors on site.
 2. Do not pass materials through open windows, or through window openings when any portion of the window remains in the opening.
- H. Staging and Scaffolding: Where staging and scaffolding is required, the Contractor shall provide the entire installation.
1. Staging shall be of approved design, erected and removed by experienced stage builders and shall have all accident prevention devices required by State and local laws.
- 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION
- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Division 01 Section "Summary."
 2. Comply with indoor air quality construction plan requirements specified in Division 01 Section "Indoor Air Quality Requirements."
- B. Protection: Protect the Work at all times from damages. Provide all pumps, equipment and enclosures to ensure this protection.
1. Remove all snow and ice as may be required for proper protection and prosecution of the work.
 2. Provide all shoring, bracing and sheeting as required for safety and for proper execution of work.
 3. Protect all work from damage during cold weather. If low temperatures make it impossible to continue operations safely in spite of cold weather precautions, cease work and so notify Architect. Repair and/or replacement of all work damaged from frost, freezing or any elements of the weather are the responsibility of the Contractor.

4. Should high wind warnings be issued by the U.S. Weather Advisory Bureau, take every precaution to minimize danger to persons, to the Work, and to adjacent properties, including, but not limited to, removing all loose materials, tools and/or equipment from exposed locations, and removing or securing scaffolding or other temporary work.
 5. Protect the building and the site from damage, loss or liability due to theft or vandalism when the work is not in progress at night, weekends, or holidays.
 6. Exercise precaution for the protection of persons and property at all times. Observe the provisions of applicable laws and construction codes. Take additional safety and health measures, or cause such measures to be taken as reasonably necessary. Maintain guards on machinery, equipment and other hazards as set forth in the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable laws.
 7. Protect and preserve in operating conditions all utilities traversing the work area. Repair all damages to any utility due to work performed under this Contract, the satisfaction of the Architect at no additional cost to the Owner.
- C. Roof Protection: The Contractor shall protect roof surfaces to prevent damage. Keep traffic on roofs to an absolute minimum, and permit traffic only as required to complete the Work under this Contract.
1. Repair or replace all roofing and substrates that are damaged by operations under this Contract by any means necessary, in accordance with the Specifications and the requirement and the roofing system Manufacturer's recommendations to their original condition, to the satisfaction of the Architect, at no additional expense to the Owner.
- D. Protect all new finished surfaces against possible damage from operations under this Contract.
1. Restore or replace all surfaces that are damaged by operations under this Contract to their original condition, to the satisfaction of the Architect, at no additional expense to the Owner.
 2. Contractor to submit a Project Approach that addresses protection of interior finishes during demolition and reconstruction.
- E. Do not load, or allow any part of the structure to be loaded, with a weight that will endanger its safety or the safety of personnel operating in or around the premises.
- F. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 2. Store combustible materials, inflammable materials and volatile liquids in containers in fire-safe containers and locations under the Contractor's control and supervision, or without adequate ventilation and fire protection.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
4. Do not permit accumulation of flammable rubbish to remain in the building overnight.
5. Do not permit storage of paint rags to remain in the building unless stored in a container immersed in water.
6. Observe strict safety precautions and provide supervision of welding operations, burning with a torch, combustion type temporary heating units, and similar sources of fire ignition.
7. No gasoline may be stored in or close to the building at any time.
8. Comply with requirements of local Fire Department, obtain Hot Work Permit for each day required, and pay all fees and other charges.

3.5 SITE CLEANING AND MAINTENANCE

- A. Perform an inspection of the site, including areas outside of the Site boundaries, with the Owner's Representative present, prior to the start of any Work, to determine the existing conditions.
- B. The Contractor shall take all necessary precautions to prevent the spreading of dirt and dust throughout the area of the Work. During demolition and all other work, take to contain dust and other debris from the Work within the limits of the site under the Contractor's control. Promptly clean up all dirt, dust and debris escaping from the work areas or dropped from vehicles traveling to and from the Work.
 1. Equip all vehicles used for transportation to, and removal of material from the site with covers, maintained in good condition, adequate to contain dust and debris within lawful acceptable limits.
 2. Provide facilities for preventing the spread of objectionable matter outside the site areas through washing of vehicles and vehicle wheels; decontamination of vehicles transporting hazardous waste containing materials such as asbestos, lead, or other matter; and by all other means necessary.
 3. When excavation begins, provide a 24' x 60', or larger as indicated, tire cleaning surface at each construction entrance. Provide adequate drainage and maintain surface for the duration of construction.
- C. Prior to Substantial Completion, remove all spots, stains, dirt and dust from all surfaces, including areas within other buildings and any portion of property of others, which were the result of the work of this project, to the satisfaction of the Architect.
 1. Requirements for final cleaning are contained in Division 01 Section, "Closeout Procedures."
- D. Repair any damage to the building, site, the property of others or the Owner's equipment caused by the Contractor or its Subcontractors, at no additional cost to the Owner.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor, with the exception of furniture and equipment provided for the Owner's field office, which are the property of the Owner. The Owner reserves the right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate existing and new permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 - b. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.
- E. As a condition of the Architect's certification of Substantial Completion, restore site areas of the site damaged by work under this Contract to their condition existing at the start of the work, unless otherwise directed by the Architect.

END OF SECTION 01 50 00

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SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 01 Section "References" for applicable industry standards for products specified.
 - 2. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
 - 3. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
 - 4. Unspecified Products: If an indicated product or item is not specified, the Contractor shall provide the quantity indicated in the Contract Documents. The product or item must be new, of average quality, and fit for the use for which it was intended. If a commercially available manufactured product is not available to fulfill these requirements, the Contractor shall provide a custom fabricated product or item at no

additional cost to the Owner. Submit shop drawings in accordance with Division 01 Section "Submittal Procedures."

- a. This does not apply to unspecified products or items that must be provided in accordance with the manufacturer's recommendation for a complete installation of a specified product or item. Such products or items shall be provided in accordance with the manufacturer's recommendation.
- B. **Basis-of-Design Product Specification:** A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
- C. **Substitutions:** Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 1. **Substitutions for Cause:** Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 2. **Substitutions for Convenience:** Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. **Comparable Product Requests:** Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. Include data to indicate compliance with the requirements specified in Part 2 "Comparable Products" Article.
 2. **Architect's Action:** If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. **Form of Approval:** As specified in Division 01 Section "Submittal Procedures."
- B. **Equal Product Requests for unnamed Products:** Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. **Equal Product Request Form:** Use facsimile of form for Substitution requests provided at end of Section.
 2. Comply with requirements in "Substitution Requests" article.

- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 SUBSTITUTION REQUESTS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided at end of Section.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 1) Format detailed comparison on letter-size paper with a two-column comparison; the specified product on the left side, the proposed substitution on the right. Include all performance criteria of the specified product regardless if no corresponding data is available for the proposed substitution.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

- a. Form of Acceptance: As specified in Division 01 Section "Submittal Procedures".

1.6 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 1. The Contractor is responsible for providing compatible products and construction methods.
 2. If a dispute arises over concurrently selectable but incompatible products, Architect will determine which products shall be used.
- B. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.
- C. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
 1. Store products to allow for inspection and measurement of quantity or counting of units.
 2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Protect construction materials from contamination and pollution from contact with construction dust, debris, fumes, solvents, and other environmentally polluting materials.
9. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.8 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
 3. Warranty Period: All warranty periods are required to commence on the date of Substantial Completion regardless of manufacturer's limitations. The Contractor is responsible to purchase an extended warranty as required.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft, for approval by the Architect, before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 02 through 48 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Warranty Requirements: When work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
 1. Upon determination by Architect that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition, in compliance with the Contract Documents.

2. Remove and replace construction that has been damaged as a result of failed or damaged warranted construction, or must be removed and replaced to provide access for correction of warranted construction.
- D. List of Warranties: Provide warranties for products and installations as specified, including but not limited to the following:
 1. EPDM Roofing: Division 07 Section "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing."
 2. Caulking: Division 07 Section "Joint Sealants".
- E. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
 7. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- B. Product Selection Procedures:
 1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 - a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed

product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
 - a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
 5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
1. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 2. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
- a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Substitution request is fully documented and properly submitted.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.3 COMPARABLE PRODUCTS

- A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION

3.1 FORMS

A. The following form referenced in this Section is attached:

1. Substitution Request Form, 2 pages.

END OF SECTION 01 60 00

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SUBSTITUTION REQUEST

(After the Bidding Phase)

DATE: _____

Page: 1 of 2

Project: _____

Substitution Request Number: _____

From: _____

To: _____

Date: _____

KBA Project Number: _____

Re: _____

Contract For: _____

Specification Title: _____

Description: _____

Section: _____ Page: _____

Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No. _____

Installer: _____ Address: _____ Phone: _____

History: ☐ New Product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

☐ Point-by-point comparative data attached – REQUIRED BY ARCHITECT

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; Explain: _____

Savings to Owner for accepting substitution: _____ (\$ _____)

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST

(After the Bidding Phase)

DATE: _____

Page: 2 of 2

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - Same warranty will be furnished for proposed substitution as for specified product.
 - Same maintenance service and source of replacement parts, as applicable, is available.
 - Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
 - Cost data as stated above is complete. Claims for addition costs related to accepted substitution which may subsequently become apparent are to be waived.
 - Proposed substitution does not affect dimensions and functional clearances.
 - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
 - Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all aspects.
-

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

ARCHITECTS'S REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
- ☐ Substitution approved ad noted - Make submittals in accordance with Specification Section 01330.
- ☐ Substitution rejected – Use specified materials.
- ☐ Substitution Request received too late – Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ Architect ☐ _____

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. General installation of products.
 - 2. Progress cleaning.
 - 3. Protection of installed construction.
 - 4. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 01 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
 - 2. Division 01 Section "Closeout Procedures" for final cleaning.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work.
 - b. List of detrimental conditions, including substrates.
 - c. List of unacceptable installation tolerances.
 - d. Recommended corrections.
 2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations.

3.3 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 7'-8" in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
 - 4. All anchors and fasteners used on the exterior of the building and where dampness and corrosion can reasonably be anticipated to be corrosion resistant.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
 - 1. All paint used on products to comply with State of Connecticut regulations controlling the use of volatile organic components. (VOCs).

3.4 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

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

- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

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SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.

1.3 DEFINITIONS

- A. Cutting: Penetration of in-place construction with an edged tool or drill to facilitate the removal, installation, modification or performance of other Work, including the removal of debris.
- B. Coring: Penetration of in-place construction with a drill that is designed to make the penetration in a manner such that the core can be removed to facilitate the installation or performance of other Work, including the removal of debris.
- C. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

- A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
 - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
 - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
 - 3. Products: List products to be used and firms or entities that will perform the Work.
 - 4. Dates: Indicate when cutting and patching will be performed.
 - 5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
 - 6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Lintels.
 - e. Structural decking.
 - f. Miscellaneous structural metals.
 - g. Exterior and/or interior masonry wall construction.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:
 1. Primary operational systems and equipment.
 2. Air or smoke barriers.
 3. Fire-suppression systems.
 4. Mechanical systems piping and ducts.
 5. Control systems.
 6. Communication systems.
 7. Conveying systems.
 8. Electrical wiring systems.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:
 1. Water, moisture, or vapor barriers.
 2. Membranes and flashings.
 3. Exterior curtain-wall construction.
 4. Equipment supports.
 5. Piping, ductwork, vessels, and equipment.
 6. Noise- and vibration-control elements and systems.
 7. Roofing Systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's

aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

- E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6 WARRANTY

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

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
 - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting and Coring: Cut and core in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 5. Proceed with patching after construction operations requiring cutting are complete.
 - 6. Where existing walls, floors, and ceilings are to remain, but portions must be removed for the demolition, installation, or modification of plumbing, HVAC, and electrical equipment the existing walls, floors, and ceilings shall be patched flush with existing surfaces and shall maintain all ratings. The Contractor and Subcontractors are responsible to review Plumbing, HVAC, and Electrical Drawings in all locations where walls, floors, and ceilings are to remain to verify the extent of work required.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

- a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
- 3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29

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SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 01 Section "Execution" for progress cleaning of Project site.
 - 2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 4. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 5. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs and photographic negatives, damage or settlement surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Complete startup testing of systems.
 8. Submit test/adjust/balance records.
 9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 10. Advise Owner of changeover in heat and other utilities.
 11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 12. Complete final cleaning requirements, including touchup painting.
 13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 14. Submit list of subcontractors, service providers, and principal vendors including contact information where they can be reached for emergency service.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Within 30 days of original request for inspection, request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, and within 60 days of issuance of Certificate of Substantial Completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

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

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number; 1 of x.

1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Schedule of Warranties: Arrange a Schedule of Warranties in columnar format and include the Specification Section number and title, product name or description, and duration of the warranty. Indicate whether the warranty is by Installer, Manufacturer, or both. Under each of these headings, indicate whether the warranty includes labor only, material only, or both labor and material. Whenever there are differing warranty responsibilities between Installer and Manufacturer, list the responsibilities and duration of each separately.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.
- B. Related Sections include the following:
 - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 3. Division 01 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 4. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 SUBMITTALS

- A. Initial Submittal: Submit two draft copies of the complete operation and maintenance manual for review by the Architect/Engineer and Commissioning Authority at least 45 days after review and approval of equipment shop drawings. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.
- B. Final Submittal: Submit one copy of corrected manual in final form at least 30 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.
 - 1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect's comments.

1.4 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name, address, and telephone number of Contractor.
 - 6. Name and address of Architect.
 - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
 - 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

- b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents, including Specification Section number. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2 PRODUCT MAINTENANCE MANUAL

- A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:
 1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.

- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- C. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
 - 1. Do not use original Project Record Documents as part of operation and maintenance manuals.
- D. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23

SECTION 01 78 39 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 01 Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 02 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one hard copy set(s) of marked-up Record Prints.
 - a. Provide one set of electronically scanned, marked-up Record Prints in Portable Document Format (.PDF) on a digital video disk (DVD).
- B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit one copy of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize Record Prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2. Identification: As follows:

- a. Project name.
- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

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

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 01 78 39

SECTION 02 08 00 - ASBESTOS REMOVAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 ACTION SUBMITTALS

- A. CTHPB Documentation Submittals: Comply with Division 01 Section “Sustainable Design Requirements” and provide the following in addition to other action submittals:
 - 1. Product Data for Credit 5d: For adhesives and sealants, documentation including printed statement of VOC content.
 - 2. Product Data for Credit 5d: For paints and coatings, including printed statement of VOC content.
 - 3. Product Data for Credit d8: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
 - 4. Product Certificates for Credit d10: For products and materials required to comply with requirements for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.

1.3 SCOPE

- A. The work specified herein shall be the abatement of asbestos-containing materials by persons who are knowledgeable, qualified, and trained in the removal, treatment, handling, and disposal of asbestos-containing material, and the subsequent cleaning of the affected environment. The Contractor shall have a Competent Person in control on the job site at all times during asbestos abatement work. This person must comply with applicable Federal, State and Local regulations which mandate work practices, and be capable of performing the work of this contract.
- B. The Contractor shall be licensed by the State of Connecticut Department of Public Health (DPH) in accordance with Regulations of CT State Agencies, Sections 20-440-1 through 20-440-9. Should any portion of the work be subcontracted, the subcontractor must also be licensed in accordance with these regulations.
- C. The Borough of Naugatuck will retain the services of a Project Monitor for protection of its interests and those using the building. Pre-abatement, during abatement and post-abatement sampling will be conducted as deemed necessary.

- D. Deviations from this Specification require the written approval of the Design Consultant.
- E. Restore all work areas and auxiliary areas utilized during abatement to conditions equal to or better than original. Any damage caused during the performance of abatement activities shall be repaired by the Contractor (e.g., paint peeled off by barrier tape, nail holes, water damage, removal of ceiling tiles or concrete blocks, broken glass, etc.) at no additional expense to the Borough of Naugatuck. The Contractor is responsible for protecting all objects in work areas that are permanent fixtures or too large to remove.

The Contractor shall be responsible for the following general requirements:

- 1. Obtain all approvals and permits, and submit all notifications required.
 - 2. Provide, erect, and maintain all planking, bracing, shoring, barricades, and warning signs.
 - 3. Unless otherwise specified, all equipment, fixtures, piping and debris resulting from demolition shall become the property of the Contractor and shall be removed from the premises.
 - 4. Materials to be reused shall be removed with the utmost care to prevent damage of any kind. All material to be reused shall be stored as directed. The Contractor shall coordinate with the Borough of Naugatuck as to the storage location.
 - 5. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.
- F. It shall be the responsibility of the Contractor to protect and preserve in operating condition, all utilities traversing the building and site. Damage to any utility due to work under this Contract shall be repaired to the satisfaction of the Borough of Naugatuck at no cost to the Borough of Naugatuck.

1.4 DESCRIPTION OF WORK

- A. The Contractor shall supply all labor, materials, equipment, services, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations and these specifications.
- B. Negative pressure must be continuously maintained in each work area, until the area achieves satisfactory reoccupancy criteria and is approved by the Project Monitor to be deregulated. Because the building has been identified as a school, and because the scope of work involves the removal of asbestos-containing materials in an occupied school building, all doors accessing the work areas will be kept locked throughout the duration of the abatement project. If doors are to be opened for access by authorized personnel the subject door(s) will be continuously monitored until they are re-locked. Doors will be completely sealed and covered with two layers of 6 mil polyethylene on the restricted side(s).

- C. A full time project monitor will be on site throughout the duration of the project. The project monitor will periodically inspect each work area throughout each work day. The project monitor will shut down the project if visible emissions of asbestos are identified. The project monitor will immediately notify the CT DPH if visible emissions are identified. Work will not proceed without written approval from the CT DPH.
- D. All air samples will be analyzed on a daily basis. All air sample results will be forwarded to the CT DPH by noon of the following day. Any air sample that is overloaded or has a fiber concentration that exceeds 0.010 fibers per cubic centimeter (f/cc) will be re-analyzed by the NIOSH 7402 TEM Method. TEM analysis will require a six hour turn around. The project will be shut down by the project monitor until TEM results are available. If the TEM analyses are overloaded or greater than 0.005 structures per cubic centimeter (s/cc) the area(s) areas outside the established work area will be considered contaminated with asbestos and the CT DPH would be immediately notified. The project designer will then submit a written assessment of the incident to the CT DPH. The work could only proceed with written approval from the CT DPH.
- E. Bead blasting and grinding/chipping is required for all floor tile mastic removal. Chemical removal of floor tile mastic is not allowed.
- F. The contractor is responsible for protecting non asbestos-containing pipe insulation when removing mudded pipe fittings or asbestos pipe insulation that is located in the abatement work area(s).
- G. PCBs were not identified in caulk or glaze materials that are impacted by roof replacement activities.
- H. The asbestos abatement work plan, which was designed by Mr. Henry J. Laliberte (CT License No. 000037), shall include the removal of asbestos-containing materials as specified herein.

1. Phase 1 – Roof 1

Remove ACM in the form of:

- All penetration flashing as ACM

Remove all penetration flashing Roof 1. Roof flashing cement may be located at any roof penetration, height change, junction, patch, chimney, flue, vent, etc. A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements.

2. Phase 2 – Roofs 2 and 3

Remove ACM in the form of:

- All penetration flashing as ACM
- All perimeter flashing (FL1) as ACM

Remove all penetration flashing and all perimeter flashing (FL1) from the Roofs 2 and 3. Roof flashing cement may be located at any roof penetration, height change, junction, patch, chimney, flue, vent, etc. A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements.

3. Phase 3 – Roofs 5, 6, 7 and 8

Remove ACM in the form of:

- All penetration flashing as ACM (Roofs 6 and 8)
- All grey brittle window caulk (WC1) as ACM (Roofs 5, 6, 7 and 8)
- All grey brittle caulk (C4) as ACM (Roofs 5 and 6)

Remove all penetration flashing from Roofs 6 and 8; all grey brittle window caulk (WC1) from Roofs 5, 6, and 8; and all grey brittle caulk (C4). Roof flashing cement may be located at any roof penetration, height change, junction, patch, chimney, flue, vent, etc. A regulated area(s) shall be established at the perimeter of the work area(s), and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements.

Note: Ceiling plaster located throughout the original building is ACM. The Contractor is responsible for all cleanup or abatement activities associated with these ceiling plaster materials that are required due to roof replacement activities.

4. Phase 4 Alternate Option – Original Building (Throughout)

Enclose ACM in the form of:

- All base coat and skim coat ceiling plaster

Install polyethylene at ceilings on all floors of the original building to reduce the risk of an asbestos fiber release from the plaster ceilings during the course of roof replacement activities. The Contractor will pre-clean any loose debris from the ceilings prior to installing the polyethylene ceilings. All space beneath these plaster ceilings will be under containment(s) within negative pressure enclosures (NPE) and with contiguous decontamination units. The Contractor is required to remove equipment and furniture that is needed in order to install the polyethylene ceilings. The Contractor will HEPA vacuum the air space above the polyethylene ceiling and plaster ceiling to reduce the risk of an asbestos fiber release prior to removing the

polyethylene. The Contractor is responsible for all cleanup or additional abatement activities required if asbestos ceiling plaster is damaged or an asbestos fiber release occurs during the course of the roof replacement activities. All areas will be placed under full containment conditions or in accordance with a pre-approved Alternative Work Practice (AWP) from the State of Connecticut Department of Public Health. Reoccupancy air clearance testing shall be in accordance with CTDPH 19a-332a-12.

Note:

- Phase 4 containments shall be installed prior to roof replacement activities to eliminate the risk of building contamination resulting from dislodged and damaged plaster.

5. Phase 5 – Interior, Throughout

Remove ACM in the form of:

- All mudded roof drain bowl insulation and roof drain insulation as ACM

under containment(s) within negative pressure enclosures (NPE) and with contiguous decontamination units. Remove all mudded roof drain bowl insulation and all roof drain insulation that impact roof replacement activities from all locations of the building. The Contractor is required to remove equipment, furniture, ceilings and walls that are needed to complete the asbestos removal work. Remove ACM under full containment conditions or in accordance with a pre-approved Alternative Work Practice (AWP) from the State of Connecticut Department of Public Health. Reoccupancy air clearance testing shall be in accordance with CTDPH 19a-332a-12.

1.5 DEFINITIONS

Accessible - A space easily accessed and which can be entered or seen without demolition.

Adequately Wet - Sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

AHERA - Asbestos Hazard Emergency Response Act - U. S. EPA regulation 40 CFR Part 763 under Section 203 of Title II of the Toxic Substances Control Act (TSCA), 15 U.S.C. 2643. This rule mandates inspections, accreditations of persons involved with asbestos, and -final air clearances following abatement in public and private schools, and public and commercial buildings.

Alternative Work Practice (AWP) - State of Connecticut Department of Public Health - approved deviation from Asbestos Standards (Sections 19a-332a-1 to 19a-332a-16 inclusive). Alternative Work Practice methods may be used if pre-approved by DPH or with the approval of DPH, the Design Consultant and Borough of Naugatuck's Project Monitor when not pre-approved. Approval of alternative work practice procedures shall not relieve the Contractor from any codes, regulations or standards required by this specification.

Asbestos - The term asbestos includes chrysotile, amosite, crocidolite, asbestiform tremolite, asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered.

Asbestos Abatement - The removal, encapsulation, enclosure, renovation, repair, demolition or other disturbance of asbestos-containing materials except activities which are related to the removal or repair of asbestos cement pipe and are performed as defined in Section 25-32a of the Connecticut General Statutes.

Asbestos-Containing Waste Materials - Mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovations operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

Asbestos Control Area - An area where asbestos abatement operations are performed which is isolated by physical boundaries which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris. Two examples of an Asbestos Control Area are a "full containment" and a "glovebag".

Asbestos Fiber - A particulate form of asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals having a length of five micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Authorized Asbestos Disposal Facility - A location approved by the Connecticut Department of Energy and Environmental Protection for handling and disposing of asbestos waste or by an equivalent regulatory agency if the material is disposed of outside the State of Connecticut.

Category I Non-Friable Asbestos-Containing Material (ACM) - Asbestos-containing packings, gaskets, resilient Floor coverings and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II Non-Friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Class I Asbestos Work - Activities involving the removal of TSI and surfacing ACM and PACM.

Class II Asbestos Work - Activities involving the removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work - Repair and maintenance operations, where ☐ ACM, including TSI and surfacing material, is likely to be disturbed.

Class IV Asbestos Work - Maintenance and custodial activities during which employees contact ACM and PACM and activities to clean up waste and debris containing ACM and PACM.

Competent Person - In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and Class II work who is specifically trained in a training course which meet the criteria of EPA's Model Accreditation Plan (40 CFR 763).

Concealed Space - Space which is out of sight. Examples of a concealed space include area above ceilings; below floors; between double walls; furred-in areas; pipe and duct shafts; and similar spaces.

Critical Barrier - A minimum of two layers of six (6) mil polyethylene sheeting taped securely over windows, doorways, diffusers, grilles and any other openings between the Work Area and uncontaminated areas outside of the Work Area, including the outside of the building.

Decontamination Enclosure System - A series of rooms separated from the Work Area and from each other by air locks, for the decontamination of workers and equipment.

Demolition - The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

DEP - The Connecticut Department of Environmental Protection, 79 Elm Street, Hartford, CT 06106.

DPH - The Connecticut Department of Public Health, 410 Capitol Avenue, Hartford, CT 06134.

Differential Pressure - A difference in the static air pressure between the Work Area and occupied areas, and is developed by the use of HEPA filtered exhaust fans. This differential is generally in the range of 0.02 to 0.04 inches of water column.

Encapsulant - Specific materials in various forms used to chemically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne. There are four types of encapsulant as follows:

1. Removal Encapsulant (can be used as a wetting agent).
2. Bridging Encapsulant (used to provide a tough durable surface coating to asbestos-containing material).

3. Penetrating Encapsulant (used to penetrate the asbestos containing material down to substrate, encapsulating all asbestos fibers).
4. Lock-down Encapsulant (used to seal off "lock-down" minute asbestos fibers left on surfaces from which asbestos containing materials have been removed).

Encapsulation - The application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the air.

Engineering Controls - Controls to include, but not be limited to, pressure differential equipment, decontamination enclosures, critical barriers and related procedures.

Equipment Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled transfer of materials and equipment into or out of the Work Area, typically consisting of a Washroom and a Holding Area.

Exposed - Open to view.

Finished Space - Space used for habitation or occupancy where rough surfaces are plastered, paneled or otherwise treated to provide a pleasing appearance.

Fixed Critical Barrier - Barrier constructed of 2" x 4" wood or metal framing 16" O.C., with $\frac{1}{2}$ " plywood on the occupied side and two layers of six (6) mil polyethylene sheeting on the Work Area side to prevent unauthorized access or air flow.

Fixed Object - A piece of equipment or furniture in the Work Area which cannot be removed from the Work Area, as determined by the Design Consultant.

Friable Asbestos Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, Section 1, Polarized Light Microscopy, that when dry can be crumbled, pulverized or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Glovebag - A sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. Properly installed and used glovebags provide a small Work Area enclosure typically used for small scale asbestos stripping operations. Information on glovebag installation, equipment and supplies, and work practices is contained in 29 CFR 1926.1101).

Glovebag Technique - A method with limited applications for removing small amounts of friable asbestos-containing material from HVAC ducts, short piping runs, valves, joints, elbows, and other non-planar surfaces in a non-contaminated work area. The glovebag assembly is a manufactured or fabricated device consisting of a glovebag (typically constructed of six (6) mil polyethylene or polyvinyl chloride plastic), two inward projecting long sleeves, an internal tool pouch, and an attached, labeled receptacle for asbestos waste. The glovebag is constructed and installed in such a manner that it surrounds the object or material to be removed and contains all asbestos fibers released during the process. This technique requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant and DPH when not pre-approved.

HEPA Filter Equipment - High-efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of trapping and retaining asbestos fibers. Filters shall be of 99.97 percent efficiency for retaining fibers of 0.3 microns in diameter or larger.

Inaccessible - A space not accessible and which cannot be entered or seen without demolition.

Lock-Down - The procedure of spraying polyethylene sheeting and building materials with an encapsulant type sealant to seal in non-visible asbestos-containing residue.

Mini-Containment - A procedure using a single layer of polyethylene sheeting to contain the Work Area. Access to the mini-containment is controlled by an air lock which also serves as a Holding Area. This procedure requires AWP application and may only be used if pre-approved by DPH or with the approval of the Design Consultant and DPH when not pre-approved.

Movable Object - A piece of equipment or furniture in the Work Area which can be removed from the Work Area, as determined by the Design Consultant.

Negative Exposure Assessment - For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the employer may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria:

1. Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or
2. Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are not more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit; or
3. The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

Non-Friable Asbestos-Containing Material - Material containing more than 1 percent asbestos as determined using the method specified in Appendix A, subpart F, 40 CFR part 763, section 1, Polarized Light Microscopy, that when dry cannot be crumbled, pulverized or reduced to powder by hand pressure.

NPE - Negative pressure enclosure.

Owner or Operator of a Demolition or Renovation Activity - Any person who owns, leases, operates, controls and supervises the facility being demolished or renovated or any person who owns, leases, operates, controls or supervises the demolition or renovation, or both.

Permissible Exposure Limit (PEL) - (1) time-weighted average unit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (f/cc) or air as an eight (8) hour time-weighted average time (TWA). (2) excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fibers per cubic centimeter of air (f/cc) as averaged over a sampling period of thirty (30) minutes.

Personal Monitoring - Air sampling within the breathing zone of an employee.

Pre-Clean - The process of cleaning an area before asbestos abatement activities begin to ensure all dust and debris in the area considered to be asbestos-containing are properly contained and disposed of. This increases the likelihood the area will pass aggressive air sampling clearance requirements after asbestos-containing materials have been removed.

Presumed Asbestos-Containing Material (PACM) - TSI and surfacing material found in buildings constructed no later than 1980.

Project Monitor - The certified and licensed individual contracted or employed by the building owner or contractor to supervise and/or conduct air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of an abatement project. Requirements for Project Monitor are defined in the Connecticut DPH regulations (Sections 20-440-1 through 20-440-9, inclusive). In addition to these requirements, this person shall be listed in the American Industrial Hygiene Association's Asbestos Analysts Registry.

Regulated Area - Area established by the employer to demarcate areas where Class I, II and III work is conducted and any adjoining area where debris and waste from such asbestos work accumulate; a work area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed the Permissible Exposure Limit.

Regulated Asbestos-Containing Material (RACM) - (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load-supporting members are wrecked or taken out are demolitions.

Repair - Overhauling, rebuilding, reconstructing or reconditioning of structures or substrates where asbestos, tremolite, anthophyllite or actinolite is present.

Thermal System Insulation (TSI) - Materials applied to pipes, fittings, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

Unfinished Space - Space used for storage, utilities or work area where appearance is not a factor. Examples of an unfinished space include crawlspace; pipe tunnel and similar spaces.

Visible Emissions - Any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.

Visible Residue - Any debris or dust on surfaces in areas within the Work Area where asbestos abatement has taken place and which is visible to the unaided eye. All visible residue is assumed to contain asbestos.

Waste Generator - Any owner or operator of a source whose act or process produces asbestos-containing waste material.

Waste Shipment Record - The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.

Work Area - Specific area or location where the actual work is being performed or such other area of a facility which the Design Consultant determines may be hazardous to public health as a result of such asbestos abatement.

Worker Decontamination Enclosure System - The portion of a Decontamination Enclosure System designed for controlled passage of workers and authorized visitors, typically consisting of a Clean Room, a Shower Room and an Equipment Room.

1.6 REFERENCES

A. The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply.

1. Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1001 - Asbestos, Tremolite, Anthophyllite, and Actinolite

29 CFR 1910.134 - Respiratory Protection

29 CFR 1926.21 - Safety Training and Education

29 CFR 1926.32 - Competent Person

29 CFR 1926.51 - Sanitation

29 CFR 1926.59 - Hazard Communication.

29 CFR 1926.62 - Lead in Construction

29 CFR 1926.200 - Accident Prevention Signs and Tags

29 CFR 1926.417 - Lockout and Tagging of Circuits

29 CFR 1926.1101 - Asbestos

2. Environmental Protection Agency (EPA)

40 CFR 61, Subpart M - National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision; Final Rule

40 CFR 260-271 - Hazardous Waste Disposal

40 CFR 763, Subpart E - Asbestos Hazard Emergency Response Act (AHERA)

40 CFR 763, Subpart G - Worker Protection Rule

3. State of Connecticut, Department of Public Health (DPH) Regulations

Section 19a-332a-1 through 19a-332a-16 - Standards for Asbestos Abatement

Section 19a-332a-17 through 19a-332a-23 - Licensure and Training

4. American National Standards Institute (ANSI)

ANSI Z9.2 - Fundamentals Governing the Design and Operation of Local Exhaust Systems

ANSI Z88.2 - Respiratory Protection

5. American Society of Testing and Materials (ASTM)

ASTM E 84 - Surface Burning Characteristics of Building Materials

ASTM E 96 - Water Vapor Transmission of Materials

ASTM E 119 - Fire Tests of Building and Construction Materials

ASTM E 736 - Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

ASTM E 1368 - Visual Inspection of Asbestos Abatement Projects

ASTM E 1494 - Encapsulants for Spray- or Trowel- Applied Friable
Asbestos-Containing Building Materials

6. Underwriters Laboratories, Inc. (UL)

UL 586 - High-Efficiency, Particulate, Air Filter Units

1.7 DOCUMENTATION

A. Submit two copies of the following documentation to ensure compliance with the applicable regulations. An up to date copy shall be retained at the job site at all times. Submission must be made prior to the Pre-abatement Meeting, which will be held two weeks prior to the start of abatement. The Abatement Contractor, Asbestos Project Designer, and Owner's Representatives shall be present at the meeting.

B. Manufacturer's Catalog Data:

Local Exhaust Equipment
HEPA Vacuum Equipment
Respirators
Pressure Differential Automatic Recording Instrument
Surfactant
Chemical Encapsulant
Polyethylene Sheeting
Airless Sprayers
Portable Shower Units
Adhesive Removal Chemicals
MSDS for All Materials Delivered to the Site
Letters of Compatibility for Encapsulant and Coating Materials

C. Statements:

Notification to State of Connecticut Department of Public Health
(ten (10) days before the start of asbestos abatement)
Notification to State of Connecticut Department of Environmental Protection
(if waste is to be disposed of in Connecticut)
Worker Medical Certification
Worker Training Certification
Worker Respirator Fit Testing
OSHA Laboratory Certification
Contractor's Project Monitor Certification
Landfill Approval
Safety Plan
Respirator Protection Plan
Initial Exposure Assessment

1. Copies of all required notifications, approvals and permits for the removal, disposal and transport asbestos-containing or contaminated materials.
2. Documentation from a physician certifying that all employees who may be exposed to airborne asbestos in excess of the background level have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health affects. In addition, document that personnel have received medical monitoring required in 29 CFR 1926.1101. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he/she will be required to perform as well as special work place conditions such as high temperature, high humidity and chemical contaminants which to which he/she may be exposed.
3. Documentation certifying that all employees have received training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis.
4. Documentation of respiratory fit testing for all employees who must enter the Work Area. This fit testing shall be in accordance with qualitative procedures as detailed in 29 CFR 1926.1101.
5. Qualifications of the Project Monitor the Contractor proposes for air sampling to assure workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Include the name and address of the testing laboratory proposed to perform air monitoring on behalf of the Contractor, along with their NIOSH PAT Program I.D. number.
6. Establish and supervise in accordance with 29 CFR 1926.21, a program for the education and training of workers in the recognition, avoidance and prevention of unsafe conditions and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site specific information to address health and safety procedures unique to this project.
7. Establish a written Respiratory Protection Plan in accordance with 29 CFR 1910.134. This plan shall establish procedures governing the selection and use of respirators and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.

8. Demonstrate that employees exposures will be below the PELs for Class I asbestos work until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise make a Negative Exposure Assessment. The employer shall presume that employees are exposed in excess of the TWA and excursion limit.

D. Records:

Sign-in/out Logs
Personal Air Sampling Results
Waste Shipment Records
Pressure Differential Recording Data
NPE Inspection and Smoke Test Logs
Rental Equipment Statements

When rental equipment is to be used in removal areas or to transport waste materials, submit a copy of written notification provided to the rental company informing them of the nature of use of the rented equipment.

1.8 PERSONNEL PROTECTION

- A. Instruct workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
- B. Ensure workers are fully protected with respirators and protective clothing during work in the Asbestos Control Area, where there is the possibility of disturbing asbestos-containing or asbestos-contaminated materials.
- C. Respiratory protection shall meet the requirements of OSHA as required in 29 CFR 1910.134 and 29 CFR 1926.1101. Provide appropriate respiratory protection for each worker and ensure usage during potential asbestos exposure. As a minimum, workers shall be equipped with powered air-purifying respirators (PAPR) with HEPA filters.
- D. Select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11. Provide an adequate supply of filter elements for respirators in use.
- E. Minimum respiratory protection shall be as follows:

Airborne concentration of asbestos,
tremolite, anthophyllite, actinolite
or a combination of these minerals

Required Respirator

Not in excess of 1 f/cc
(100 x PEL)

Half mask air purifying respirator other than a disposable
or otherwise as required respirator, equipped with high
efficiency filters.

Not in excess of 5 f/cc (50 X PEL)	Full facepiece air purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (1000 x PEL)	Any powered air purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode
Not in excess of 100 f/cc (1000 X PEL)	Full facepiece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (>1000 x PEL) or unknown concentration	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

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- Note: 1. Respirators assigned for higher airborne fiber concentrations may be used at lower concentrations.
2. A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.
3. The Contractor shall provide a full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus for all persons within the regulated area where apparatus for all persons within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced.
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- F. Provide and require all workers to wear protective clothing in Work Areas where asbestos fiber concentrations exceed permissible limits established by OSHA. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.
- G. Provide all authorized persons entering contaminated areas with proper respirators and protective clothing.
- H. Ensure that all workers and authorized persons enter and leave the Asbestos Control Area through the Worker Decontamination Enclosure System.
- I. Ensure all contaminated protective clothing remains in the Equipment Room for reuse or disposal of as contaminated waste.
- J. Ensure workers do not eat, drink, smoke or chew gum or tobacco while in the Asbestos Control Area.

1.9 EQUIPMENT REMOVAL PROCEDURE

- A. Clean surfaces of contaminated containers and equipment thoroughly by vacuuming with HEPA filtered equipment and wet wiping before moving such items into the Equipment Decontamination Enclosure System for final cleaning and removal to uncontaminated areas. Ensure that personnel do not leave the Asbestos Control Area through the Equipment Decontamination Enclosure System.

1.10 SEQUENCE OF WORK

- A. Proceed in accordance with the sequence of work as mutually agreed upon with the Borough of Naugatuck.
- B. The following sequence of work shall be used for the asbestos abatement work:
 - 1. A visual inspection of the Work Area to determine pre-existing damage to facility components.
 - 2. Removal of all movable objects from the Work Area undergoing abatement by the Owner.
 - 3. All temporary utilities required for the project shall be on site and operational prior to the initiation of asbestos work.
 - 4. Release of work area to the Contractor.
 - 5. Abatement of all asbestos-containing materials by the Contractor.
 - 6. Air sampling by the Borough of Naugatuck's Project Monitor for re-occupancy.
 - 7. Cleanup by the Contractor. Work Areas must be returned to their original condition or better.

1.11 DELIVERY, STORAGE AND HANDLING

- 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. Do not use damaged or deteriorating materials. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Fire retardant polyethylene sheet in roll size to minimize the frequency of joints, shall be delivered to job site with factory label indicating four (4) or six (6) mil.

- B. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Disposable bags shall be opaque.
- C. Tape shall be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces. Tape must be capable of adhering under both dry and wet conditions.
- D. Surfactant (wetting agent) shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water or as directed by the manufacturer.
- E. Containers must be impermeable and shall be both air and watertight. Containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101 and EPA 40 CFR Part 61.152 as appropriate.
- F. Labels and signs shall conform to OSHA Standard 29 CFR 1926.1101.
- G. Encapsulant shall be bridging or penetrating type which has been approved by the Design Consultant. Usage shall be in accordance with manufacturer's printed technical data. Encapsulant must be compatible with new materials being installed. Encapsulant shall be clear.
- H. Glovebag assembly shall be manufactured of six (6) mil transparent polyethylene or PVC with two (2) inward projecting long sleeve gloves, an internal pouch for tools, and an attached labeled receptacle for waste.

2.2 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for asbestos removal.
- B. Protective clothing, respirators, filter cartridges, air filters and sample filter cassettes shall be provided in sufficient quantities for the project.
- C. Electrical equipment, protective devices, emergency generators 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. Showers shall be equipped with hot and cold or warm running water. One shower stall shall be provided for each eight workers.
- E. Exhaust air filtration units shall be equipped with HEPA filters capable of providing sufficient air exhaust to create a minimum pressure differential of 0.02 inches of water column, and to allow a sufficient flow of air through the area. An automatic warning system shall be incorporated into the equipment to indicate pressure drop or unit failure. No air movement system or air filtering equipment shall discharge unfiltered air outside the Asbestos Control Area.

- F. Pressure differential automatic recording instrument shall be provided to ensure exhaust air filtration devices provide the minimum pressure differential required between the Work Area and occupied areas of the facility.
- G. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Asbestos Control Area.
- H. 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 0.3 microns in diameter or larger.
- I. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule.
- J. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the Work Area shall be provided as appropriate for the work.

PART 3 EXECUTION

3.1 PREPARATION OF WORK AREA ENCLOSURE SYSTEM

- A. Prior to beginning work, the Design Consultant, Borough of Naugatuck Representative and Contractor shall perform a visual survey of the Work Area and list all pre-existing damage to building components. The Contractor shall submit to the Design Consultant a list which shall include all damaged areas not scheduled to be repaired under this Contract and include photographs, video tapes as applicable.
- B. Post warning signs meeting the specifications of OSHA 29 CFR 1910 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of work place enclosure barriers.
- C. Utilize engineering controls and personnel protective equipment when asbestos-containing materials may be disturbed.
- D. Provide temporary power and lighting, if applicable, and ensure safe installation, including ground fault protection, of temporary power sources and equipment in compliance with applicable electrical code and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.
- E. When necessary, shut down and isolate heating, cooling, and ventilating air systems to prevent contamination and fiber dispersal to other areas of the building. Seal all vents.

3.2 WORKER DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area, a Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series. Access to the Work Area shall only be through this enclosure.
- B. Access between rooms in the Worker Decontamination Enclosure System shall be through double flap curtained openings (air locks). Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be completely sealed ensuring sole source of air flow into the Asbestos Control Area originates from the outside uncontaminated areas.
- C. The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.
- D. The Shower Room shall be of sufficient capacity to accommodate the number of workers. Supply warm water to showers. Provide one shower for each eight workers. No worker or other person shall leave an Asbestos Control Area without showering. Shower water shall be collected and filtered using best available technology and dumped down an approved drain.
- E. No personnel or equipment shall be permitted to leave the Asbestos Control Area unless just decontaminated by showering, wet cleaning or HEPA vacuuming to remove all asbestos debris. No asbestos-contaminated materials or persons shall enter the Clean Room.

3.3 EQUIPMENT DECONTAMINATION ENCLOSURE SYSTEM

- A. Establish contiguous to the Work Area an Equipment Decontamination Enclosure System consisting of two (2) totally enclosed chambers divided by a double flap curtained opening. Other effective designs are permissible. This enclosure must be constructed so as to ensure that no personnel enter or exit through this unit.

3.4 SEPARATION OF WORK AREAS FROM OCCUPIED AREAS

- A. Occupied areas and/or building space not within the Asbestos Control Area shall be separated from asbestos abatement Work Areas by means of airtight barriers. Barriers at openings with dimensions exceeding two (2) feet in both directions shall be blocked with fixed critical barriers.
- B. Do not impair required building exits from any occupied building area. Where normal exits have been blocked by the asbestos work, provide temporary exit signs directing building occupants to the nearest available exit location.
- C. For Class I work, visually inspect and smoke test barriers to assure an effective seal. Repair defects immediately.
- D. Create a pressure differential in the range of 0.02 to 0.04 inches of water column between the

Work Area and occupied areas by the use of acceptable pressure differential equipment. Provide a sufficient quantity of units to exhaust the volume of air within the Asbestos Control Area a minimum of four times per hour. Ensure that a negative pressure differential is maintained in each abatement Work Area by continuously monitoring the pressure differential between the Work Area and occupied areas utilizing recording type equipment to ensure exhaust air filtration equipment maintains a minimum pressure differential of 0.02 inches of water column.

3.5 EXTERIOR ASBESTOS REMOVAL PROCEDURES

- A. No asbestos work shall be performed until the Project Monitor has been notified and is on-site.
- B. The Contractor shall establish Regulated areas through the use of barrier tape and warning signs to demarcate the Work Area.
- C. Only those workers afforded the proper personnel protection shall be allowed into the Regulated Area.
- D. The Contractor shall erect one or more decontamination facilities to serve each separate Regulated Work Area or containment barrier where asbestos removal shall be performed. The facility shall consist of a functional washstand for cleanup of personnel who exit from the regulated work area. All workers exiting the regulated area must pass directly to a decontamination facility.
- E. The following parameters are to be followed during exterior abatement activities:
 - 1. No asbestos removal work shall begin until the Work Area has been prepared and approved by the Project Monitor. Removal workers shall wear respirators and protective clothing throughout all removal and waste handling operations.
 - 2. Materials shall be fully wetted and carefully removed in small sections by hand, using scrapers or other suitable tools. The use of rotating saws will be allowed for the removal of Category I non friable ACM. Rotating saws cannot be used for the removal of friable ACM or for Category II non friable ACM. The Contractor will adhere to NESHAP if rotating saws are used.
 - 3. As the asbestos-containing material is removed, it shall be promptly wetted and packed into burlap bags, then into two (2) impermeable 6-mil polyethylene disposal bags.
 - 4. The Contractor shall prevent materials from drying out.
 - 5. Once the asbestos is removed, the Contractor shall scrub the substrate surface with a nylon brush or equivalent, and wash it to remove any remaining material. Cleaning shall also include the use of HEPA filtered vacuum equipment.

6. The Contractor shall then request that the Project Monitor perform a visual inspection of the removal area(s). The Contractor will receive either approval or denial, indicating the area may be deregulated or additional removal and/or decontamination is required.

3.6 ASBESTOS REMOVAL

- A. A Competent Person shall be on the job at all times to ensure the establishment and maintenance of the negative pressure enclosure (NPE) and proper work practices throughout the project.
- B. Do not begin abatement work until authorized by the State. Follow the steps for abatement as outlined in Section 1.8, Sequence of Work.
- C. For all Class I work, before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches, and smoke tested for leaks, and any leaks sealed. Results of the NPE inspection shall be logged.
- D. Spray asbestos materials with amended water, using airless spray equipment capable of providing a "mist" application to reduce the release of fibers during the removal operation.
- E. In order to maintain indoor asbestos concentrations at a minimum, remove the wet asbestos in manageable sections. Materials shall not be allowed to dry out. 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 provide enclosed dust-proof chutes.
- F. Fill disposal containers (six (6) mil polyethylene bags or fiber drums) as removal proceeds, seal filled containers, apply caution labels and clean containers before removal to wash area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Bags may be placed in drums for staging and transportation to the disposal site. Bags shall be decontaminated by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape for transport to the waste disposal site. Small components and asbestos containing waste with sharp-edged components (e.g., nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. Wet clean each container thoroughly before moving to Holding Area. Ensure that workers do not enter from uncontaminated areas into the Washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the Equipment Decontamination Enclosure.
- G. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet.
- H. If at any time during asbestos removal, should the State's Project Monitor suspect contamination of areas outside the Work Area, the Contractor shall stop all abatement work

and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and visual inspections determine decontamination.

- I. Containerize asbestos-containing waste material removed daily. Do not allow ACM to remain on the floor overnight, allowing it to dry out.

3.7 ALTERNATIVE WORK PRACTICE (AWP) PROCEDURES

- A. The procedures described in this specification are to be utilized at all times. Alternative work practice methods may be used if pre-approved by DPH. Should the Contractor desire to use alternative work practice procedures which have not been pre-approved by the DPH, submit in writing a description of the proposed methods to DPH, Design Consultant, and State's Project Monitor for approval.
- B. Alternative procedures shall provide equivalent or greater protection than procedures which they replace.
- C. The Contractor shall be responsible for all fees associated with filing Alternative Work Practice (AWP) applications which have not been pre-approved. Submission of AWP applications requires a Connecticut DPH project designer license.

3.8 CLEAN-UP PROCEDURE

- A. Remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene wall covering. Carefully remove the cleaned outer layer of polyethylene from the walls, fold inward as material is being removed, and place in disposal containers. Any debris which may have leaked behind the outer layer shall be removed by HEPA vacuuming and/or wet cleaning.
- B. Remove contamination from the exteriors of the negative air machines, scaffolding, ladders, extension cords, hoses and other equipment inside the Work Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning.
- C. The State's Project Monitor shall conduct a thorough visual inspection utilizing a high-intensity flashlight, with the containment barriers in place, to detect visible accumulations of dust or bulk asbestos-containing materials remaining in the Work Area. Should dust, debris or residue be detected, the Contractor shall repeat the cleaning, at the Contractor's expense, until the area is in compliance. The visual inspection will detect incomplete work, damage caused by the abatement activity, and inadequate clean-up of the work site. At the conclusion of the final visual inspection, the State's Project Monitor and the Contractor's supervisor shall certify that they have visually inspected the work area (all surfaces including pipes, beams, ledges, walls, decontamination unit, etc.) and have found no dust, debris or residue.
- D. Once the area has been recleaned, any equipment, tools or materials not required for completion of the work, shall be removed from the Work Area. Negative air filtration

devices shall remain in place and operating for the remainder of the clean-up operation.

- E. Apply a lock-down encapsulant to all surfaces within the Work Area from which asbestos has been removed and the cleaned inner layer of polyethylene.
- F. The State's Project Monitor shall perform a visual inspection. All surfaces within the Work Area, including ledges, beams and hidden locations shall be inspected for visible residue. Evidence of asbestos contamination identified during the inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense until the Standard of Cleaning is achieved.
- G. Air sampling for re-occupancy clearance shall be undertaken using aggressive sampling techniques. Analysis of clearance samples shall follow State of Connecticut Regulations, Section 19a-332a-12. Areas which do not comply shall continue to be cleaned by and at the Contractors expense, until the specified Standard of Cleaning is achieved as evidenced by results of air testing. When the Work Area passes the re-occupancy clearance, controls established by this specification may be removed.
- H. Remove all remaining polyethylene, including critical barriers, and Decontamination Enclosure Systems leaving negative air filtration devices in operation. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process.

3.9 REINSTALLATION OF DISPLACED EQUIPMENT

- A. After re-occupancy is granted, re-secure mounted items removed during the course of the work to their former positions.
- B. Re-establish to proper working order all HVAC, mechanical and electrical systems including lights, exit lights, fire alarm systems and sound systems.
- C. Install new filters in HVAC systems and dispose of used filters as asbestos-containing waste.

3.10 DISPOSAL OF ASBESTOS

- A. Disposal of asbestos-containing and/or asbestos contaminated material shall occur at an authorized site and must be in compliance with the requirements of, and authorized by the Office of Solid Waste Management, Department of Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.
- B. Disposal approval shall be obtained prior to commencement of asbestos removal.
- C. Warning signs must be attached to vehicles used to transport asbestos-containing waste. Warning signs shall be posted during loading and unloading of disposal containers. The signs must be posted so that they are plainly visible.
- D. Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled

containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap Floor sheeting 24-inches and shall be taped into place.

- E. The completed waste shipment record shall be provided to the Borough of Naugatuck.

3.11 CONTRACTOR RESPONSIBILITY

- A. Conduct air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee. Documentation of air sampling results must be recorded at the work site within twenty-four (24) hours of receipt of results, and shall be available for review until the job is complete.

3.12 AIR SAMPLING SCHEDULE

- A. At a minimum, air sampling by the Borough of Naugatuck's Project Monitor will be conducted in accordance with the following schedule:

<u>Abatement Activity</u>	<u>Pre- Abatement</u>	<u>During Abatement</u>	<u>Post- Abatement</u>
Greater than 160 SF/260 LF	PCM	PCM	TEM
Equal to or less than 160 SF/260 LF	PCM	PCM	PCM
Tent and Glovebag Procedures	---	PCM	PCM

- B. Frequency and duration of the air sampling during abatement will be representative of the actual conditions during the abatement. The size of the asbestos project will be a factor in the number of samples required to monitor the abatement activities. In addition to OSHA compliance monitoring (personal sampling accomplished by the Contractor) the following minimum schedule of samples will be required:

1. Background Samples:
 - a. Outside of work area - 2.
 - b. Adjacent Area(s) inside school - 2.
 - c. Work Area - 3 or if areas are separated (such as rooms) at least one (1) sample per area equaling a minimum of three (3).
2. During Abatement:

- a. Outside of building at the exhaust of air filtering device - 2 per shift.
- b. Work Area - 2 per shift.
- c. Adjacent area inside school - 2 per shift.
- d. Outside of the Equipment Decontamination Enclosure System - 1 during removal of ACM waste.

3. Post-Abatement:

- a. Not applicable.

3.13 ACTION CRITERIA

- A. If air samples collected outside of the Work Area during abatement activities indicate airborne fiber concentrations greater than original background levels or greater than 0.050 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Work Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Work Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

END OF SECTION 02 08 00



REPORT

PRE-RENOVATION INVESTIGATIVE SURVEY FOR HAZARDOUS BUILDING MATERIALS WESTERN ELEMENTARY SCHOOL NAUGATUCK, CONNECTICUT

Prepared for

Borough of Naugatuck
Naugatuck, Connecticut

Prepared by

TRC
Windsor, Connecticut

June 25, 2015



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Henry Laliberte
Project Manager

TRC Project No. 237478-0010-0001
June 25, 2015

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EXECUTIVE SUMMARY

On May 28 and June 1, 2015 TRC of Windsor, Connecticut conducted an inspection for suspect asbestos-containing materials (ACM) and PCBs at Western Elementary School in Naugatuck, Connecticut. The inspection was initiated prior to planned roof replacement activities in accordance with USEPA Asbestos National Emissions Standard for Hazardous Air Pollutants (NESHAPS) requirements.

The scope of the inspection included all roofs and interior building areas that could be affected by the roof replacement activities. A Connecticut licensed asbestos inspector from TRC conducted the inspection in accordance with USEPA AHERA protocols and ASTM Standard E2356-04. Bulk samples of suspect materials were collected and analyzed via polarized light microscopy (PLM) and/or transmission electron microscopy (TEM) methods at CTDPH/NVLAP accredited laboratories. ACM was identified as perimeter flashing, window caulking and building caulking on the subject roof areas as well as plaster/skim coat located throughout the original building. ACM to be impacted by renovation activities must be removed prior to disturbance in accordance with OSHA, USEPA, CTDPH, and CTDEEP standards for asbestos abatement/disposal. TRC had conducted prior bulk sampling of plaster ceiling tile in 2004. Analyses from this inspection was included in the current site investigations. Detailed results of the asbestos inspection activities can be found in Tables 1-3 and Appendices A through E.

TRC's on-site inspectors conducted a visual inspection and bulk sampling of suspect PCB containing caulking and glazing on exterior components of the subject roofs. Bulk samples were collected following a sample strategy similar to the EPA's simplified sampling scheme for ACM under the direction of TRC's CIH and CHMM. The samples were then sent to a CTDPH accredited laboratory for PCB analysis via EPA method 8082, with EPA Method 3540c, Soxhlet extraction. Analytical results indicated no caulks contained PCB concentrations ≥ 50 ppm; therefore no PCB Bulk Product waste under the EPA TSCA PCB regulations (40 CFR 761) was identified in the subject area. There were no caulks that contained PCB concentrations >1 ppm; therefore no PCB materials regulated as Connecticut Regulated Waste (CRW) under the CTDEEP PCB statutes (22a-463 through 22a-469)

were identified in the subject area. Five (5) caulks (C1, C2, C3, C4, C5) were confirmed as unregulated excluded product <1 ppm. Caulks/glazes regulated by the EPA/CTDEEP are unauthorized use and require proper removal/disposal prior to full demolition. In addition, the identification of CTDEEP/EPA regulated PCB caulk/glaze requires that an evaluation for PCB migration impacts into adjacent porous substrates and/or soils must be undertaken as a follow-up inspection, in order to properly evaluate the complete PCB remedial effort that will be necessary prior to demolition/renovation activities. Detailed results of the PCB caulk/glaze inspection can be found in Tables 4 and 5 as well as Appendix F.

PROJECT OUTLINE

Project Address: Western Elementary School
Naugatuck, CT

Facilities Manager
Naugatuck Public Schools: Michael Lynch

TRC Project No.: 237478-0010-0001

TRC Project Manager: Henry Laliberte

Asbestos Inspector: Robert Belding (LIC #000690)
Stephen Arienti (LIC #000583)

Date of Inspection: 6/29/04, 5/28/15, 6/1/15

Asbestos Identified: Yes

PCBs Identified: No

Additional Notes:

The site investigation was limited to the collection and analysis of suspect asbestos-containing materials and PCB containing materials from the roof areas of the subject building and from the interior first and second floors of the building.

TABLES

TABLE 1 BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS WESTERN ELEMENTARY SCHOOL NAUGATUCK, CONNECTICUT			
Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
6/29/04 Bulk Sampling			
01-CP	2 nd floor – Janitor’s Closet	Ceiling Plaster	ND<1%
02-CP	2 nd floor – Northwest Hallway	Ceiling Plaster	ND<1%
03-CP	2 nd floor – Room 3	Ceiling Plaster	ND<1%
04-CP	2 nd floor – Southeast Hallway	Ceiling Plaster	ND<1%
05-CP	2 nd floor – Girl’s Bathroom	Ceiling Plaster	ND<1%
06-CP	2 nd floor – North Hallway	Ceiling Plaster	ND<1%
07-CP	2 nd floor – North Hallway	Ceiling Plaster	ND<1%
5/28/15 Bulk Sampling Results			
1	Roof 1	Gray Asphalt Roofing (RF1)	ND
2	Roof 2	Gray Asphalt Roofing (RF1)	ND
3	Roof 1	Black Asphalt Roofing (RF2)	ND
4	Roof 2	Black Asphalt Roofing (RF2)	ND
5	Roof 8	Black Built-up Roofing (BUR1)	ND
6	Roof 8	Black Built-up Roofing (BUR1)	ND
7	Roof 2	Black Fibrous Vapor Barrier (VB1)	ND
8	Roof 2	Black Fibrous Vapor Barrier (VB1)	ND
9	Roof 4A	Brown Paper Vapor Barrier (VB2)	ND
		Black rubber-like backing	ND
10	Roof 4A	Brown Paper Vapor Barrier (VB2)	ND
		Black rubber-like backing	ND
11	Roof 8	Black Paper-like Vapor Barrier (VB3)	ND
12	Roof 8	Black Paper-like Vapor Barrier (VB3)	ND
13	Roof 9	Black Paper-like Fibrous Vapor Barrier (VB4)	ND
14	Roof 9	Black Paper-like Fibrous Vapor Barrier (VB4)	ND
15	Roof 1	Black Backing w/Tar on Foam Insulation (FI1)	ND

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

TABLE 1 (...continued) BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS WESTERN ELEMENTARY SCHOOL NAUGATUCK, CONNECTICUT			
Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
16	Roof 6	Black Backing w/Tar on Foam Insulation (FI1)	ND
17	Roof 8	Black Fibrous Backing on Fiberglass Insulation (FGI1)	ND
18	Roof 8	Black Fibrous Backing on Fiberglass Insulation (FGI1)	ND
19	Roof 4A	Hard Gray Penetration Flashing (PEN1)	ND
20	Roof 4A	Hard Gray Penetration Flashing (PEN1)	ND
21	Roof 2	Hard Black perimeter Flashing (FL1)	10% chrysotile
22	Roof 2	Hard Black perimeter Flashing (FL1)	NA/PS
23	Roof 3	Black Roof Flashing (FL2)	ND
24	Roof 3	Black Roof Flashing (FL2)	ND
25	Roof 6	Lightweight Concrete w/Black Tar Backing (LC1)	ND
26	Roof 6	Lightweight Concrete w/Black Tar Backing (LC1)	ND
27	Roof 5	Gray Brittle Window Caulking (WC1)	10% chrysotile
28	Roof 5	Gray Brittle Window Caulking (WC1)	NA/PS
29	Roof 1	White Pliable Caulking (C1)	ND
30	Roof 1	White Pliable Caulking (C1)	ND
31	Roof 1	Gray Pliable Caulking (C2)	ND
32	Roof 1	Gray Pliable Caulking (C2)	ND
33	Roof 2	Black Pliable Caulking (C3)	ND
34	Roof 2	Black Pliable Caulking (C3)	ND
35	Roof 5	Gray Brittle Caulking (C4)	5% chrysotile
36	Roof 5	Gray Brittle Caulking (C4)	NA/PS
37	Roof 6	Gray Pliable Rubber-like Caulking (C5)	ND
38	Roof 7	Gray Pliable Rubber-like Caulking (C5)	ND
6/1/15 Bulk Sampling Results			
1	1 st floor – Faculty Bathroom	White skim coat & brown base coat plaster (PL1)	0.75% chrysotile♦

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

TABLE 1 (...continued) BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS WESTERN ELEMENTARY SCHOOL NAUGATUCK, CONNECTICUT			
Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
2	1 st floor – Hallway	White skim coat & brown base coat plaster (PL1)	1.0% chrysotile♦
3	1 st floor – Stair 2	White skim coat & brown base coat plaster (PL1)	<0.25% chrysotile♦
4	2 nd floor – Stair 2	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
5	1 st floor – Hallway between Rooms 1 & 2	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
6	1 st floor – Custodial Closet	White skim coat & brown base coat plaster (PL1)	0.75% chrysotile♦
7	2 nd floor – Curriculum Room	White skim coat & brown base coat plaster (PL1)	0.50% chrysotile♦
8	2 nd floor – Reading Tutor Room	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
9	2 nd floor - Hallway	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

TABLE 2
IDENTIFIED ASBESTOS CONTAINING MATERIALS (>1%)
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT

Material	Sampled-Assumed (mo/yr)	General Location	NESHAP Category	AHERA Category	Estimated Quantity
Hard Black perimeter Flashing (FL1)	Sampled 5/15	Roofs 2 and 3	Category I Non-friable	Miscellaneous	1,224 SF
Penetration Flashing	Assumed 5/15	Roofs 1, 2 3 and 8. Roof 6 at stack	Category I Non-friable	Miscellaneous	207 SF
Gray Brittle Window Caulking (WC1)	Sampled 5/15	Roof 5 on Roof 6 wall window, Roof 8 on Roof 7 wall	Category II Non-friable	Miscellaneous	40 LF
Gray Brittle Caulking (C4)	Sampled 5/15	Roof 5 – Roof 6 wall on metal flashing (under window)	Category II Non-friable	Miscellaneous	60 LF
White skim coat & brown base coat plaster (PL1)	Sampled 6/15	Throughout the original building	Category II Non-friable	Surfacing Material	15,640 SF ^A
Mudded roof bowl insulation	Assumed 2015	All locations	Friable	Thermal System Insulation	~20 EA

** Roof tars have been completely exempted from OSHA Asbestos regulations and, as a Category I Non-friable material, do not need to be removed from a structure prior to renovation/demolition under EPA Asbestos NESHAP regulations and, so long as the materials are exterior to a structure and will remain Category I Non-friable materials during renovation/demolition, are not covered under the CTDPH Asbestos Abatement standards. In addition, as Category I Non-friable materials, the roof tars do not need to be disposed of as asbestos waste under the EPA Asbestos NESHAP regulations; however, the CTDEEP special waste regulations would not allow the material to be disposed of as general construction waste within the State of Connecticut. Disposal of the roof tars as general construction waste (so long as the materials are not rendered into a state which would define them as regulated asbestos-containing materials (RACM), i.e., friable) is, however, allowed in other states such as Massachusetts.*

AHERA Categories = thermal system insulation (TSI), surfacing material or miscellaneous

NESHAP Categories = friable, category I non-friable or category II non-friable

Friable = crumbled, pulverized or reduced to powder by hand pressure when dry

Category I Non-friable = packings, gaskets, resilient floor covering and asphalt roofing

Category II Non-friable = all non-friable that is not Category I

A = Plaster may become a risk during the course of roof replacement. For this reason, the plaster is being categorized as ACM.

TABLE 3
CONFIRMED NON-ASBESTOS CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT

Material	General Location
Ceiling Plaster	Throughout 2 nd floor (Original Building)
Gray Asphalt Roofing (RF1)	Roof 1, Roof 2, Roof 3
Black Asphalt Roofing (RF2)	Roof 1, Roof 2, Roof 3
Black Built-up Roofing (BUR1)	Roof 8
Black Fibrous Vapor Barrier (VB1)	Roof 2, Roof 3
Brown Paper Vapor Barrier & black rubber-like backing (VB2)	Roof 4A
Black Paper-like Vapor Barrier (VB3)	Roof 8
Black Paper-like Fibrous Vapor Barrier (VB4)	Roof 9, Roof 10
Black Backing w/Tar on Foam Insulation (FI1)	Roof 1, Roof 2, Roof 3, Roof 4A, Roof 5, Roof 6, Roof 7, Roof 8, Roof 9, Roof 10
Black Fibrous Backing on Fiberglass Insulation (FGI1)	Roof 6, Roof 8
Hard Gray Penetration Flashing (PEN1)	Roof 4A – A/C units, wiring
Black Roof Flashing (FL2)	Roof 3 – some roof seams & penetrations
Lightweight Concrete w/Black Tar Backing (LC1)	Roof 6
White Pliable Caulking (C1)	Roof 1, Roof 3
Gray Pliable Caulking (C2)	Roof 1, Roof 8
Black Pliable Caulking (C3)	Roof 2, Roof 7, Roof 8
Gray Pliable Rubber-like Caulking (C5)	Roof 6, Roof 7
White skim coat & brown base coat plaster (PL1)	Throughout 1 st & 2 nd floors (Original Building)

TABLE 4 BULK SAMPLE SUMMARY OF SUSPECT PCB CONTAINING MATERIALS HILLSIDE INTERMEDIATE SCHOOL NAUGATUCK, CONNECTICUT				
Sample No.	Homogenous Material Type	Sample Location	Total PCB (ppm)	EPA/CTDEEP Regulated
1 (C1-1)	White Pliable Caulking	Roof 1	ND<0.8	Not Regulated
2 (C1-2)			ND<0.83	
3 (C1-3)			ND<0.83	
4 (C2-1)	Gray Pliable Caulking	Roof 1	ND<0.8	Not Regulated
5 (C2-2)			ND<0.81	
6 (C2-3)			ND<0.81	
7 (C3-1)	Black Pliable Caulking	Roof 2	ND<0.65	Not Regulated
8 (C3-2)			ND<0.65	
9 (C3-3)			ND<0.65	
10 (C4-1)	Gray Brittle Caulking (C4) ♦	Roof 5	ND<0.79	Not Regulated
11 (C4-2)			ND<0.72	
12 (C4-3)			ND<0.8	
13 (C5-1)	Gray Pliable Rubber-like Caulking	Roof 6	ND<0.75	Not Regulated
14 (C5-2)			ND<0.77	
15 (C5-3)		Roof 7	ND<0.65	

BRL < = Below Reportable Detection Limit
PCB ≥ 50 ppm = EPA PCB Bulk Product Waste
PCB > 1 ppm but < 50 ppm = CTDEEP regulated

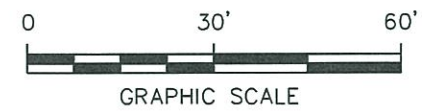
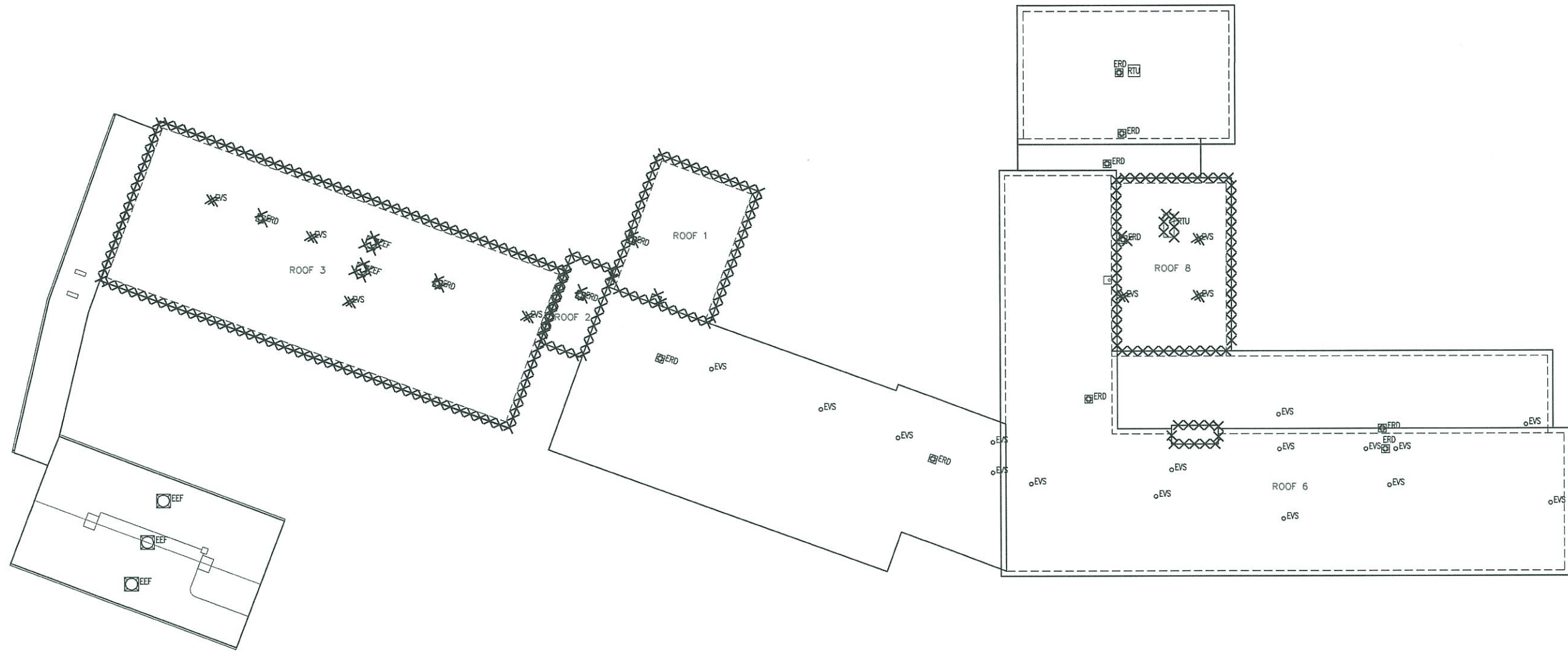
♦ Asbestos containing material (>1%)

TABLE 5
IDENTIFIED PCB CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT

Material	Sample Date (mo/yr)	General Location	Estimated Quantity
NO PCB CONTAINING MATERIALS WERE IDENTIFIED IN THE SUBJECT AREA			


APPENDIX A
SITE SKETCHES

11x17 - ATTACHED XREFS - ATTACHED IMAGES:
DRAWING NAME: J:\CADD\City of Naugatuck\Western Elementary\Asbestos-PCB-237778\Phase-10 001000001\ASB-2.DWG -- PLOT DATE: June 29, 2015 - 10:26AM -- LAYOUT: Roof



LEGEND OF SYMBOLS	
xxxx	ACM ROOF FLASHING

PROJECT:		CITY OF NAUGATUCK WESTERN ELEMENTARY SCHOOL NAUGATUCK, CONNECTICUT	
TITLE:		ROOF PLAN	
DRAWN BY:	REA	PROJ NO.:	237478.0010.00001
CHECKED BY:	HL	ROOF	
APPROVED BY:	EP		
DATE:	06/29/15		
FILE NO.:		ASB-2.DWG	



21 Griffin Road North
Windsor, CT 06095
Phone: 860.298.9692
www.trcsolutions.com

SHEET NO. _____ OF _____

PROJECT NO. _____

DATE 5/28/15BY RB

CHK'D _____

SUBJECT Western School - Naugahuck, CT

- C1 - White Pliable Caulking
- C2 - Gray Pliable Caulking
- RF1 - Gray Asphalt Roofing
- RF2 - Black Asphalt Roofing
- FI1 - Foam Insulation with Black paper backing & tar (pitch)
- VB1 - Black Fibrous Vapor Barrier
- C3 - Black Pliable Caulking
- FL2 - Black Roof Flashing
- VB2 - Brown Vapor Barrier with Pliable Tar backing (Rubber-Like)
- C4 - Gray Brittle Caulking
- WC1 - ~~White~~ ^{Gray} Brittle Window Caulking
- C5 - Gray Pliable Caulking (Rubber-Like)
- LC1 - Lightweight Concrete w/ Tar Backing
- BUR1 - Black Built-up Roofing - Asphalt
- VB3 - Black Paper-Like Vapor Barrier
- FGI1 - Orange Fiberglass Insulation with Black Paper Backing
- VB4 - Black Paper-Like Fibrous Vapor Barrier
- PEN1 - Hard Gray Penetration Flashing
- FL1 - Hard Black Perimeter Flashing

Roof 6 - Same as Roof 5

C5 on Chimney @ Metal Flashing
(~50 LF @ Chimney)

Small section of LC1 in middle of Roof 6
(~5' w x Roof length from eaves) →

Membrane
FI1
LC1

Roof 7 - Membrane
FI1
Gravel
Concrete

C5 on Metal Flashing bordering
Roof 6 (~10 LF)



C3 on rest of flashing

Roof 8 - Membrane
FI1
BUR1
VB3
FGI1 -
Concrete

WC1 on Roof 7 Wall
(~15 LF)

C2 on Roof 7 Wall metal Flashing
(~10 LF)

C3 on rest of metal flashing
(~55 LF)

Roof 9 - Membrane
FI1
VB4
Fiber Insulation (Perlite)
Metal

Roof 10 - Same as Roof 9

SUBJECT Western School - Naugatuck, CTRoof 1

RF1

RF2

Tar
(on FI1) → Iso w/ Black Backing (FI1)
Metal Deck

C1 on Metal Flashing
(~50 LF)C2 on Brick Chimney
(~30 LF)Roof 2~~Same as Roof 1~~

RF1

RF2

VB1

FI1

Metal Deck

C3 on Metal Flashing
(~40 LF)FL1 on Wall
(~40 LF)Roof 3

Same as Roof 2

(FL1 around Perimeter)

(FL2 on some Roof Seams
& penetrations)C1 on Roof 4A side of Metal Flashing
(~10 LF)Roof 4A

Membrane

FI1

VB2

Wood Fiber

Plywood

(PEN1 on AC units, wiring)

Roof 4B

Membrane

FL1

Membrane

Wood

C4 on Roof 6 Wall on metal Flashing
(~60 LF)Roof 5

Membrane

FI1

WC1 on Roof 6 Wall Windows
(~25 LF)

APPENDIX B

LABORATORY AND INSPECTOR ACCREDITATIONS

1001103 01 AY 0.378 **AUTO T6 1 1464 06040-452200 C01 P01106-1



ROBERT W. BELDING
100 STEEP HOLLOW LN
MANCHESTER CT 06040-4522

Dear ROBERT W. BELDING,

Attached you will find your validated certificate for the coming year. Should you have any questions about your certificate renewal, please do not hesitate to write or call:

Department of Public Health
P.O. Box 340308
M.S.#12MQA
Hartford, CT 06134-0308

(860) 509-7603
oplc.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

JEWEL MULLEN, MD, MPH, MPA, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME

ROBERT W. BELDING

VALIDATION NO
03-103347

CERTIFICATE NO
000690

CURRENT THROUGH
08/31/15

PROFESSION

ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE

COMMISSIONER

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

THE INDIVIDUAL NAMED BELOW IS CERTIFIED
BY THIS DEPARTMENT AS A

ASBESTOS CONSULTANT-INSPECTOR

ROBERT W. BELDING

CERTIFICATE NO
000690

CURRENT THROUGH
08/31/15

VALIDATION NO.
03-103347

SIGNATURE

COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME

ROBERT W. BELDING

VALIDATION NO
03-103347

CERTIFICATE NO
000690

CURRENT THROUGH
08/31/15

PROFESSION

ASBESTOS CONSULTANT-INSPECTOR

SIGNATURE

COMMISSIONER

1001103-0001109-00000001 of 00000001-C01-a1d00101-1464-01106

CERTIFICATE OF ACHIEVEMENT

This certifies that

Robert Belding

has successfully completed the
Asbestos Site Inspector Refresher Training
Asbestos Accreditation Under TSCA Title II
40 CFR Part 763

conducted by

Cardno ATC
73 William Franks Drive
West Springfield, MA 01089
(413) 781-0070

Mark Gordon

Principal Instructor

July 17, 2014

Date of Course

July 17, 2015

Expiration Date

William M. White

Interim Training Director

SLAR-4918

Certificate Number

July 17, 2014

Examination Date

State of Connecticut, Department of Public Health

Approved Environmental Laboratory

THIS IS TO CERTIFY THAT THE LABORATORY DESCRIBED BELOW HAS BEEN APPROVED BY THE STATE DEPARTMENT OF PUBLIC HEALTH PURSUANT TO APPLICABLE PROVISIONS OF THE PUBLIC HEALTH CODE AND GENERAL STATUTES OF CONNECTICUT, FOR MAKING THE EXAMINATIONS, DETERMINATIONS OR TESTS SPECIFIED BELOW WHICH HAVE BEEN AUTHORIZED IN WRITING BY THAT DEPARTMENT.

TRC ENVIRONMENTAL CORPORATION

LOCATED AT 21 Griffin Road North IN Windsor, CT 06095

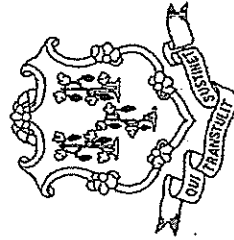
AND REGISTERED IN THE NAME OF Erik Plimpton

THIS CERTIFICATE IS ISSUED IN THE NAME OF Kathleen Williamson WHO HAS BEEN DESIGNATED BY THE REGISTERED OWNER/AUTHORIZED AGENT TO BE IN CHARGE OF THE LABORATORY WORK COVERED BY THIS CERTIFICATE OF APPROVAL AS FOLLOWS:

ASBESTOS
AIR-FIBER COUNTING - PCM
BULK IDENTIFICATION - PLM

SEE COMPUTER PRINT-OUT FOR SPECIFIC TESTS APPROVED

THIS CERTIFICATE EXPIRES December 31, 2015 AND IS REVOCABLE FOR CAUSE BY THE STATE DEPARTMENT OF PUBLIC HEALTH
DATED AT HARTFORD, CONNECTICUT THIS 19th DAY OF December, 2013

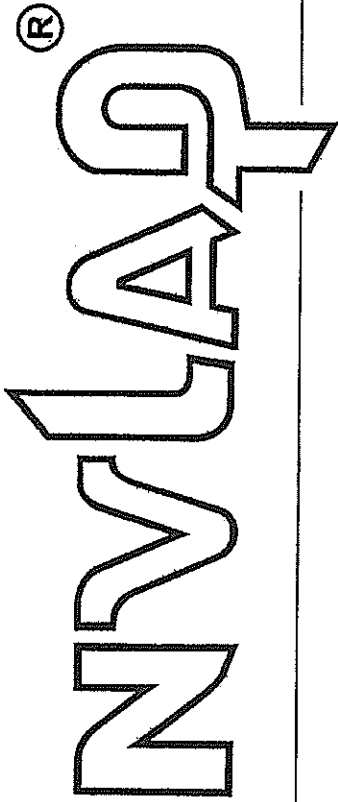


Registration No.

PH-0426

SUZANNE BLANCAFLOR, MS
CHIEF, ENVIRONMENTAL HEALTH SECTION

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 101424-0

TRC Environmental Corporation
Windsor, CT

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:

BULK ASBESTOS FIBER ANALYSIS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).

2013-07-01 through 2014-06-30

Effective dates



For the National Institute of Standards and Technology



STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH ENVIRONMENTAL HEALTH SECTION

ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM CERTIFIED ANALYTES REPORT FOR ALL MATRICES

Phoenix Environmental Laboratories, Inc.

587 EAST MIDDLE TURNPIKE
MANCHESTER, CT 06040

CT REGISTRATION NUMBER : PH-0618

REGISTERED OWNER / AUTHORIZED AGENT : Allan Caffyn

DIRECTOR : Phyllis Shiller

CO DIRECTOR(S) : Kathleen Cressia

PHONE : (860) 645-1102

LABORATORY REGISTRATION EFFECTIVE DATE : 06/30/2014

LABORATORY REGISTRATION EXPIRATION DATE : 06/30/2016

LABORATORY STATUS : APPROVED

APPROVED BY


PHILIP SCHLOSSBERG

12/23/2014 12:03:46 PM

ANY QUESTIONS CONCERNING THIS DOCUMENT SHOULD BE ADDRESSED TO THE
ENVIRONMENTAL LABORATORY CERTIFICATION PROGRAM AT (860) 509-7389

DRINKING WATER (SDWA)

STATUS REPORTED ON 12/23/2014

ANALYTE NAME

MICROBIOLOGY/BACTERIA

E. COLI - COLILERT (SM9223 Enumeration & P/A)	E. COLI - MF NUTRIENT AGAR + MUG (SM9222G)
ENTEROCOCCUS - ENTEROLERT	ENTEROCOCCUS - MF mEI Agar (EPA1600)
FECAL COLIFORM - MF m-FC (SM9222D)	HPC - POUR PLATE (SM9215B)
TOT COLIFORM - COLILERT (SM9223 Enumeration & P/A)	TOT. COLIFORM - MF mENDO (SM9222B)

PHYSICALS

COLOR	
CONDUCTIVITY	ODOR
pH	TEMPERATURE
TURBIDITY	

MINERALS

ACIDITY	ALKALINITY
CHLORIDE	CHLORINE, TOTAL & FREE RESIDUAL
FLUORIDE	HARDNESS, CALCIUM
HARDNESS, TOTAL	SULFATE

NUTRIENTS

AMMONIA	
NITRATE	NITRITE
O-PHOSPHATE	

METALS

ALUMINUM	ANTIMONY
ARSENIC	BARIUM
BERYLLIUM	BORON
CADMIUM	CALCIUM
CHROMIUM	COBALT
COPPER	IRON
LEAD	MAGNESIUM
MANGANESE	MERCURY
MOLYBDENUM	NICKEL
POTASSIUM	SELENIUM
SILVER	SODIUM
THALLIUM	TIN

VANADIUM

ZINC

RESIDUE

TOTAL DISSOLVED SOLIDS

TOTAL RESIDUE (SOLIDS)

DEMANDS

TOTAL ORGANIC CARBON

MISCELLANEOUS

CYANIDE (TOTAL)

FOAMING AGENTS (MBAS)

PHENOLICS

ORGANIC DISINFECTION BY-PRODUCTS

BROMOACETIC ACID

CHLOROACETIC ACID

DIBROMOACETIC ACID

DICHLOROACETIC ACID

TRICHLOROACETIC ACID

VOLATILE ORGANICS

1,2-DIBROMO-3-CHLOROPROPANE 504.1 (DBCP)
(SOC)

1,4-DIOXANE (Mod 8260)

ETHYLENE DIBROMIDE 504.1 (EDB) (SOC)

TOTAL TRIHALOMETHANES 524.2 (SOC)

VOLATILE ORGANICS - 524.2 (SOCs)

PESTICIDES/ PCB'S

ALDRIN

CHLORDANE (TECHNICAL) (SOC)

DIELDRIN

ENDRIN (SOC)

HEPTACHLOR (SOC)

HEPTACHLOR EPOXIDE (SOC)

HEXACHLOROBENZENE (SOC)

HEXACHLOROCYCLOPENTADIENE (SOC)

LINDANE (BHC-GAMMA) (SOC)

METHOXYCHLOR (SOC)

PCB's (Aroclors, Qualitative Only)

TOXAPHENE (SOC)

HERBICIDES

2,4,5-TP (SILVEX) (SOC)

2,4-D (SOC)

DALAPON (SOC)

DICAMBA

DINOSEB (SOC)

PENTACHLOROPHENOL (SOC)

PICLORAM (SOC)

PHTHALATE ESTERS & ADIPATES

BIS (2 - ETHYLHEXYL) ADIPATE (SOC)

BIS (2-ETHYLHEXYL) PHTHALATE (SOC)

PAHS

BENZO(a) PYRENE (SOC)

TRIAZINE PESTICIDES

ALACHLOR (SOC)

ATRAZINE (SOC)

BUTACHLOR

METOLACHLOR

PROPACHLOR

SIMAZINE (SOC)

CARBAMATE PESTICIDES

3 - HYDROXYCARBOFURAN

ALDICARB (SOC)

ALDICARB SULFONE (SOC)

ALDICARB SULFOXIDE (SOC)

CARBARYL

CARBOFURAN (SOC)

METHOMYL

OXAMYL (SOC)

NON-POTABLE WATER/ WASTEWATER

STATUS REPORTED ON 12/23/2014

ANALYTE NAME

MICROBIOLOGY/BACTERIA

E. COLI - COLILERT (SM9223 Enumeration & P/A)	E. COLI - MF NUTRIENT AGAR + MUG (SM9222G)
ENTEROCOCCUS - ENTEROLERT	ENTEROCOCCUS - MF mEI Agar (EPA1600)
FECAL COLIFORM - MF m-FC (SM9222D)	FECAL STREPT - MF mEnterococcus Agar (SM9230C)
HPC - POUR PLATE (SM9215B)	TOT COLIFORM - COLILERT (SM9223 Enumeration & P/A)
TOT. COLIFORM - MF mENDO (SM9222B)	

PHYSICALS

COLOR	
CONDUCTIVITY	ODOR
pH	TEMPERATURE
TURBIDITY	

MINERALS

ACIDITY	
ALKALINITY	CHLORIDE
CHLORINE, TOTAL & FREE RESIDUAL	FLUORIDE
HARDNESS, CALCIUM	HARDNESS, TOTAL
SULFATE	SULFIDE
SULFITE	

NUTRIENTS

AMMONIA	
KJELDAHL NITROGEN	NITRATE
NITRITE	O-PHOSPHATE
TOTAL PHOSPHOROUS	

METALS

ALUMINUM	
ANTIMONY	ARSENIC
BARIUM	BERYLLIUM
BORON	CADMIUM
CALCIUM	CHROMIUM
CHROMIUM - Hexavalent	COBALT
COPPER	IRON
LEAD	MAGNESIUM

MANGANESE	MERCURY
MOLYBDENUM	NICKEL
POTASSIUM	SELENIUM
SILVER	SODIUM
STRONTIUM	THALLIUM
TIN	TITANIUM
VANADIUM	ZINC

RESIDUE

TOTAL DISSOLVED SOLIDS	
TOTAL RESIDUE (SOLIDS)	TOTAL SUSPENDED SOLIDS
TOTAL VOLATILE RESIDUE	

DEMANDS

BOD	CARBONACEOUS BOD
COD	TOTAL ORGANIC CARBON

MISCELLANEOUS

CYANIDE (TOTAL)	
FOAMING AGENTS (MBAS)	FORMALDEHYDE
PHENOLICS	

INORGANIC DISINFECTION BY-PRODUCTS

BROMIDE

PESTICIDES/ PCB'S

CHLORDANE (TECHNICAL)	ORGANOCHLORINE PESTICIDES (Single Response)
PCB IN OIL	POLYCHLORINATED BIPHENYLS
TOXAPHENE	

SOLVENTS

CT Extractable Petroleum Hydrocarbons (ETPH)	
MA Extractable Petroleum Hydrocarbons (EPH)	MA Volatile Petroleum Hydrocarbons (VPH)
OIL AND GREASE	TPH (HEM/SGT)

HERBICIDES

2,4,5-T	2,4,5-TP (SILVEX)
2,4-D	DICAMBA

TRIAZINE PESTICIDES

ALACHLOR	ATRAZINE
SIMAZINE	

ORGANICS

ACID EXTRACTABLES (PHENOLS)	
BENZIDINES	CHLORINATED HYDROCARBONS

HALOETHERS

NITROSAMINES

POLYNUCLEAR AROMATIC HYDROCARBONS

NITROAROMATICS & ISOPHORONE

PHTHALATE ESTERS

VOLATILE ORGANICS

RECREATIONAL WATER

STATUS REPORTED ON 12/23/2014

ANALYTE NAME

MICROBIOLOGY/BACTERIA

ENTEROCOCCUS - MF mEI Agar (EPA1600)

SOLID WASTE/SOIL

STATUS REPORTED ON 12/23/2014

ANALYTE NAME

PHYSICALS

pH

MINERALS

SULFIDE

NUTRIENTS

AMMONIA

KJELDAHL NITROGEN

TOTAL PHOSPHOROUS

METALS

ALUMINUM

ANTIMONY

ARSENIC

BARIUM

BERYLLIUM

BORON

CADMIUM

CALCIUM

CHROMIUM

CHROMIUM - Hexavalent

COBALT

COPPER

IRON

LEAD

MAGNESIUM

MANGANESE

MERCURY

MOLYBDENUM

NICKEL

POTASSIUM

SELENIUM

SILVER

SODIUM

STRONTIUM

THALLIUM

TIN

TITANIUM

VANADIUM

ZINC

RESIDUE

TOTAL RESIDUE (SOLIDS)

TOTAL VOLATILE RESIDUE

DEMANDS

TOTAL ORGANIC CARBON

MISCELLANEOUS

CORROSIVITY

CYANIDE (TOTAL)

IGNITABILITY

PHENOLICS

REACTIVITY

SPLP LEACH (1312)

TCLP LEACH (1311)

PESTICIDES/ PCB'S

CHLORDANE (TECHNICAL)

ORGANOCHLORINE PESTICIDES (Single
Response)

PCB IN OIL

POLYCHLORINATED BIPHENYLS

TOXAPHENE

SOLVENTS

CT Extractable Petroleum Hydrocarbons (ETPH)

MA Extractable Petroleum Hydrocarbons (EPH)

MA Volatile Petroleum Hydrocarbons (VPH)

OIL AND GREASE

TOTAL ORGANIC HALIDES

TPH (HEM/SGT)

HERBICIDES

2,4,5-T

2,4,5-TP (SILVEX)

2,4-D

DICAMBA

TRIAZINE PESTICIDES

ALACHLOR

ATRAZINE

SIMAZINE

RCRA (SW-846) ORGANICS

ACID EXTRACTABLES (PHENOLS) (SW 8270)

BENZIDINES (SW 8270)

CHLORINATED HYDROCARBONS (SW 8270)

HALOETHERS (SW 8270)

NITROAROMATICS & CYCLIC KETONES (SW
8270)

NITROSOAMINES (SW 8270)

PAH's (SW 8270)

PHTHALATES (SW 8270)

VOLATILE ORGANICS (SW 8260)

ENVIRONMENTAL HEALTH & HOUSING

LEAD (PAINT) IN SOIL

LEAD IN DUST WIPES

LEAD IN PAINT

Report Profile: Lab Name : Phoenix Environmental Laboratories, Inc.

Test Name : *

Matrix Name : *

Matrix Selection = ALL OR SOME MATRICES SELECTED

Certifications approved or provisional on 12/23/2014

THIS IS THE LAST PAGE OF THE REPORT

APPENDIX C

ASBESTOS BULK SAMPLE CHAIN OF CUSTODY FORMS

TRC

5 WATERSIDE CROSSING
WINDSOR, CONNECTICUT 06095
TELEPHONE (860) 298-9692
FAX (860) 298-6399

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

LAB ID #.

PROJECT NUMBER		PROJECT NAME		PARAMETERS					TURNAROUND TIME				
28460-0000-00001		Naugatuck BOE - Western Street School											
INSPECTOR: (SIGNATURE)		(PRINTED)											
		Stephen Arienti											
FIELD SAMPLE NUMBER	DATE	TIME	TYPE		SAMPLE LOCATION	PLM EPA 600/R93/116 (POSITIVE STOP)	PLM NY NOB 198.1 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	MATERIAL	PLM:	TEM:
			COMP	GRAB									
01-CP	6/29/04	13:15	x		2nd Floor - Janitor's Closet	X			X		Ceiling Plaster		
02-CP	6/29/04	13:15	x		2nd Floor - Northwest Hallway	X			X				
03-CP	6/29/04	13:15	x		2nd Floor - Room 3	X			X				
04-CP	6/29/04	13:15	x		2nd Floor - Southeast Hallway	X			X				
05-CP	6/29/04	13:15	x		2nd Floor - Girl's Bathroom	X			X				
06-CP	6/29/04	13:15	x		2nd Floor - North Hallway	X			X				
07-CP	6/29/04	13:15	x		2nd Floor - North Hallway	X			X				

Relinquished by: (Signature)		Date:	Received by: (Signature)		Date:	Received by: (Signature)	
		6/28/04					
(Printed)		Time:	(Printed)		Time:	(Printed)	
Stephen Arienti		14:35					
Remarks:							
Page 1 of 4							



21 GRIFFIN ROAD NORTH

WINDSOR, CONNECTICUT 06095

TELEPHONE (860) 298-9692

FAX (860) 298-6380

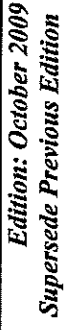
ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Edition: October 2009
Supersede Previous Edition

LAB ID #. 45911


PROJECT NUMBER		PROJECT NAME		PARAMETERS		TURNAROUND TIME					
237478.0010.0001		Western School - Naugatuck, CT - Roof				PLM:	8hr	24hr	48hr	3day	
SIGNATURE		INSPECTOR				TEM:	24hr	48hr	3day	5day	
DATE		TIME		TYPE		SAMPLE LOCATION					
FIELD SAMPLE NUMBER		DATE		TIME		TYPE					
1	5/28/15	0825	X	Roof 1	X	PLM EPA 600/R93/116 (POSITIVE STOP)	PLM EPA 600/R93/116 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	Gray Asphalt Roofing (RF1)
2	5/28/15	0831	X	Roof 2	X						Gray Asphalt Roofing (RF1)
3	5/28/15	0826	X	Roof 1	X						Black Asphalt Roofing (RF2)
4	5/28/15	0832	X	Roof 2	X						Black Asphalt Roofing (RF2)
5	5/28/15	0955	X	Roof 8	X			X			Black Built-up Roofing (BUR1)
6	5/28/15	0958	X	Roof 8	X			X		X	Black Built-up Roofing (BUR1)
7	5/28/15	0835	X	Roof 2	X						Black Fibrous Vapor Barrier (VB1)
8	5/28/15	0836	X	Roof 2	X						Black Fibrous Vapor Barrier (VB1)
9	5/28/15	0851	X	Roof 4A	X			X			Brown Paper Vapor Barrier w/Black Rubber-like Backing (VB2)
10	5/28/15	0852	X	Roof 4A	X			X		X	Brown Paper Vapor Barrier w/Black Rubber-like Backing (VB2)



Relinquished by: (Signature)	Date: 5/28/15	Received by: (Signature)	Date: 5/29/15
(Printed)	Time: 2030	(Printed)	Time: 1000
Robert Belding			
Remarks:	Condition of Samples: Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments:		
	Page 1 of 5		



ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

LAB ID #. 45911

PROJECT NUMBER		PROJECT NAME		PARAMETERS				TURNAROUND TIME				
237478.0010.0001		Western School – Naugatuck, CT - Roof						PLM:	8hr	X	24hr	48hr
SIGNATURE		INSPECTOR		PLM EPA 600/R93/116 (POSITIVE STOP)				TEM:				
		Robert Belding						X				24hr
FIELD SAMPLE NUMBER	DATE	TIME	TYPE	SAMPLE LOCATION		PLM EPA 600/R93/116 (POSITIVE STOP)	PLM EPA 600/R93/116 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	MATERIAL	
				COMP	GRAB							
11	5/28/15	1001	X	Roof 8	X	X					Black Paper-like Vapor Barrier (VB3)	
12	5/28/15	1002	X	Roof 8	X	X					Black Paper-like Vapor Barrier (VB3)	
13	5/28/15	1015	X	Roof 9	X	X					Black Paper-like Fibrous Vapor Barrier (VB4)	
14	5/28/15	1018	X	Roof 9	X	X					Black Paper-like Fibrous Vapor Barrier (VB4)	
15	5/28/15	0827	X	Roof 1	X	X		X			Black Backing w/Tar on Foam Insulation (F11)	
16	5/28/15	0831	X	Roof 6	X			X		X	Black Backing w/Tar on Foam Insulation (F11)	
17	5/28/15	1006	X	Roof 8	X	X					Black Fibrous Backing on Fiberglass Insulation (FG11)	
18	5/28/15	1009	X	Roof 8	X	X					Black Fibrous Backing on Fiberglass Insulation (FG11)	
19	5/28/15	0855	X	Roof 4A	X	X					Hard Gray Penetration Flashing (PEN1)	
20	5/28/15	0856	X	Roof 4A	X	X				X	Hard Gray Penetration Flashing (PEN1)	

Relinquished by: (Signature) 	Date: 5/29/15	Received by: (Signature) 	Relinquished by: (Signature)	Date:	Received by: (Signature)
(Printed) Robert Belding	Time: 2030	(Printed) 1200	(Printed)	Time:	(Printed)
Remarks:			Condition of Samples: Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Comments:		
			Page 2 of 5		



21 GRIFFIN ROAD NORTH

WINDSOR, CONNECTICUT 06095

TELEPHONE (860) 298-9692

FAX (860) 298-6380

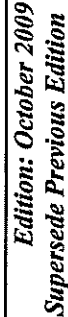
ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Edition: October 2009
Supersede Previous Edition

LAB ID #. 45-911

PROJECT NUMBER		PROJECT NAME		PARAMETERS		TURNAROUND TIME						
237478.0010.0001		Western School - Naugatuck, CT - Roof				PLM:	8hr	X	24hr	48hr	3day	5day
SIGNATURE		INSPECTOR				TEM:	X	24hr	48hr	3day	5day	
FIELD SAMPLE NUMBER		DATE	TIME	TYPE	GRAB	SAMPLE LOCATION		MATERIAL				
21	5/28/15	0840		X	Roof 2	X						
22	5/28/15	0841		X	Roof 2							
23	5/28/15	0846		X	Roof 3							
24	5/28/15	0846		X	Roof 3							
25	5/28/15	0940		X	Roof 6							
26	5/28/15	0941		X	Roof 6							
27	5/28/15	0914		X	Roof 5							
28	5/28/15	0915		X	Roof 5							
29	5/28/15	0820		X	Roof 1							
30	5/28/15	0821		X	Roof 1							
31	5/28/15	0822		X	Roof 1							

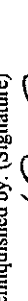


Relinquished by: (Signature)		Date:	Received by: (Signature)	Date:	Received by: (Signature)
		5/28/15			5/29/15
(Printed)	Robert Belding	Time: 2030	(Printed)	Time: 1000	(Printed)
Remarks:		Condition of Samples: Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Page 3 of 5	



ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

LAB ID #. 45911

[illegible]

Relinquished by: (Signature)	Date:	Received by: (Signature)	5/29/15	Relinquished by: (Signature)	Date:	Received by: (Signature)
	5/28/15					
(Printed)	Time:	(Printed)	1000	(Printed)	Time:	(Printed)
Robert Belding	2030					
Remarks:						
Condition of Samples:				Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
				Comments:		
						Page 4 of 5

22 Cummings Park, Woburn, MA 01801 Ph. 781-935-3212 Fax 781-932-4857
TEM Bulk Chain of Custody Record

Other:

			Description	Location	Acceptable on Receipt	For Lab Use Only Comments
Client ID #	Lab ID#					
6	45911		Built-up Roofing	See COC		
10	45911		Rubber Like backing			
16	45911		Backing			
20	45911		Flashing			
24	45911		Flashing			
26	45911		Tar Backing			
30	45911		Caulking			
32	45911		Caulking			
34	45911		Caulking			
38	45911		Caulking			
For Lab Use Only	# Spies	Total	Client #	Batch #	Results Reported	Comments



21 GRIFFIN ROAD NORTH
WINDSOR, CONNECTICUT 06095
TELEPHONE (860) 298-9692
FAX (860) 298-6380

ASBESTOS BULK SAMPLING CHAIN OF CUSTODY

Edition: October 2009
Supersedes Previous Edition

PROJECT NUMBER
237478.0010.0001

PROJECT NAME
Western School - Naugatuck, CT -
Plaster Inspection

INSPECTOR
Robert Belding

LAB ID #.

45976

FIELD SAMPLE NUMBER	DATE	TIME	TYPE		SAMPLE LOCATION	PARAMETERS				TURNAROUND TIME							
			COMP	GRAB		PLM EPA 600/R93/116 (POSITIVE STOP)	PLM EPA 600/R93/116 (w/ gravimetric reduction) (POSITIVE STOP)	ANALYZE BY LAYER	POINT COUNT (IF >1% & <10%)	TEM NY NOB 198.4 (IF PLM SERIES NEG)	PLM:	TEM:	8hr	24hr	48hr	3day	5day
1	6/1/15	1610	X		1 st Floor - Faculty Bathroom	X				X							
2	6/1/15	1618	X		1 st Floor - Hallway	X				X							
3	6/1/15	1625	X		1 st Floor - Stair 2	X				X							
4	6/1/15	1628	X		2 nd Floor - Stair 2	X				X							
5	6/1/15	1655	X		1 st Floor - Hall Between Rms. 1-2	X				X							
6	6/1/15	1659	X		1 st Floor - Custodial Closet	X				X							
7	6/1/15	1710	X		2 nd Floor - Curriculum Room	X				X							
8	6/1/15	1715	X		2 nd Floor - Reading Tutor Room	X				X							
9	6/1/15	1725	X		2 nd Floor - Hallway	X				X							

Relinquished by: (Signature) <i>Robert Belding</i>	Date: 6/5/15	Received by: (Signature) <i>William</i>	Date: 6/5/15	Relinquished by: (Signature)	Date:	Received by: (Signature)
(Printed) Robert Belding	Time: 1325	(Printed) 1400	Time: 1325	(Printed)	Time:	(Printed)
Remarks:	Condition of Samples: Acceptable: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			Page 1 of 4		

22 Cummings Park, Woburn, MA 01801 Ph. 781-935-3212 Fax 781-932-4857
TEM Bulk Chain of Custody Record

Relinquished by: K. Williamson – KWilliamson@trcsolutions.com *nd*
 Received by: *Margaret Valero* *6-2-15* *10:00AM*
 Report to: E. Plimpton – EPlimpton@trcsolutions.com & H. Laliberte- HLaliberte@trcsolutions.com
 Samplers Name: R. Belding

Turn Around Time:	<12 Hour	<24 Hour	<48 Hour	<3 Day	5 Day	Other:

[illegible]

APPENDIX D

PLM LABORATORY ANALYSIS DATA

TRC ENVIRONMENTAL CORPORATION
Environmental Chemistry Laboratory
5 Waterside Crossing - Windsor, CT 06095
(860) 298-6308
AIHA Laboratory Certificate No. 259, Lab ID #100122
NIST-NVLAP Code #101424-0

BULK ASBESTOS ANALYSIS REPORT

CLIENT: Naugatuck Board of Education

Site: Western Street School
Lab Log #: 28260
Project #: 28460-0000-00001
Date Received: 06/29/04
Date Analyzed: 07/01/04

RESULTS

Sample No.	Color	Homogeneous	Multi-Layered	Layer No.	Other Matrix Mat'ls	Asbestos %	Asbestos Type
01-CP	Tan/White	Yes	No	--	10% cellulose	Trace	Chrysotile
02-CP	Tan/White	Yes	No	--	20% cellulose	Trace	Chrysotile
03-CP	Tan/White	Yes	No	--	15% cellulose	Trace	Chrysotile
04-CP	Tan/White	Yes	No	--	10% cellulose	Trace	Chrysotile
05-CP	Tan/White	Yes	No	--	10% cellulose	Trace	Chrysotile
06-CP	Tan/White	Yes	No	--	10% cellulose	Trace	Chrysotile
07-CP	Tan/White	Yes	No	--	10% cellulose	Trace	Chrysotile

The Laboratory at TRC utilizes Polarized Light Microscopy (PLM) following the EPA's Interim Method for the Determination of Asbestos in Bulk Insulation Samples (EPA/600/M4-82-020, 1982), and the EPA recommended Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116), July 1993, R.L. Perkins and B.W. Harvey. Our analysts have completed an accredited course in asbestos identification. TRC's Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), for Bulk Asbestos Fiber Analysis, NVLAP Code 18/A01, effective through June 30, 2004. TRC is an American Industrial Hygiene Association (AIHA) accredited lab for PLM effective through September 1, 2005. Asbestos content is determined by visual estimate unless otherwise indicated. Quality Control is performed in-house on at least 10% of samples and the QC data related to the samples is available upon written request from the client.

Note: Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound (NOB) materials. In those cases, negative results should be confirmed by quantitative transmission electron microscopy as recommended by the EPA.

This report shall not be reproduced, except in full, without the written approval of TRC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the items tested.

Analyst: Lance R. Cotton



BULK ASBESTOS ANALYSIS REPORT

CLIENT: Borough of Naugatuck

Lab Log #: 0045911
Project #: 237478.0010.0001
Date Received: 05/29/2015
Date Analyzed: 05/29/2015

Site: Western School, Naugatuck, CT

POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
1	Black/Grey	Yes	No	--	10% synthetic fiber	ND	None
2	Black/Grey	Yes	No	--	10% synthetic fiber	ND	None
3	Black	Yes	No	--	10% fibrous glass	ND	None
4	Black	Yes	No	--	10% fibrous glass	ND	None
5	Black	Yes	No	--	10% cellulose	ND	None
6	Black	Yes	No	--	10% cellulose	ND	None
7	Black	Yes	No	--	10% fibrous glass	ND	None
8	Black	Yes	No	--	10% fibrous glass	ND	None
9	Brown (vapor barrier)	Yes	Yes	1	90% cellulose	ND	None
9	Black/Brown (rubber backing)	Yes	Yes	2	10% cellulose	ND	None
10	Brown (vapor barrier)	Yes	Yes	1	90% cellulose	ND	None
10	Black/Brown (rubber backing)	Yes	Yes	2	10% cellulose	ND	None
11	Black	Yes	No	--	60% cellulose	ND	None
12	Black	Yes	No	--	60% cellulose	ND	None
13	Black	Yes	No	--	60% cellulose	ND	None
14	Black	Yes	No	--	60% cellulose	ND	None
15	Black	Yes	No	--	60% cellulose	ND	None
16	Black	Yes	No	--	60% cellulose	ND	None

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0
RI #AAL-007 TX #300354
CO# AL-15020

AIHA-LAP,LLC #100122 CT #PH-0426
YT #AL014538 LA#05011 VA #3333 000283
PHIL# 461 PA#68-03387

ME LA-0075, LB-0071
AZ #A20944

MA #AA000052
HI #L-09-004

NY #10980 WY# LT000411
NJ #CT004 CA #2907



POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
17	Black	Yes	No	--	30% fibrous glass	ND	None
18	Black	Yes	No	--	30% fibrous glass	ND	None
19	Grey	Yes	No	--	---	ND	None
20	Grey	Yes	No	--	---	ND	None
21	Black	Yes	No	--	---	10%	Chrysotile
22	--	--	--	--	--	NA/PS	--
23	Black	Yes	No	--	20% cellulose	ND	None
24	Black	Yes	No	--	20% cellulose	ND	None
25	Grey/Black	Yes	No	--	---	ND	None
26	Grey/Black	Yes	No	--	---	ND	None
27	Grey	Yes	No	--	---	10%	Chrysotile
28	--	--	--	--	--	NA/PS	--
29	White	Yes	No	--	---	ND	None
30	White	Yes	No	--	---	ND	None
31	Grey	Yes	No	--	---	ND	None
32	Grey	Yes	No	--	---	ND	None
33	Black	Yes	No	--	---	ND	None
34	Black	Yes	No	--	---	ND	None
35	Grey	Yes	No	--	---	5%	Chrysotile
36	--	--	--	--	--	NA/PS	--
37	Grey	Yes	No	--	---	ND	None
38	Grey	Yes	No	--	---	ND	None

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0
RI #AAL-007 TX #300354
CO# AL-15020

AIHA-LAP,LLC #100122 CT #PH-0426
VT #AL014538 LA#05011 VA #3333 000283
PHIL# 461 PA#68-03387

ME LA-0075, LB-0071 MA #AA000052 NY #10980 WV# LT000411
AZ #A20944 HI #L-09-004 NJ #CT004 CA #2907



POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
------------	-------	------------	---------------	-----------	------------------------	------------	---------------

Reporting limit- asbestos present at 1%

ND - asbestos was not detected

Trace - asbestos was observed at level of less than 1%

NA/PS - Not Analyzed / Positive Stop

SNA- Sample Not Analyzed- See Chain of Custody for details

Note: Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. In those cases, EPA recommends, and certain states (e.g. NY) require, that negative results be confirmed by quantitative transmission electron microscopy.

The Laboratory at TRC follows the EPA's Interim Method for the Determination of Asbestos in Bulk Insulation (1982), and the EPA recommended Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116), July 1993, R.L. Perkins and B.W. Harvey which utilizes polarized light microscopy (PLM). Our analysts have completed an accredited course in asbestos identification. TRC's Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), for Bulk Asbestos Fiber Analysis, NVLAP Code 18/A01, effective through June 30, 2015. TRC is an American Industrial Hygiene Association (AIHA) accredited lab for PLM effective through October 1, 2016. Asbestos content is determined by visual estimate unless otherwise indicated. Quality Control is performed in-house on at least 10% of samples and the QC data related to the samples is available upon written request from the client.

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Analyzed by: K. Williamson
Kathleen Williamson, Laboratory Manager

Reviewed by: Aud. Parkins
Amanda Parkins, Approved Signatory

Date Issued
05/30/2015

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0
RI #AAL-007 TX #300354
CO# AL-15020

AIHA-LAP,LLC #100122 CT #PH-0426
VT #AL014538 LA#05011 VA #3333 000283
PHIL# 461 PA#68-03387

ME LA-0075, LB-0071 MA #AA000052 NY #10980 WV# LT000411
AZ #A20944 HI #L-09-004 NJ #CT004 CA #2907



BULK ASBESTOS ANALYSIS REPORT

CLIENT: Borough of Naugatuck

Lab Log #: 0045976
Project #: 237478.0010.0001
Date Received: 06/05/2015
Date Analyzed: 06/09/2015

Site: Western School, Naugatuck, CT

POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
1	■ White/Brown	Yes	No	--	20% cellulose	0.75%	Chrysotile
2	■ White/Brown	Yes	No	--	20% cellulose	1.0%	Chrysotile
3	■ White/Brown	Yes	No	--	20% cellulose	1.0%	Chrysotile
4	■ White/Brown	Yes	No	--	20% cellulose	<0.25%	Chrysotile
5	■ White/Brown	Yes	No	--	20% cellulose	0.25%	Chrysotile
6	■ White/Brown	Yes	No	--	20% cellulose	0.75%	Chrysotile
7	■ White/Brown	Yes	No	--	20% cellulose	0.50%	Chrysotile
8	■ White/Brown	Yes	No	--	20% cellulose	0.25%	Chrysotile
9	■ White/Brown	Yes	No	--	20% cellulose	0.25%	Chrysotile

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0
RI #AAL-007 TX #300354
CO# AL-15020

AIHA-LAP,LLC #100122 CT #PH-0426
VT #AL014538 LA#05011 VA #3333 000283
PHIL# 461 PA#68-03387

ME LA-0075, LB-0071 MA #AA000052 NY #10980 WV# LT000411
AZ #A20944 HI #L-09-004 NJ #CT004 CA #2907



POLARIZED LIGHT MICROSCOPY by EPA 600/R-93/116

Sample No.	Color	Homogenous	Multi-Layered	Layer No.	Other Matrix Materials	Asbestos %	Asbestos Type
------------	-------	------------	---------------	-----------	------------------------	------------	---------------

■ Analyzed by 400 Point Count Method

Reporting limit- asbestos present at 0.25% for 400 Point Count Method

ND- No asbestos was detected by 400 Point Count Method

<0.25%- Trace concentrations of asbestos are concentrations that are less than or equal 1% including samples that contain zero asbestos points out of 400 nonempty points, but did contain asbestos positively identified by PLM.

Reporting limit- asbestos present at 1%

ND - asbestos was not detected

Trace - asbestos was observed at level of less than 1%

NA/PS - Not Analyzed / Positive Stop

SNA- Sample Not Analyzed- See Chain of Custody for details

Note: Polarized-light microscopy is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. In those cases, EPA recommends, and certain states (e.g. NY) require, that negative results be confirmed by quantitative transmission electron microscopy.

The Laboratory at TRC follows the EPA's Interim Method for the Determination of Asbestos in Bulk Insulation (1982), and the EPA recommended Method for the Determination of Asbestos in Bulk Building Materials (EPA/600/R-93/116), July 1993, R.L. Perkins and B.W. Harvey which utilizes polarized light microscopy (PLM). Our analysts have completed an accredited course in asbestos identification. TRC's Laboratory is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), for Bulk Asbestos Fiber Analysis, NVLAP Code 18/A01, effective through June 30, 2015. TRC is an American Industrial Hygiene Association (AIHA) accredited lab for PLM effective through October 1, 2016. Asbestos content is determined by visual estimate unless otherwise indicated. Quality Control is performed in-house on at least 10% of samples and the QC data related to the samples is available upon written request from the client.

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Analyzed by: 
Amanda Parkins, Laboratory Analyst

Reviewed by: 
Kathleen Williamson, Laboratory Manager

Date Issued
06/09/2015

TRC LABORATORY ASBESTOS ANALYTICAL ACCREDITATIONS

NVLAP Lab Code 101424-0	AIHA-LAP.LLC #100122	CT #PH-0426	ME LA-0075, LB-0071	MA #AA000052	NY #10980	WV# LT000411
RI #AAL-007	TX #300354	VT #AL014538	LA#05011	VA #3333 000283	AZ #A20944	HI #L-09-004
CO# AL-15020		PHIL# 461		PA#68-03387		NJ #CT004
						CA #2907

APPENDIX E

TEM LABORATORY ANALYSIS DATA

ProScience Analytical Services, Inc.

22 Cummings Park, Woburn, Massachusetts 01801
781-935-3212 ~ Fax: 781-932-4857 ~ E-Mail: general@proscience.net

Laboratory Report

Batch: NT 15188
Method: NOB
Date Received: 6/2/2015
Date Analyzed: 6/4/2015
Date of Report: 6/4/2015

Client Project #: 237478.0010.0001
Client Reference: Borough of Naugatuck - Western School
PO #: C237478
Client #: 297
Client Name: TRC Environmental Corp. (CT)

LAB ID	Field ID	Description:	Color	Initial Weight	% Asbestos Types					% Other Non-asb.	% Carb.	Total % Asbestos	Analyzed / Charged	Prepped / Charged
					CHR	AMO	ACT	CRO	ANT					
NT115540	6	Black Built-up Roofing		.7292	.13	.00	.00	.00	.00	.00	11.83	TR	Yes	No
NT115541	10	Brown Paper Vapor Barrier w/ Black Rubber-like Backing		.1109	.00	.00	.00	.00	.00	.00	5.86	ND	Yes	No
NT115542	16	Black Backing w/ Tar on Foam Insulation		.1020	.00	.00	.00	.00	.00	.00	8.92	ND	Yes	No
NT115543	20	Hard Gray Penetration Flashing		.1945	.00	.00	.00	.00	.00	.00	31.47	ND	Yes	No
NT115544	24	Black Roof Flashing		.1965	.00	.00	.00	.00	.00	.00	8.50	ND	Yes	No
NT115545	26	Lightweight Concrete w/ Black Tar Backing		.3240	.00	.00	.00	.00	.00	.00	3.55	ND	Yes	No
NT115546	30	White Pliable Caulking		.2317	.00	.00	.00	.00	.00	.00	50.37	ND	Yes	No
NT115547	32	Gray Pliable Caulking		.2027	.00	.00	.00	.00	.00	.00	19.29	ND	Yes	No
NT115548	34	Black Pliable Caulking		.3352	.00	.00	.00	.00	.00	.00	30.67	ND	Yes	No
NT115549	38	Gray Pliable Rubber-like Caulking		.2596	.00	.00	.00	.00	.00	.00	26.04	ND	Yes	No

Comments:

Key: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite TR = Trace = < 1% ND = None Detected


Mark Derosier, Analyst

APPENDIX F

PCB LABORATORY DATA



Tuesday, June 23, 2015

Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Project ID: WESTERN SCHOOL - ROOF
Sample ID#s: BJ29055 - BJ29069

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

Enclosed are revised Analysis Report pages. Please replace and discard the original pages. If you have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext. 200.

Sincerely yours,



Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #MA-CT-007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 9:40

06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29055

Project ID: WESTERN SCHOOL - ROOF
Client ID: C1-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	85	%	5	06/11/15	AW	30 - 150 %
% TCMX	95	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C1-1

Phoenix I.D.: BJ29055

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 9:44
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29056

Project ID: WESTERN SCHOOL - ROOF
Client ID: C1-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1221	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1232	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1242	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1248	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1254	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1260	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1262	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A
PCB-1268	ND	0.83	mg/Kg	5	06/13/15	AW	SW8082A

QA/QC Surrogates

% DCBP	76	%	5	06/13/15	AW	30 - 150 %
% TCMX	75	%	5	06/13/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C1-2

Phoenix I.D.: BJ29056

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 9:48
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29057

Project ID: WESTERN SCHOOL - ROOF
Client ID: C1-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.83	mg/Kg	5	06/11/15	AW	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	76		%	5	06/11/15	AW	30 - 150 %
% TCMX	79		%	5	06/11/15	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 5:50
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29058

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	84		%	5	06/11/15	AW	30 - 150 %
% TCMX	83		%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-1

Phoenix I.D.: BJ29058

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

<u>Date</u>	<u>Time</u>
06/10/15	9:59
06/10/15	16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29059

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	83	%	5	06/11/15	AW	30 - 150 %
% TCMX	83	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-2

Phoenix I.D.: BJ29059

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:04
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29060

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.81	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	97	%	5	06/11/15	AW	30 - 150 %
% TCMX	94	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C2-3

Phoenix I.D.: BJ29060

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:10
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29061

Project ID: WESTERN SCHOOL - ROOF
Client ID: C3-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1221	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1232	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1242	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1248	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1254	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1260	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1262	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A
PCB-1268	ND	0.65	mg/Kg	2	06/22/15	AW	SW8082A

QA/QC Surrogates

% DCBP	49	%	2	06/22/15	AW	30 - 150 %
% TCMX	46	%	2	06/22/15	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:

For PCBs, due to matrix interference from non target compounds in the sample an elevated RL was reported. Multiple cleanup steps were performed but were unsuccessful. The extract was cleaned up with a combination of sulfuric acid, potassium permanganate, copper powder and additional florisil.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:15
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29062

Project ID: WESTERN SCHOOL - ROOF
Client ID: C3-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1221	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1232	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1242	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1248	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1254	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1260	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1262	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A
PCB-1268	ND	0.65	mg/Kg	2	06/23/15	AW	SW8082A

QA/QC Surrogates

% DCBP	52	%	2	06/23/15	AW	30 - 150 %
% TCMX	44	%	2	06/23/15	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

PCB Comment:

For PCBs, due to matrix interference from non target compounds in the sample an elevated RL was reported. Multiple cleanup steps were performed but were unsuccessful. The extract was cleaned up with a combination of sulfuric acid, potassium permanganate, copper powder and additional florisol.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

<u>Date</u>	<u>Time</u>
06/10/15	10:20
06/10/15	16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29063

Project ID: WESTERN SCHOOL - ROOF
Client ID: C3-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1221	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1232	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1242	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1248	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1254	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1260	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1262	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A
PCB-1268	ND	0.65	mg/Kg	2	06/12/15	AW	SW8082A

QA/QC Surrogates

% DCBP	50	%	2	06/12/15	AW	30 - 150 %
% TCMX	48	%	2	06/12/15	AW	30 - 150 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

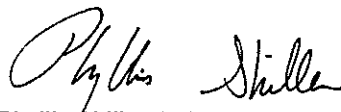
PCB Comment:

For PCBs, in order to reach the desired RL, multiple cleanup steps were performed. The extract was cleaned up with a combination of sulfuric acid, potassium permanganate, copper powder and additional florisil.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:32

06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29064

Project ID: WESTERN SCHOOL - ROOF
Client ID: C4-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.79	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	89	%	5	06/11/15	AW	30 - 150 %
% TCMX	86	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C4-1

Phoenix I.D.: BJ29064

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB,
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:35
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29065

Project ID: WESTERN SCHOOL - ROOF
Client ID: C4-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.72	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	98	%	5	06/11/15	AW	30 - 150 %
% TCMX	94	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C4-2

Phoenix I.D.: BJ29065

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

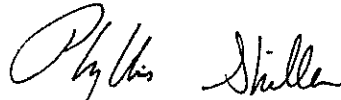
Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:37
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29066

Project ID: WESTERN SCHOOL - ROOF
Client ID: C4-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.8	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	105	%	5	06/11/15	AW	30 - 150 %
% TCMX	97	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF

Phoenix I.D.: BJ29066

Client ID: C4-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:45
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29067

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	QP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.75	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	107	%	5	06/11/15	AW	30 - 150 %
% TCMX	104	%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-1

Phoenix I.D.: BJ29067

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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June 23, 2015

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Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:49
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29068

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-2

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	PP/UX	SW3540C

PCB (Soxhlet SW3540C)

PCB-1016	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1221	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1232	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1242	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1248	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1254	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1260	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1262	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A
PCB-1268	ND	0.77	mg/Kg	5	06/11/15	AW	SW8082A

QA/QC Surrogates

% DCBP	125		%	5	06/11/15	AW	30 - 150 %
% TCMX	113		%	5	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-2

Phoenix I.D.: BJ29068

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

June 23, 2015

FOR: Attn: Mr. Henry Laliberte
TRC Environmental Corp.
21 Griffin Rd North
Windsor, CT 06095

Sample Information

Matrix: BULK
Location Code: TRC-PCB
Rush Request: 72 Hour
P.O.#:

Custody Information

Collected by:
Received by: LB
Analyzed by: see "By" below

Date Time

06/10/15 10:54
06/10/15 16:45

Laboratory Data

SDG ID: GBJ29055
Phoenix ID: BJ29069

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-3

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Caulk Extraction for PCB	Completed				06/10/15	PP/UX	SW3540C
<u>PCB (Soxhlet SW3540C)</u>							
PCB-1016	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1221	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1232	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1242	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1248	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1254	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1260	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1262	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
PCB-1268	ND	0.65	mg/Kg	2	06/11/15	AW	SW8082A
<u>QA/QC Surrogates</u>							
% DCBP	80		%	2	06/11/15	AW	30 - 150 %
% TCMX	75		%	2	06/11/15	AW	30 - 150 %

Project ID: WESTERN SCHOOL - ROOF
Client ID: C5-3

Phoenix I.D.: BJ29069

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
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RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

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Phyllis Shiller, Laboratory Director

June 23, 2015

Reviewed and Released by: Greg Lawrence, Assistant Lab Director



Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

QA/QC Report

June 23, 2015

QA/QC Data

SDG I.D.: GBJ29055

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
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QA/QC Batch 310248 (mg/Kg), QC Sample No: BJ28202 10X (BJ29055, BJ29056, BJ29057, BJ29058, BJ29059, BJ29060)

Polychlorinated Biphenyls - Bulk

PCB-1016	ND	0.17	74	79	6.5	82	81	1.2	40 - 140	30
PCB-1221	ND	0.17							40 - 140	30
PCB-1232	ND	0.17							40 - 140	30
PCB-1242	ND	0.17							40 - 140	30
PCB-1248	ND	0.17							40 - 140	30
PCB-1254	ND	0.17							40 - 140	30
PCB-1260	ND	0.17	89	93	4.4	121	120	0.8	40 - 140	30
PCB-1262	ND	0.17							40 - 140	30
PCB-1268	ND	0.17							40 - 140	30
% DCBP (Surrogate Rec)	88	%	90	96	6.5	86	88	2.3	30 - 150	30
% TCMX (Surrogate Rec)	86	%	88	99	11.8	89	91	2.2	30 - 150	30

QA/QC Batch 310387 (mg/Kg), QC Sample No: BJ28799 2X (BJ29061, BJ29062, BJ29063, BJ29064, BJ29065, BJ29066, BJ29067)

Polychlorinated Biphenyls - Bulk

PCB-1016	ND	0.033	64			80	81	1.2	40 - 140	30
PCB-1221	ND	0.033							40 - 140	30
PCB-1232	ND	0.033							40 - 140	30
PCB-1242	ND	0.033							40 - 140	30
PCB-1248	ND	0.033							40 - 140	30
PCB-1254	ND	0.033							40 - 140	30
PCB-1260	ND	0.033	94			101	101	0.0	40 - 140	30
PCB-1262	ND	0.033							40 - 140	30
PCB-1268	ND	0.033							40 - 140	30
% DCBP (Surrogate Rec)	99	%	111			113	113	0.0	30 - 150	30
% TCMX (Surrogate Rec)	84	%	73			81	80	1.2	30 - 150	30

Comment:

LCS could not be reported for this batch. LCSD was reported as LCS. Aw

QA/QC Batch 310405 (mg/Kg), QC Sample No: BJ29068 10X (BJ29068, BJ29069)

Polychlorinated Biphenyls - Bulk

PCB-1016	ND	0.17	82	77	6.3				40 - 140	30
PCB-1221	ND	0.17							40 - 140	30
PCB-1232	ND	0.17							40 - 140	30
PCB-1242	ND	0.17							40 - 140	30
PCB-1248	ND	0.17							40 - 140	30
PCB-1254	ND	0.17							40 - 140	30
PCB-1260	ND	0.17	99	95	4.1				40 - 140	30
PCB-1262	ND	0.17							40 - 140	30
PCB-1268	ND	0.17							40 - 140	30
% DCBP (Surrogate Rec)	98	%	97	95	2.1				30 - 150	30
% TCMX (Surrogate Rec)	92	%	103	92	11.3				30 - 150	30

QA/QC Data

SDG I.D.: GBJ29055

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
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If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference

LCS - Laboratory Control Sample

LCSD - Laboratory Control Sample Duplicate

MS - Matrix Spike

MS Dup - Matrix Spike Duplicate

NC - No Criteria

Intf - Interference



Phyllis Shiller, Laboratory Director
June 23, 2015

Sample Criteria Exceedences Report

Criteria: None

State: CT

GBJ29055 - TRC-PCB

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL	Analysis Units
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*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Reasonable Confidence Protocol Laboratory Analysis QA/QC Certification Form

Laboratory Name: Phoenix Environmental Labs, Inc. **Client:** TRC Environmental Corp.

Project Location: WESTERN SCHOOL - ROOF **Project Number:**

Laboratory Sample ID(s): BJ29055, BJ29056, BJ29057, BJ29058, BJ29059, BJ29060, BJ29061, BJ29062, BJ29063, BJ29064, BJ29065, BJ29066, BJ29067, BJ29068, BJ29069

Sampling Date(s): 6/10/2015

RCP Methods Used:

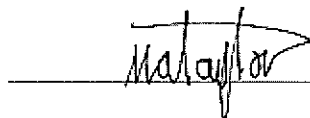
☐ 1311/1312 ☐ 6010 ☐ 7000 ☐ 7196 ☐ 7470/7471 ☐ 8081 ☐ EPH ☐ TO15
☒ 8082 ☐ 8151 ☐ 8260 ☐ 8270 ☐ ETPH ☐ 9010/9012 ☐ VPH

1.	For each analytical method referenced in this laboratory report package, were all specified QA/QC performance criteria followed, including the requirement to explain any criteria falling outside of acceptable guidelines, as specified in the CT DEP method-specific Reasonable Confidence Protocol documents?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1a.	Were the method specified preservation and holding time requirements met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b.	EPH and VPH methods only: Was the VPH or EPH method conducted without significant modifications (see section 11.3 of respective RCP methods)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
2.	Were all samples received by the laboratory in a condition consistent with that described on the associated Chain-of-Custody document(s)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3.	Were samples received at an appropriate temperature (< 6 Degrees C)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA
4.	Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5a.	Were reporting limits specified or referenced on the chain-of-custody?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
5b.	Were these reporting limits met?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
6.	For each analytical method referenced in this laboratory report package, were results reported for all constituents identified in the method-specific analyte lists presented in the Reasonable Confidence Protocol documents?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
7.	Are project-specific matrix spikes and laboratory duplicates included in the data set?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA

Note: For all questions to which the response was "No" (with the exception of question #5a, #7), additional information must be provided in an attached narrative. If the answer to question #1, #1A or 1B is "No", the data package does not meet the requirements for "Reasonable Confidence".

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete.

Authorized
Signature:



Date: Tuesday, June 23, 2015

Printed Name: Maryam Taylor

Position: Project Manager



Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823



RCP Certification Report

June 23, 2015

SDG I.D.: GBJ29055

Temperature above 6C:

The samples were received in a cooler with ice packs. The samples were delivered to the Laboratory within a short period of time after sample collection. Therefore no bias is suspected.

PCB Narration

Were all QA/QC performance criteria specified in the Reasonable Confidence Protocol documents achieved? Yes.

Instrument: Au-ecd48 06/11/15-1 (BJ29056)

The initial calibration (PC609AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC609BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/11/2015

Instrument: Au-ecd5 06/22/15-1 (BJ29061, BJ29062)

The initial calibration (PC612AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC612BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/22/2015

Instrument: Au-ecd8 06/11/15-1 (BJ29055, BJ29057, BJ29058, BJ29059, BJ29064, BJ29068)

The initial calibration (PC603AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC603BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/11/2015

Instrument: Au-ecd8 06/13/15-1 (BJ29056)



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RCP Certification Report

June 23, 2015

SDG I.D.: GBJ29055

The initial calibration (PC603AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC603BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/13/2015

Instrument: Au-eccart1 06/11/15-1 (BJ29060, BJ29065, BJ29066, BJ29067, BJ29068, BJ29069)

The initial calibration (PC604AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC604BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/11/2015

Instrument: Au-eccart1 06/12/15-1 (BJ29061, BJ29062, BJ29063)

The initial calibration (PC604AI) RSD for the compound list was less than 20% except for the following compounds: None.

The initial calibration (PC604BI) RSD for the compound list was less than 20% except for the following compounds: None.

The continuing calibration %D for the compound list was less than 15% except for the following compounds: None.

Printed Name Adam Werner
Position: Chemist
Date: 6/12/2015

QC Comments: QC Batch 310387 06/10/15 (BJ29061, BJ29062, BJ29063, BJ29064, BJ29065, BJ29066, BJ29067)

LCS could not be reported for this batch. LCSD was reported as LCS. Aw



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RCP Certification Report

June 23, 2015

SDG I.D.: GBJ29055

QC (Batch Specific)

----- Sample No: BJ28202, QA/QC Batch: 310248 -----

All LCS recoveries were within 40 - 140 with the following exceptions: None.

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

----- Sample No: BJ28799, QA/QC Batch: 310387 -----

All LCS recoveries were within 40 - 140 with the following exceptions: None.

----- Sample No: BJ29068, QA/QC Batch: 310405 -----

All LCS recoveries were within 40 - 140 with the following exceptions: None.

All LCSD recoveries were within 40 - 140 with the following exceptions: None.

All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

Temperature Narration

The samples were received at 10C with cooling initiated.

(Note acceptance criteria is above freezing up to 6°C)



CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Coolant: Yes ☒ No ☐
Coolant: IPK ☐ ICE ☐
Temp: 0 °C Pg 1 of 1

Contact Options:

Fax: _____
Phone: _____
Email: ☒ HLab@phoenixlabs.com

Customer: TLC

Address: 21 Griffin Rd North
Windsor, CT 06095

Project: Western School - Roof
Report to: Henry Laliberte
Invoice to: Same

Project P.O.:

This section MUST be completed with Bottle Quantities.

237478-0010.0001

Client Sample - Information - Identification

Sampler's Signature: Tale P. Date: 6/10/15
Matrix Code: _____
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe
OIL=Oil B=Bulk L=Liquid

Analysis Request

PCB's

GL VOA Vials () methanol () H₂O
GL Soil container () oz
40 ml VOA Vial () As Is () HCl
PL As Is () 250ml () 500ml () 1000ml
PL H₂SO₄ () 250ml () 500ml () 1000ml
PL NaOH 250ml
Bacteria Bottle

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled
29055	C1-1	B	6/10/15	0940
29056	C1-2			0944
29057	C1-3			0948
29058	C2-1			0955
29059	C2-2			0959
29060	C2-3			1004
29061	C3-1			1010
29062	C3-2			1015
29063	C3-3			1020
29064	C4-1			1032
29065	C4-2			1035
29066	C4-3			1037

Relinquished by: Tale P.

Accepted by: Talman

Date: 6/10/15 Time: 10:35

RI ☐ Direct Exposure (Residential) ☐ GW ☐ Other

CI ☐ RCP Cert ☐ GW Protection ☐ SW Protection ☐ GA Mobility ☐ GB Mobility ☐ Residential DEC ☐ I/C DEC ☐ Other

MA ☐ MCP Certification ☐ GW-1 ☐ GW-2 ☐ GW-3 ☐ S-1 ☐ S-2 ☐ S-3 ☐ MWRA eSMART ☐ Other

Data Format ☐ Excel ☒ PDF ☐ GIS/Key ☐ EQUS ☐ Other

Data Package ☐ Tier II Checklist ☐ Full Data Package* ☒ Phoenix Std Report ☐ Other

Comments, Special Requirements or Regulations:

Turnaround: ☐ 1 Day* ☐ 2 Days* ☐ 3 Days* ☒ Standard ☐ Other

* SURCHARGE APPLIES

State where samples were collected: CT

* SURCHARGE APPLIES

TABLE 1
BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT

Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
6/29/04 Bulk Sampling			
01-CP	2 nd floor – Janitor's Closet	Ceiling Plaster	ND<1%
02-CP	2 nd floor – Northwest Hallway	Ceiling Plaster	ND<1%
03-CP	2 nd floor – Room 3	Ceiling Plaster	ND<1%
04-CP	2 nd floor – Southeast Hallway	Ceiling Plaster	ND<1%
05-CP	2 nd floor – Girl's Bathroom	Ceiling Plaster	ND<1%
06-CP	2 nd floor – North Hallway	Ceiling Plaster	ND<1%
07-CP	2 nd floor – North Hallway	Ceiling Plaster	ND<1%
5/28/15 Bulk Sampling Results			
1	Roof 1	Gray Asphalt Roofing (RF1)	ND
2	Roof 2	Gray Asphalt Roofing (RF1)	ND
3	Roof 1	Black Asphalt Roofing (RF2)	ND
4	Roof 2	Black Asphalt Roofing (RF2)	ND
5	Roof 8	Black Built-up Roofing (BUR1)	ND
6	Roof 8	Black Built-up Roofing (BUR1)	ND
7	Roof 2	Black Fibrous Vapor Barrier (VB1)	ND
8	Roof 2	Black Fibrous Vapor Barrier (VB1)	ND
9	Roof 4A	Brown Paper Vapor Barrier (VB2)	ND
		Black rubber-like backing	ND
10	Roof 4A	Brown Paper Vapor Barrier (VB2)	ND
		Black rubber-like backing	ND
11	Roof 8	Black Paper-like Vapor Barrier (VB3)	ND
12	Roof 8	Black Paper-like Vapor Barrier (VB3)	ND
13	Roof 9	Black Paper-like Fibrous Vapor Barrier (VB4)	ND
14	Roof 9	Black Paper-like Fibrous Vapor Barrier (VB4)	ND
15	Roof 1	Black Backing w/Tar on Foam Insulation (FI1)	ND

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

**TABLE 1 (...continued)
BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT**

Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
16	Roof 6	Black Backing w/Tar on Foam Insulation (FI1)	ND
17	Roof 8	Black Fibrous Backing on Fiberglass Insulation (FGI1)	ND
18	Roof 8	Black Fibrous Backing on Fiberglass Insulation (FGI1)	ND
19	Roof 4A	Hard Gray Penetration Flashing (PEN1)	ND
20	Roof 4A	Hard Gray Penetration Flashing (PEN1)	ND
21	Roof 2	Hard Black perimeter Flashing (FL1)	10% chrysotile
22	Roof 2	Hard Black perimeter Flashing (FL1)	NA/PS
23	Roof 3	Black Roof Flashing (FL2)	ND
24	Roof 3	Black Roof Flashing (FL2)	ND
25	Roof 6	Lightweight Concrete w/Black Tar Backing (LC1)	ND
26	Roof 6	Lightweight Concrete w/Black Tar Backing (LC1)	ND
27	Roof 5	Gray Brittle Window Caulking (WC1)	10% chrysotile
28	Roof 5	Gray Brittle Window Caulking (WC1)	NA/PS
29	Roof 1	White Pliable Caulking (C1)	ND
30	Roof 1	White Pliable Caulking (C1)	ND
31	Roof 1	Gray Pliable Caulking (C2)	ND
32	Roof 1	Gray Pliable Caulking (C2)	ND
33	Roof 2	Black Pliable Caulking (C3)	ND
34	Roof 2	Black Pliable Caulking (C3)	ND
35	Roof 5	Gray Brittle Caulking (C4)	5% chrysotile
36	Roof 5	Gray Brittle Caulking (C4)	NA/PS
37	Roof 6	Gray Pliable Rubber-like Caulking (C5)	ND
38	Roof 7	Gray Pliable Rubber-like Caulking (C5)	ND
6/1/15 Bulk Sampling Results			
1	1 st floor – Faculty Bathroom	White skim coat & brown base coat plaster (PL1)	0.75% chrysotile♦

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

TABLE 1 (...continued)
BULK SAMPLE SUMMARY OF SUSPECT ASBESTOS CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CONNECTICUT

Sample No.	Sample Location	Homogeneous Material	% and Type Asbestos
2	1 st floor – Hallway	White skim coat & brown base coat plaster (PL1)	1.0% chrysotile♦
3	1 st floor – Stair 2	White skim coat & brown base coat plaster (PL1)	<0.25% chrysotile♦
4	2 nd floor – Stair 2	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
5	1 st floor – Hallway between Rooms 1 & 2	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
6	1 st floor – Custodial Closet	White skim coat & brown base coat plaster (PL1)	0.75% chrysotile♦
7	2 nd floor – Curriculum Room	White skim coat & brown base coat plaster (PL1)	0.50% chrysotile♦
8	2 nd floor – Reading Tutor Room	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦
9	2 nd floor - Hallway	White skim coat & brown base coat plaster (PL1)	0.25% chrysotile♦

NA/PVA Not analyzed/positive via inseparable association with a confirmed positive ACM

NA/PS Not analyzed/positive stop, homogeneous to sample proven to contain asbestos

ND<1% Non-detected, less than 1%

NAD No asbestos detected

+ Although found to be negative by analysis, material is homogeneous to a determined ACM and therefore must be considered positive

1 NOB material; result confirmed by TEM analyses

♦ Analyzed by 400 Point Count Method

TABLE 2 IDENTIFIED ASBESTOS CONTAINING MATERIALS (>1%) WESTERN ELEMENTARY SCHOOL NAUGATUCK , CONNECTICUT					
Material	Sampled- Assumed (mo/yr)	General Location	NESHAP Category	AHERA Category	Estimated Quantity
Hard Black perimeter Flashing (FL1)	Sampled 5/15	Roofs 2 and 3	Category I Non-friable	Miscellaneous	1,224 SF
Penetration Flashing	Assumed 5/15	Roofs 1, 2 3 and 8. Roof 6 at stack	Category I Non-friable	Miscellaneous	207 SF
Gray Brittle Window Caulking (WC1)	Sampled 5/15	Roof 5 on Roof 6 wall window, Roof 8 on Roof 7 wall	Category II Non-friable	Miscellaneous	40 LF
Gray Brittle Caulking (C4)	Sampled 5/15	Roof 5 – Roof 6 wall on metal flashing (under window)	Category II Non-friable	Miscellaneous	60 LF
White skim coat & brown base coat plaster (PL1)	Sampled 6/15	Throughout the original building	Category II Non-friable	Surfacing Material	15,640 SF ^A
Mudded roof bowl insulation	Assumed 2015	All locations	Friable	Thermal System Insulation	~20 EA

** Roof tars have been completely exempted from OSHA Asbestos regulations and, as a Category I Non-friable material, do not need to be removed from a structure prior to renovation/demolition under EPA Asbestos NESHAP regulations and, so long as the materials are exterior to a structure and will remain Category I Non-friable materials during renovation/demolition, are not covered under the CTDPH Asbestos Abatement standards. In addition, as Category I Non-friable materials, the roof tars do not need to be disposed of as asbestos waste under the EPA Asbestos NESHAP regulations; however, the CTDEEP special waste regulations would not allow the material to be disposed of as general construction waste within the State of Connecticut. Disposal of the roof tars as general construction waste (so long as the materials are not rendered into a state which would define them as regulated asbestos-containing materials (RACM), i.e., friable) is, however, allowed in other states such as Massachusetts.*

AHERA Categories = thermal system insulation (TSI), surfacing material or miscellaneous

NESHAP Categories = friable, category I non-friable or category II non-friable

Friable = crumbled, pulverized or reduced to powder by hand pressure when dry

Category I Non-friable = packings, gaskets, resilient floor covering and asphalt roofing

Category II Non-friable = all non-friable that is not Category I

A = Plaster may become a risk during the course of roof replacement. For this reason, the plaster is being categorized as ACM.

TABLE 3
CONFIRMED NON-ASBESTOS CONTAINING MATERIALS
WESTERN ELEMENTARY SCHOOL
NAUGATUCK , CONNECTICUT

Material	General Location
Ceiling Plaster	Throughout 2 nd floor (Original Building)
Gray Asphalt Roofing (RF1)	Roof 1, Roof 2, Roof 3
Black Asphalt Roofing (RF2)	Roof 1, Roof 2, Roof 3
Black Built-up Roofing (BUR1)	Roof 8
Black Fibrous Vapor Barrier (VB1)	Roof 2, Roof 3
Brown Paper Vapor Barrier & black rubber-like backing (VB2)	Roof 4A
Black Paper-like Vapor Barrier (VB3)	Roof 8
Black Paper-like Fibrous Vapor Barrier (VB4)	Roof 9, Roof 10
Black Backing w/Tar on Foam Insulation (FI1)	Roof 1, Roof 2, Roof 3, Roof 4A, Roof 5, Roof 6, Roof 7, Roof 8, Roof 9, Roof 10
Black Fibrous Backing on Fiberglass Insulation (FGI1)	Roof 6, Roof 8
Hard Gray Penetration Flashing (PEN1)	Roof 4A – A/C units, wiring
Black Roof Flashing (FL2)	Roof 3 – some roof seams & penetrations
Lightweight Concrete w/Black Tar Backing (LC1)	Roof 6
White Pliable Caulking (C1)	Roof 1, Roof 3
Gray Pliable Caulking (C2)	Roof 1, Roof 8
Black Pliable Caulking (C3)	Roof 2, Roof 7, Roof 8
Gray Pliable Rubber-like Caulking (C5)	Roof 6, Roof 7
White skim coat & brown base coat plaster (PL1)	Throughout 1 st & 2 nd floors (Original Building)

TABLE 4 BULK SAMPLE SUMMARY OF SUSPECT PCB CONTAINING MATERIALS HILLSIDE INTERMEDIATE SCHOOL NAUGATUCK, CONNECTICUT				
Sample No.	Homogenous Material Type	Sample Location	Total PCB (ppm)	EPA/CTDEEP Regulated
1 (C1-1)	White Pliable Caulking	Roof 1	ND<0.8	Not Regulated
2 (C1-2)			ND<0.83	
3 (C1-3)			ND<0.83	
4 (C2-1)	Gray Pliable Caulking	Roof 1	ND<0.8	Not Regulated
5 (C2-2)			ND<0.81	
6 (C2-3)			ND<0.81	
7 (C3-1)	Black Pliable Caulking	Roof 2	ND<0.65	Not Regulated
8 (C3-2)			ND<0.65	
9 (C3-3)			ND<0.65	
10 (C4-1)	Gray Brittle Caulking (C4) ♦	Roof 5	ND<0.79	Not Regulated
11 (C4-2)			ND<0.72	
12 (C4-3)			ND<0.8	
13 (C5-1)	Gray Pliable Rubber-like Caulking	Roof 6	ND<0.75	Not Regulated
14 (C5-2)			ND<0.77	
15 (C5-3)		Roof 7	ND<0.65	

BRL< = Below Reportable Detection Limit

PCB ≥ 50 ppm = EPA PCB Bulk Product Waste

PCB >1 ppm but <50 ppm = CTDEEP regulated

◆ Asbestos containing material (>1%)

TABLE 5 IDENTIFIED PCB CONTAINING MATERIALS WESTERN ELEMENTARY SCHOOL NAUGATUCK , CONNECTICUT			
Material	Sample Date (mo/yr)	General Location	Estimated Quantity
NO PCB CONTAINING MATERIALS WERE IDENTIFIED IN THE SUBJECT AREA			

**DO NOT REMOVE
THIS PAGE INTENTIONALLY LEFT BLANK**

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of rooftop equipment, as indicated.
 - 2. Demolition and removal of roof drains, as indicated.
- B. Related Sections include the following:
 - 1. Division 01 Section "Summary" for use of premises and Owner-occupancy requirements.
 - 2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
 - 3. Division 01 Section "Cutting and Patching" for cutting and patching procedures.
 - 4. Division 02 Abatement sections.
 - 5. Division 07 Section "Preparation for Rer--Roofing" for roof demolition.

1.3 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.

1.4 MATERIALS OWNERSHIP

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

1.5 PRE-DEMOLITION MEETINGS

- A. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for environmental protection and for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Coordination of Owner's continuing occupancy of portions of existing building.
 - 5. Means of protection for items to remain and items in path of waste removal from building.
- C. Predemolition Photographs or Video: Submit before Work begins.

1.7 CLOSEOUT SUBMITTALS

- A. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.8 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

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

1.9 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
 - 1. Comply with requirements specified in Division 01 Section "Summary."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: Hazardous materials are present in construction to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous materials will be removed under separate contract prior to start of work.
 - 2. Hazardous material remediation is specified in other Division 02 Sections.
 - 3. If unidentified hazardous materials are encountered during the work, do not disturb hazardous materials or items suspected of containing hazardous materials. Stop all work on the project and immediately notify Architect.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

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

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. 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.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

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.
 - 1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
- 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. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 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. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

- a. Equipment to Be Removed: Disconnect and cap services and remove equipment.
- b. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
- c. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
- d. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
- e. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

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 Controls."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
 6. Comply with indoor air quality requirements specified in Division 01 Section "Indoor Air Quality Construction Plan."
- 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.
 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

- 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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. 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.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. 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.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

3.6 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.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property.
 - 1. Include cost of all transportation and disposal.
 - 2. Provide verification of all disposal trips.
 - 3. Hazardous materials are to be handled and disposed of in accordance with all State, Local, and Federal regulations.

3.7 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 02 41 19

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SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. Section includes:
 - 1. Metal ladders.

1.3 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
 - 2. Provide templates for anchors and bolts specified for installation under other Sections.
 - 3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the State of Connecticut responsible for their preparation.
 - 4. Provide Shop Drawings for the following:
 - a. Metal ladders.
- B. Delegated-Design Submittal: For ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Qualification Data: For professional engineer.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 1. AWS D1.1, "Structural Welding Code--Steel."
 - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Provide allowance for trimming and fitting at site.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design ladders.
- B. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.
- C. Thermal Movements: Provide exterior metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.3 METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

- B. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 for nuts, Alloy Group 1.
- D. Anchor Bolts: ASTM F 1554, Grade 36.
 - 1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.
- E. Eyebolts: ASTM A 489.
- F. Machine Screws: ASME B18.6.3.
- G. Lag Bolts: ASME B18.2.1.
- H. Wood Screws: Flat head, ASME B18.6.1.
- I. Plain Washers: Round, ASME B18.22.1.
- J. Lock Washers: Helical, spring type, ASME B18.21.1.
- K. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
 - 1. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.7 METAL LADDERS

- A. General: Provide fixed metal ladders to comply with OSHA fall protection regulation 29 CFR 1910.27, and the following:
 - 1. Comply with ANSI A14.3, unless otherwise indicated.
 - 2. Space siderails 18 inches apart, unless otherwise indicated.
 - 3. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted brackets, made from same metal as ladder.
- B. Steel Ladders:
 - 1. Siderails: Continuous, 1-1/2-inch diameter steel pipe.
 - 2. Rungs: 3/4-inch- diameter steel bars.
 - 3. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
 - 4. Provide nonslip surfaces on top of each rung by coating with abrasive material metallically bonded to rung by a proprietary process.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) IKG Industries, a Harsco company; Mebac.
 - 2) W. S. Molnar Company; SlipNOT.
 - 5. Galvanize exterior ladders, including brackets and fasteners.

2.8 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 - 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 50 00

SECTION 06 10 53 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wood blocking, nailers, and plywood associated with roofing.
- B. Related Sections include the following:
 - 1. Division 07 Section "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing" for installation of wood blocking, nailers and plywood associated with roofing.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."
 - 1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.
 - 2. Notify Architect weekly of extent of work performed that is attributable to unit prices.

1.4 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.

1.5 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

- B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Power-driven fasteners.
2. Powder-actuated fasteners.
3. Expansion anchors.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- B. Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Plywood: DOC PS 1.
1. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
 2. Factory mark panels to indicate compliance with applicable standard.

2.2 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.

- B. For items of dimension lumber size, provide Construction or No. 2 lumber with 15 percent maximum moisture content and the following species:
 - 1. Hem-fir (north); NLGA.
- C. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. Application: Provide kiln dried lumber in the following locations:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing.

2.3 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, fire retardant treated, or in area of high relative humidity, provide fasteners of with hot-dip zinc coating complying with ASTM A 153/A 153M.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Provide blocking and framing as indicated.
- E. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Securely attach 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 ICC's International Building Code.
- G. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 PROTECTION

- A. 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 06 10 53

SECTION 07 01 50.19 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

A. Section Includes:

1. Roof tear-off.
2. Removal of damaged or deteriorated curbs and blocking.
3. Roof re-cover preparation.
4. Removal of base flashings.
5. Temporary roof protection.
6. All hoisting and scaffolding for completion of masonry work.
7. Waste disposal.

B. Related Sections:

1. Division 01 Section "Summary" for use of the premises and phasing requirements.
2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.
3. Division 02 Section "Selective Demolition."
4. Division 02 Abatement sections.
5. Division 07 Section "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing" for new roofing installation over prepared decks.

1.3 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

- B. Existing Membrane Roofing System: Roofing membrane, roof insulation, and components and accessories between deck and roofing membrane.
 - 1. At concrete decks, remove roofing membrane, membrane flashing, and insulation down to coal tar pitch to remain.
- C. Roof Tear-Off: Removal of existing membrane roofing system from deck.
- D. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and reinstalled.
- E. Existing to Remain: Existing items of construction that are not indicated to be removed.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Fastener pull-out test report.
- C. Photographs: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations. Submit before Work begins.
- D. Landfill Records: Indicate receipt and acceptance of hazardous wastes, such as asbestos-containing material, by a landfill facility licensed to accept hazardous wastes.
- E. Qualification Data: For Installer, including certificate that Installer is licensed to perform asbestos abatement.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Installer of new membrane roofing system, licensed to perform asbestos abatement in the State of Connecticut.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Reroofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner; Architect; Owner's insurer if applicable; testing and inspecting agency representative; roofing system manufacturer's representative; deck Installer; roofing Installer including project manager, superintendent, and foreman; and installers whose work interfaces with or affects reroofing including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing system tear-off and replacement including, but not limited to, the following:

- a. Reroofing preparation, including membrane roofing system manufacturer's written instructions.
- b. Existing roof drains and roof drainage during each stage of reroofing, and roof drain plugging and plug removal requirements.
- c. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
- d. Existing deck removal procedures and Owner notifications.
- e. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
- f. Structural loading limitations of deck during reroofing.
- g. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that will affect reroofing.
- h. HVAC shutdown and sealing of air intakes.
- i. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
- j. Discovery of asbestos-containing materials.
- k. Governing regulations and requirements for insurance and certificates if applicable.
- l. Existing conditions that may require notification of Architect before proceeding.

1.7 PROJECT CONDITIONS

- A. Existing Roofing System: Membrane roofing.
- B. Owner will occupy portions of building immediately below reroofing area. Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
 1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
 2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.
- C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
- E. Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.
 1. The results of an analysis of test cores from existing membrane roofing system are available for Contractor's reference.

- F. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
- G. Hazardous Materials: Present in building to be reroofed. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
 - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except according to procedures specified in the Contract Documents.
 - 3. Coordinate with hazardous material remediation subcontractor to prevent water from entering existing roofing system or building.

PART 2 - PRODUCTS

2.1 TEMPORARY PROTECTION MATERIALS

- A. Expanded Polystyrene (EPS) Insulation: ASTM C 578.
- B. Plywood: DOC PS1, Grade CD Exposure 1.
- C. OSB: DOC PS2, Exposure 1.

2.2 AUXILIARY REROOFING MATERIALS

- A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prior to removal operations, examine all interior and exterior conditions. Identify and accommodate existing assemblies anchored to existing substrates and/or impacted by removal operations.
- B. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- C. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

1. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new membrane roofing system, provide alternative drainage method to remove water and eliminate ponding. Do not permit water to enter into or under existing membrane roofing system components that are to remain.
- D. Verify that rooftop utilities and service piping have been shut off before beginning the Work.

3.2 ROOF TEAR-OFF

- A. General: Notify Owner's Representative each day of extent of roof tear-off proposed for that day.
- B. Roof Tear-Off: Remove existing roofing membrane and other membrane roofing system components down to the deck.
 1. Remove cover boards, roof insulation and substrate boards as occurs.
 2. Remove fasteners from deck.
 3. Remove all existing roofing materials down to existing deck.
 - a. Ensure substrate is dry and free of loose debris prior to installation of new roofing materials.
 4. At concrete decks, remove all existing roofing materials down to existing coal tar pitch.

3.3 DECK PREPARATION

- A. Inspect deck after tear-off of membrane roofing system.
- B. If broken or loose fasteners that secure deck panels to one another or to structure are observed or if deck appears or feels inadequately attached, immediately notify Architect. Do not proceed with installation until directed by Architect.
- C. If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.4 EXISTING BASE FLASHINGS

- A. Remove existing base flashings around parapets, curbs, walls, and penetrations.
 1. Clean substrates of contaminants such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain. Replace metal counterflashings damaged during removal with counterflashings specified in Division 07 Section "Sheet Metal Flashing and Trim."

3.5 FASTENER PULL-OUT TESTING

- A. Retain independent testing and inspecting agency to conduct fastener pull-out tests according to SPRI FX-1, and submit test report to Architect and roofing manufacturer before installing new roofing system.
 - 1. Obtain roofing manufacturer's approval to proceed with specified fastening pattern. Roofing manufacturer may furnish revised fastening pattern commensurate with pull-out test results.

3.6 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
 - 1. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 07 01 50.19

SECTION 07 53 23 - ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. Section includes the following:

1. Adhered EPDM membrane roofing system.
2. Roof insulation, tapered insulation, and crickets.
3. Gypsum cover board.
4. Membrane base flashing.
5. Pitch pockets.
6. Vapor retarder.
7. Flashing for roof drains, vent piping, and all roof penetrations.
8. Furnish and install all wood nailers, blocking, curbs and plywood sheathing.
9. Installation of metal ladders furnished by Division 05 Section "Metal Fabrications."
10. Curb mounted mechanical equipment to receive base flashing.
11. All hoisting and scaffolding necessary for the completion of the roofing work.
12. Waste disposal.

- B. Related Sections:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, blocking, and plywood.
2. Division 07 Section "Preparation for Re-Roofing" for roof demolition.
3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, counterflashings, and metal gravel stops.
4. Division 07 Section "Roof Accessories" for roof hatch accessories.
5. Division 07 Section "Joint Sealants."

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation layout, including slopes.
 - 3. Insulation fastening patterns.
 - 4. Expansion joints.
- C. Samples for Verification: For the following products:
 - 1. 6-by-6-inch square of sheet roofing, of color specified, including T-shaped side and end lap seam.
 - 2. 6-by-6-inch square of roof insulation.
 - 3. 6-inch length of metal termination bars.
 - 4. Six insulation fasteners of each type, length, and finish.
 - 5. Six roof cover fasteners of each type, length, and finish.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer and manufacturer.
- B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system. Certification is required to be issued by manufacturer not less than one year prior to start of work.
- C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of meeting performance requirements.
 - 2. Submit certificate of roof membrane sheet thickness specified, signed by manufacturer's control manager. ASTM +/- tolerance for membrane thickness is not acceptable.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of membrane roofing system.
- E. Research/Evaluation Reports: For components of membrane roofing system, from the ICC-ES.
- F. Field quality-control reports.
- G. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.
- H. Warranties: Sample of special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For membrane roofing system to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that has a UL Listing and FMG approval for membrane roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
 - 1. The Installer shall be doing business under the same name for a minimum of 5 years prior to January 1, 2016, and have applied similar roofing systems on 10 or more projects which have been completed for more than two years.
 - a. Furnish names and addresses of each project within 100 miles of Project.
 - 2. The Contractor that receives the award of this Project shall be the Installer of the roofing system. Installation of the roofing system shall not be subcontracted.
- C. Installer's Field Supervision: Maintain a full-time supervisor/foreman on-site during times that the roofing installation is in progress, who is experienced in installing roofing systems similar to type and scope required for this Project, and who is certified by the manufacturer as an approved applicator of the roofing system.
- D. Source Limitations: Obtain components for membrane roofing system from or approved by roofing membrane manufacturer.
- E. Exterior Fire-Test Exposure: ASTM E 108, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- F. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- G. Preinstallation Roofing Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
 1. Store membrane rolls horizontally on pallets, fully protected from the weather with canvas tarpaulins. Non-vented, polyethylene tarpaulins are not permitted.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.9 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Substrate Conditions: Proceed with roofing installation after substrates have been inspected and determined to be in satisfactory condition. Commencement of work indicates acceptance of substrates.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's customized form, without monetary limitation, edge-to-edge, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
 - 1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, vapor retarder, walkway products and other components of membrane roofing system.
 - 2. Special warranty includes peak gust wind speed up to **100** mph.
 - 3. Warranty Period: 30 years from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, vapor retarders, and walkway products, for the following warranty period:
 - 1. Warranty Period: Two years from date of Substantial Completion.

1.11 GUARANTEE

- A. Special Project Guarantee: Pursuant to Connecticut General Statute, Chapter 173, Section 10-291 provide an unlimited manufacturer's guarantee for watertightness covering material and workmanship on the entire roofing system including vapor retarders, insulation, bitumen, felts, membranes, flashings, metals, and other feature required by the roof design. All manufacturer's materials used in the roofing system must meet the latest ASTM standards for individual components of the roofing system.
 - 1. Warranty Period: 30 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
 - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7 and the Connecticut State Building Code.
 - 1. Exposure Category: Exposure B.
 - 2. Importance Factor: III.
 - 3. Basic Wind Speed: 100 mph.
- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.2 EPDM MEMBRANE ROOFING – BASE BID

- A. EPDM: ASTM D 4637, Type I, non-reinforced, uniform, flexible EPDM sheet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products.
 - c. Johns Manville.
 - 2. Thickness: 90 mils nominal.
 - 3. Exposed Face Color: Black.

2.3 AUXILIARY MEMBRANE ROOFING MATERIALS

- A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
- B. Sheet Flashing: 90-mil- thick EPDM, partially cured or cured, according to application.
- C. Protection Sheet: Epichlorohydrin or neoprene non-reinforced flexible sheet, 55- to 60-mil-thick, recommended by EPDM manufacturer for resistance to hydrocarbons, non-aromatic solvents, grease, and oil.
- D. Bonding Adhesive: Manufacturer's standard.
- E. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- wide minimum, butyl splice tape with release film.
- F. Lap Sealant: Manufacturer's standard, single-component sealant.
- G. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- H. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

- I. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to roofing system manufacturer.
- J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 VAPOR RETARDER

- A. Polyethylene Vapor Retarder: ASTM D 4397, 10 mils thick, minimum, with maximum permeance rating of 0.10 perm.
 - 1. Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM membrane roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated and that produce FM Approvals-approved roof insulation.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. To maintain system warranty, manufacturer's approved insulation must be installed.
- C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.
 - 1. Thickness: As indicated on Drawings.
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
- C. Cold Fluid-Applied Adhesive: Manufacturer's standard cold fluid-applied adhesive formulated to adhere roof insulation to substrate.

- D. Foamable Adhesive: Elastomeric, one- or two-part, foamable adhesive formulated to adhere roof insulation to non-nailable substrate.
 - 1. Product: Subject to compliance with requirements, provide the following:
 - a. Millennium Adhesive Products, Inc.; Weather-Tite One Step Foamable Adhesive.
- E. Cover Board: ASTM C 1289, Type II, Class 2, high density fiberglass coated urethane foam, 1/4- inch thick.
 - 1. Product: Subject to compliance with requirements, provide one of the following:
 - a. Carlisle SynTec Incorporated; SecurShield HD.
 - b. Firestone Building Products; IsoGuard HD.
 - c. Johns Manville; Invinsa Roof Board.

2.7 PITCH POCKETS

- A. Pitch Pockets: Stainless steel, formed to provide not less than two inches clear between the penetrating item face and vertical edge of the pitch pan.
 - 1. Form side walls that project not less than 6 inches above the finished sheet membrane, with 1-1/2" inside hem at the top edge.
 - 2. Flange: Not less than 3-1/2- inches wide.
 - 3. Solder all seams to avoid open joints and to form a water tight seal.
 - 4. Prime the interior and exterior surfaces with metal primer.

2.8 NAILERS, BLOCKING AND PLYWOOD

- A. Comply with requirements for lumber and plywood specified in Division 06 Section "Miscellaneous Rough Carpentry."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of the work indicates acceptance of substrates.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 TEMPORARY CUT-OFF

- A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100 percent watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. Waterstop shall be sealed to the deck or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as specified. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.
- B. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.
- C. If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Contractor's expense.

3.4 VAPOR-RETARDER INSTALLATION

- A. Polyethylene Film: Loosely lay polyethylene-film vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively.
 - 1. Continuously seal side and end laps with tape.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.5 WOOD NAILER AND BLOCKING INSTALLATION

- A. Install continuous wood nailers at perimeter of the entire roof, around roof projections, penetrations, and locations indicated.

1. Do not use nailers less than three feet in length.
2. Build up nailer height to match thickness of substrate or insulation, with smooth transitions.
 - a. Wood blocking and nailers are indicated in nominal lumber sizes. Where required, as indicated or not, provide ripped, continuous shims to create nailer height to match thickness of substrate or insulation.
- B. Anchor nailers to resist a minimum force of 300 lbf in any direction. Provide a 1-1/2" space between lengths of nailers.
 1. Anchor nailers with fasteners spaced at 12 inches on center, staggered 1/3 the nailer width and installed within 6 inches of each end.
 2. Comply with fastening requirements of FM Loss Prevention Data Sheet 1-49.

3.6 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
 1. Where installing composite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
- E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
 1. Slope insulation and membrane at drains to create a 4' x 4' sump.
 2. End top edge of flashing just below the top edge of the sump to prevent any blockage for positive water flow.
- F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

- G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
- H. Adhered Insulation (Existing Non-Nailable Deck):
 - 1. Install first layer of insulation adhered to substrate with foamable adhesive in accordance with manufacturer's instructions, and as follows:
 - a. Provide two-part foamable adhesive for lightweight concrete and Tectum decks.
 - 2. Install subsequent layers of insulation in a solid application of adhesive approved by the Roofing Manufacturer, at the manufacturer's recommended rate.
- I. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together.
 - 1. Adhere cover boards according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Adhere cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.7 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing.
- B. Start installation of membrane roofing in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing.
- E. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.
- F. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

- G. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.
 - 1. Apply a continuous bead of in-seam sealant before closing splice if required by membrane roofing system manufacturer.
- H. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.
- I. Spread sealant or mastic bed over deck drain flange at roof drains and securely seal membrane roofing in place with clamping ring.
- J. Install membrane roofing and auxiliary materials to tie in to existing membrane roofing to maintain weather-tightness of transition.
- K. Adhere protection sheet over membrane roofing at locations indicated.

3.8 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.9 PITCH POCKET INSTALLATION

- A. Install pitch pockets at all pipe and conduit penetrations, including equipment supports.
- B. Attach pitch pockets directly to roofing sheet membrane in accordance with roofing manufacturer's written instructions.
- C. Provide wood blocking at all pitch pockets greater than 6 inches in any direction.
- D. Fill any holes in bottom of pitch pocket with roofing insulation and fill with sand or mortar to within 2 inches of the top of the pan.

- E. Fill to top of pitch pocket with two-component, cold-applied elastomeric flashing cement.

3.10 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect and Construction Manager.
 - 1. Notify Architect or Owner 48 hours in advance of date and time of inspection.
- B. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.11 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.12 WASTE DISPOSAL

- A. Disposal: At completion of roofing work, transport demolished materials and waste off Owner's property.

3.13 PROJECT COMPLETION

- A. Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of the manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and the manufacturer prior to demobilization.

- B. All Warranties referenced in this Section shall have been submitted and have been accepted at time of contract award.

END OF SECTION 07 53 23

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. Section Includes:

- 1. Manufactured Products:
 - a. Roof edge flashings (fascia).
- 2. Formed Products:
 - a. Formed through-wall flashing and counterflashing.
 - b. Formed reglets and counterflashing.
 - c. Formed low-slope roof sheet metal fabrications.
 - d. Formed roof drainage sheet metal fabrications.
 - e. Roof penetration flashing.
- 3. All hoisting and scaffolding necessary for the completion of the work.
- 4. Waste disposal.

- B. Related Sections:

- 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Thermal Movements: Provide sheet metal flashing and trim that allows for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

- C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested according to SPRI ES-1-1998.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.
- B. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:
 - 1. Identification of material, thickness, weight, and finish for each item and location in Project.
 - 2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
 - 3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
 - 4. Details of termination points and assemblies, including fixed points.
 - 5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
 - 6. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
 - 7. Details of special conditions.
 - 8. Details of connections to adjoining work.
 - 9. Detail formed flashing and trim at a scale of not less than 1-1/2 inches per 12 inches.
- C. Fabrication Samples: For copings and roof edge flashings made from 12-inch lengths of full-size components including fasteners, cover joints, accessories, and attachments.
- D. Samples for Initial Selection: For each type of sheet metal flashing, trim, and accessory indicated with factory-applied color finishes involving color selection.
- E. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
 - 2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
 - 3. Accessories and Miscellaneous Materials: Full-size Sample.
- F. Qualification Data: For qualified fabricator.
- G. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.

- H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

- A. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
1. For roof edge flashings that are ANSI/SPRI ES-1-1998 tested, shop shall be listed as able to fabricate required details as tested and approved.
- C. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.
- D. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
1. Build mockup of typical roof eave, approximately 10 feet long, including supporting construction cleats, seams, attachments, underlayment, and accessories.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- E. Preinstallation Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, and roof-mounted equipment.
 2. Review methods and procedures related to sheet metal flashing and trim.
 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 4. Review special roof details, roof drainage, roof penetrations, and condition of other construction that will affect sheet metal flashing.
 5. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.7 COORDINATION

- A. Coordinate installation of manufactured roof specialties with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

1.8 WARRANTY

- A. Roofing-System Warranty: Roof edge flashings are included in warranty provisions in Division 07 Section "Ethylene-Propylene-Diene-Monomer (EPDM) Roofing".
- B. 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 specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 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: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
 - 1. Surface: Smooth, flat.
 - 2. Exposed Coil-Coated Finish:

- a. 2-Coat Fluoropolymer: AAMA 620. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
- C. Zinc-Tin Alloy-Coated Copper Sheet: ASTM B 370, cold-rolled copper sheet, H00 temper, of minimum uncoated weight (thickness) indicated; coated on both sides with a zinc-tin alloy (50 percent zinc, 50 percent tin).
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Revere Copper Products, Inc.; FreedomGray.

2.2 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 of 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.
 2. Fasteners for Zinc-Tin Alloy-Coated Copper Sheet: Series 300 stainless steel.
 3. Fasteners for Aluminum Sheet: Series 300 stainless steel.
- C. Solder:
 1. For Zinc-Tin Alloy-Coated Copper: ASTM B 32, 100 percent tin.
- D. 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 (13 mm) wide and 1/8 inch (3 mm) thick.
- E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

- F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- H. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 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. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. 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.
 - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.
- D. 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.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" for application, but not less than thickness of metal being secured.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- H. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.

- I. Do not use graphite pencils to mark metal surfaces.

2.4 ROOF EDGE FLASHINGS

- A. Roof Edge Fascia: Manufactured, two-piece, roof edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet and a continuous formed- or extruded-aluminum anchor bar with integral drip edge cleat to engage fascia cover. Provide matching mitered and welded corner units.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide **Metal-Era, Inc.; Anchor-Tite Standard Fascia** or comparable product by the following, or equal:
 - a. Hickman, W. P. Company.
 2. Fascia Material: Extruded aluminum, 0.040 inch thick.
 - a. Finish: Two-coat fluoropolymer.
 - b. Color: As selected by Architect from manufacturer's full range.
 3. Fascia Cover Color: As selected by Architect from manufacturer's full range.
 4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
 5. Fascia Accessories: Fascia extenders with continuous hold-down cleats.

2.5 ROOF DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-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 expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.
 1. Gutter Profile: As indicated.
 2. Expansion Joints: Butt type with cover plate.
 3. Accessories: Wire-ball downspout strainer
 4. Fabricate from the following material:
 - a. Aluminum: 0.063 inch thick.
 - b. Color: As selected by Architect from manufacturer's full range.
- B. Downspouts: Rectangular closed face with mitered elbows, manufactured from extruded aluminum. Furnish wall brackets, from same material and finish as downspouts with anchors.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Architectural Products Co.; Extruded Downspouts.
 - b. Eastern Metals Inc.; Extruded Aluminum Downspouts.
 - c. Perimeter Systems, a division of Southern Aluminum Finishing Company; DS-EX.

2. Wall Brackets: Fabricated from 0.125 inch x 1 inch extruded aluminum bar, finished to match downspout. Furnish brackets at 60 inch maximum spacing, two brackets minimum per downspout.
3. Size: As indicated.
4. Fabricate from the following material:
 - a. Aluminum: 0.050 inch thick.
 - b. Color: As selected by Architect from manufacturer's full range to match gutter.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Base Flashing: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- B. Counterflashing: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- C. Flashing Receivers: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- D. Equipment Support Flashing: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- E. Roof-Penetration Flashing: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- F. Roof-Drain Flashing: Fabricate from the following material:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.
- G. Scuppers: Fabricate from the following material:
 1. Match fascia.

2.7 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, at shelf angles, and where indicated. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings. Form with 2-inch- high, end dams where flashing is discontinuous. Fabricate from the following materials:
 1. Zinc-Tin Alloy-Coated Copper: 16 oz./sq. ft.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
 - 1. Verify compliance with requirements for installation tolerances of substrates.
 - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- B. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

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. 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.
 - 7. Do not use graphite pencils to mark metal surfaces.
- 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. Underlayment: Where installing metal flashing directly on cementitious 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 (25 mm) 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.
 - 1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."
- F. 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 inches, except reduce pre-tinning where pre-tinned surface would show in completed Work.
 - 1. Do not solder aluminum sheet.
 - 2. Pre-tinning is not required for zinc-tin alloy-coated copper.
 - 3. 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.

3.3 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

- A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
- B. Hanging Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored straps spaced not more than 36 inches apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Fasten gutter spacers to front and back of gutter.
 - 2. Loosely lock straps to front gutter bead and anchor to roof deck.
 - 3. Anchor and loosely lock back edge of gutter to continuous cleat.
 - 4. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches apart.
 - 5. Install gutter with expansion joints at locations indicated, but not exceeding, 50 feet apart. Install expansion-joint caps.
- C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.

1. Connect downspouts to existing underground drainage system indicated.

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 staggered 3-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. 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. Secure in a waterproof manner by means of snap-in installation and sealant or lead wedges and sealant.
- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

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 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.7 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

- B. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

3.8 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.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.9 WASTE DISPOSAL

- A. Unless otherwise indicated, excess materials are Contractor's property. At completion of roofing work, remove from Project site.

END OF SECTION 07 62 00

SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Metal deck, including steel angles.
- B. Related Sections include the following:
 - 1. Division 07 low-slope roofing Sections for roofing accessories.
 - 2. Division 07 Section "Sheet Metal Flashing and Trim" for shop- and field-fabricated metal flashing and counterflashing, and miscellaneous sheet metal trim and accessories.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Division 01 Section "Unit Prices."
 - 1. Unit prices apply to additions to and deletions from Work as authorized by Change Orders.
 - 2. Notify Architect weekly of extent of work performed that is attributable to unit prices.

1.4 SUBMITTALS

- A. Product Data: For each type of roof accessory indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show fabrication and installation details for roof accessories. Show layouts of roof accessories including plans and elevations. Indicate dimensions, weights, loadings, required clearances, method of field assembly, and components. Include plans, elevations, sections, details, and attachments to other work.
- C. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:
 - 1. Size and location of roof accessories specified in this Section.

2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Pack, handle, and ship roof accessories properly labeled in heavy-duty packaging to prevent damage.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify required openings for each type of roof accessory by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 MISCELLANEOUS MATERIALS

- A. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by roof accessory manufacturer. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners.
- B. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, or PVC; or flat design of foam rubber, sponge neoprene, or cork.
- C. Elastomeric Sealant: ASTM C 920, polyurethane sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2.2 METAL DECK

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Manufacturers: Subject to compliance with requirements, provide **Nucor Corp. Vulcraft Group; Vulcraft 1.5B** or equal.

- C. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), G90 zinc coating.
 2. Deck Profile: Type B, wide rib.
 3. Profile Depth: 1-1/2 inches.
 4. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: 22 gauge.
 5. Span Condition: As indicated.
- D. Steel Angles: ASTM A 36. Provide steel angles where indicated for securing metal deck infill to existing roof deck.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.
1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored and is ready to receive roof accessories.
 2. Verify dimensions of roof openings for roof accessories.
 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 METAL DECK INSTALLATION

- A. Metal Deck Installation:
1. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
 2. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
 3. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
 4. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
 5. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- B. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
1. Weld Diameter: 3/4 inch, nominal.

2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 12 inches apart in the field of roof and 6 inches apart in roof corners and perimeter, based on roof-area definitions in FMG Loss Prevention Data Sheet 1-28.
 3. Weld Washers: Install weld washers at each weld location.
- C. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches, and as follows:
1. Fasten with a minimum of 1-1/2-inch- long welds.

3.3 TOUCH UP

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.4 CLEANING

- A. Clean exposed surfaces according to manufacturer's written instructions.

END OF SECTION 07 72 00

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. Section Includes:
 - 1. Urethane joint sealants.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each type and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.

- B. Qualification Data: For Installer.
- C. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- D. Product Test Reports: Based on comprehensive testing of product formulations performed by a qualified testing agency, indicating that sealants comply with requirements.
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Warranties: Special warranties specified in this Section.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
 - 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and indentation hardness.
- D. Mockups: Build mockups incorporating sealant joints, as follows, to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution:
 - 1. Joints in mockups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants, which are specified by reference to this Section.
 - 2. Each type of sealant and joint substrate indicated.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.7 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period for Urethane: Five years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

- B. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 URETHANE JOINT SEALANTS

- A. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 50, for Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Corporation-Construction Systems; MasterSeal NP 2 (formerly Sonolastic NP2).
 - c. Pecora Corporation; Dynatrol II.
 - d. Tremco; Dymeric 240 FC.

2.3 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - 1. Provide products nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or

harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - 1. Remove excess sealant from surfaces adjacent to joints.
 - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces in all exterior joints.
 - 1. Joint Sealant: Multicomponent nonsag urethane sealant.
 - 2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors, for each material.

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SECTION 31 30 01 – TRENCH EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”
- B. CTDOT Standard Specifications - The State of Connecticut Department of Transportation (a.k.a. CTDOT) current version of "Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004" together with all supplements thereto issued by CTDOT and dated January, 2013.

1.2 SUMMARY

- A. This Section shall consist of the removal and satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, to the dimensions shown on the plans or as ordered, and backfilling, all in accordance with these specifications for the following:
 - 1. Trench excavation, bedding, backfill and compaction for all underground piping such as storm drainage pipes, and drainage structures.
 - 2. Disposal of all items to be removed, unsuitable soils or excess materials.
 - 3. The removal of underground structures and pipes.
 - 4. Sheet piling and dewatering.
 - 5. Furnish and install warning tape.
- B. This Section shall also consist of the furnishing and installing all materials for bedding material, granular backfill, processed stone, etc. in accordance with the current City Standard Specifications.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Backfill
 - 1. All suitable materials removed in making the trench excavation shall be used for backfill.
 - 2. Where unsuitable material is excavated and removed, backfill and/or refill shall be compacted granular fill under pavements and structures and granular fill in all other areas meeting requirements of Sub articles M.02.02 and M.02.01 respectively of the Form 816.

- B. Pipe Bedding
 - 1. Bedding materials for solid storm drainage pipe and non-flexible sanitary sewer pipe shall be sand or sandy soil conforming to Article M.08.01-21 of Form 816. When groundwater is encountered, the Architect may allow 3/4 inch crushed stone, conforming to Article M.01.01 of "Form 816", to be used as bedding instead of sandy soil.
- C. Warning Tape
 - 1. Warning tape shall be an electronic tracer tape constructed of a high density polyethylene material featuring 2 wires to provide a closed signal loop.
 - 2. Warning tape shall be APWA color coded for each utility.
 - 3. Warning tape shall be 4 inches wide for main facilities and 2 inches wide for lateral lines.
- D. Miscellaneous
 - 1. Geotextile Material (separation) shall be used when indicated on the contract drawings. The material used shall be listed on the Connecticut Department of Transportation approved materials list.

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

- A. Comply with the following Articles of "Form 816":
 - 1. Trench Excavation Article 2.05.03
- B. Compact bedding and backfill a minimum of 95% of the maximum dry density achieved by AASHTO T-180, Method D, for the same material.
- C. Blasting will not be permitted as part of this project.
- D. Dewatering
 - 1. The Contractor shall provide all necessary pumps, dams, drains, ditches, flumes, well points and other means of excluding and removing ground water or any water from any source from trenches and other parts of the work and for preventing the slopes from sliding or caving. He shall sufficiently dewater all trenches to completely dry out and solidify the sub-base below the bottom of the trench to whatever depth is necessary below the bottom of the trench to provide a firm, solid, completely dry trench bottom on which to place foundation material, lay pipe or build a structure.
 - 2. The Contractor shall satisfactorily remove all water which interferes with the work. The flow of all sewers, drains, house connections and watercourses encountered shall be maintained and provided for by the Contractor without damage or nuisance to other parties. All connections shall be restored as ordered.

3. Before any pipes are laid, suitable drains shall be provided as needed and maintained in order that the bottom may be free from water and sufficiently dry at all times. No water shall be allowed to flow over or rise up on fresh concrete, and no drainage shall be allowed to enter the pipe until such time and under such conditions as the Architect shall direct.
4. The Contractor shall provide and operate additional pumps or drains at any place where the Architect shall deem them necessary.

E. Other Utilities

1. The Contractor shall be solely responsible for the supporting and protection of all existing gas, water, electric, telephone and sewer mains and services. The support and protection of said existing utilities shall be repaired at the cost of the Contractor whether the repair work is done by the Contractor or utility company. Cost for supporting and protecting shall be included.
2. If any sewer, drain, lateral, utility, connection or similar conduit is encountered and cut off, abandoned or cut through incidental to the construction of the work, and, if the said drain, etc. is not to continue to function or to be used, then the open end or ends of such sewer, etc. shall be securely and tightly closed by an adequate cover or bulkheads as directed by the Architect. The cost of such covers, bulkheads and the setting of them shall have been included in the price or prices bid for various other portions of the work in the proposal and no additional payment will be made therefore.

END OF SECTION 31 30 01

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SECTION 32 12 16 – ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Inspection and acceptance of earthwork operations and base course installed under Division 31, Section “Trench Excavation and Backfill”.
 - 2. Asphalt paving, including patching and overlays.
 - 3. Pavement-markings.
- B. Related Sections include the following:
 - 1. Division 32 Section “Concrete Paving”.

1.3 DEFINITIONS

- A. Form 816: “Standard Specifications for Roads, Bridges and Incidental Construction”, State of Connecticut, Department of Transportation, Form 816, 2004 edition, with 2005 supplement.

1.4 SUBMITTALS

- A. Product Data for each product specified. Include technical data and tested physical and performance properties.
- B. Job-Mix Designs for each job mix proposed for the Work.
- C. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate dedicated handicapped spaces with international graphics symbol.
- D. Samples: 12 by 12 inches minimum, of paving fabric.
- E. Qualification data: For firms and persons specified in the “Quality Assurance” Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owner, and other information specified.
- F. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed asphalt paving for a minimum of three years similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Manufacturer Qualifications: Engage a firm experienced in manufacturing asphalt paving similar to that indicated for this Project and with a record of successful in-service performance.
 - 1. Firm shall be a registered and approved paving mix manufacturer with authorities having jurisdiction or with the DOT of the state in which Project is located.
- C. Regulatory Requirements: Modify pavement details and provide additional thicknesses as required to conform to applicable standards for State and local authorities having jurisdiction for work on public property. Secure all permits that are required.
- D. Walks, parking spaces and loading zones constructed for use by persons with accessibility challenges shall conform to the applicable portions of the Americans With Disability Act Accessibility Guidelines (ADA) and the Connecticut State Building Code.
- E. Asphalt-Paving Publications Requirements: Comply with AI's "The Asphalt Handbook", and ASTM and AASHTO requirements except where more stringent requirements are indicated herein.
- F. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1, Section "Project Coordination" Review methods and procedures related to asphalt paving including, but not limited to the following:
 - 1. Review proposed sources of paving materials, including capabilities and location of manufacturing plant.
 - 2. Review condition of substrate and preparatory work performed by other trades.
 - 3. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - 4. Review and finalize construction schedule for paving and related work. Verify availability for materials, paving Installer's personnel, and equipment required to execute the Work without delays.
 - 5. Review inspection and testing requirements, governing regulations, and proposed installation procedures.
 - 6. Review forecasted weather conditions and procedures for coping with unfavorable conditions.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seal unbroken and bearing manufacturers' labels containing brand name and type of material, date of manufacture, and directions for storage.
- B. Store pavement-marking materials in a clean, dry, protected location and within temperature range required by manufacturer. Protect stored materials from direct sunlight.

PART 2 - PRODUCTS

2.1 ASPHALT MATERIALS

- A. Binder Course: Form 816, Article M.04.03, Class 1.
- B. Surface Course: Form 816, Article M.04.03, Class 2.
- C. Tack Coat: CONN: ASTM D 977, emulsified asphalt or ASTM D 2397, cationic emulsified asphalt, slow setting, factory-diluted in water, of suitable grade and consistency for application.

2.2 AUXILIARY MATERIALS

- A. Paving Geotextiles: Nonwoven polypropylene, specifically designed for paving application, resistant to chemical attack, rot and mildew.
- B. Pavement Markings:
 - 1. Parking lines, stop bars, Handicap Symbols and aisles: Fast Drying White Traffic Paint, per Form 816, Section M.07.20.
 - 2. Crosswalks: retro reflective thermoplastic preformed material, 90 mils thick, consisting of a homogeneous mixture of high quality polymeric thermoplastic binders, pigments, fillers and glass beads. Materials shall conform to AASHTO, M249-79 (86) except for material being preformed. Color shall be white.
 - 3. Driveway center lines (two-way traffic): Fast drying yellow traffic paint, as per Form 816, Section M.07.20.

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if substrate is wet or excessively damp or the following conditions are not met:
 - 1. Prime and Tack Coats: Minimum surface temperature of 60 deg F.
 - 2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
 - 3. Bituminous Concrete Base Course: Minimum surface temperature of 40 deg F and rising at time of placement, or conform to State Highway Specifications.
 - 4. Bituminous Concrete Surface course: Minimum surface temperature of 60 deg F at time of placement, or conform to State Highway Specifications.
- B. Pavement-Markings: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil based materials, 50 deg F for water based materials, and not exceeding 95 deg F.

- C. Grade Control: Establish and maintain the required lines and grades, including crown, inverted crown, and cross-slopes, for each course during paving operations. Conform to tolerances listed in this specification.

3.2 EXAMINATION

- A. Verify that base is dry and in suitable condition to support paving and imposed loads. Ensure proper drainage at all times.
- B. Proof-roll base using heavy, pneumatic-tire rollers to locate areas that are unstable or that require further compaction. Subbase surface to be smooth, free of irregularities, depressions, or unsuitable materials.
- C. Notify Architect in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily corrected.
- D. Frame Adjustments:
 - 1. Verify frames for manholes, catch basins, and other such improvements, within areas to be paved, are at their proper elevation.
 - 2. Adjust frames if required. Provide temporary closures over openings until completion of rolling operations. Remove closures at completion of the work. Set covers to grade, flush with the surface of adjoining pavement surface.

3.3 PATCHING AND REPAIRS

- A. Patching: Saw cut perimeter of patch and excavate existing pavement section to sound base. Re-compact new subgrade. Excavate rectangular patches, parallel and perpendicular to the direction of traffic, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Laminate courses. Feathering of edges and transitions between new and existing pavements is not acceptable.
 - 1. Apply tack coat to faces of excavation and allow to cure before paving.
 - 2. Fill excavation with dense-graded, hot mix asphalt base mix and, while still hot, compact flush with adjacent surface.
 - 3. Partially fill excavation with dense-graded, hot-mix asphalt base mix and compact while still hot. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.
- B. Crack and Joint Filling: Remove existing filler material from cracks or joints to a depth of ¼ inch. Refill with asphalt joint-filling material to restore watertight condition. Remove excess filler that has accumulated near cracks or joints.
- C. Tack Coat: Apply uniformly to existing surfaces of previously constructed asphalt or Portland cement concrete paving and to surfaces abutting or projecting into new, bituminous concrete pavement. Apply at a uniform rate of 0.05 to 0.15 gal./sq. yd. of surface.
 - 1. Allow tack coat to cure undisturbed before paving.

2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.4 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
 1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.5 GEOTEXTILE INSTALLATION

- A. Apply bond coat, consisting of asphalt cement, uniformly to existing surfaces at a rate of 0.20 to 0.30 gal./sq. yd.
- B. Place paving geotextile promptly according to manufacturer's written instruction. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches and transverse joints 6 inches.
 1. Protect paving geotextile from traffic and other damage and place overlay paving the same day.

3.6 HOT-MIX ASPHALT PLACING

- A. Hot-mix Asphalt: Provide dense, hot-laid asphalt plant mixes approved by authorities having jurisdiction; designed according to the procedures in AI's "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the requirements of Form 816, Section M.04.
- B. Machine place hot-mix asphalt mix on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness, when compacted. Conform to Form 816 Section 4.06, including transport of material.
 1. Spread mix at minimum temperature of 250 deg F.
 2. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
 3. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- C. Place paving in consecutive strips not less than 10 feet wide, except where infill edge strips of a lesser width are required.
 1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete asphalt base course for a section before placing asphalt surface course.

- D. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.
- E. Protect installed curb, walls, and other improvements, during paving operations. Repair/replace/reset any item/ curb damaged during paving operation. Joint between bituminous pavement shall be of equal density to other areas of pavement.
- F. If the asphalt surface course is not installed immediately after the binder course is installed and stabilized, the Contractor assumes all responsibility for any damage, from whatever source, which may affect the binder course. All damage to this binder course will be removed and replaced by the Contractor, at no additional cost to the Owner. The Architect shall be the sole judge of the limits and extents of pavement and subgrade to be replaced.

3.7 JOINTS

- A. Construct joints to ensure continuous bond between adjoining paving sections. Construct joints free of depressions with same texture, density and smoothness as other sections of hot-mix asphalt course.
 - 1. Clean contact surfaces and apply tack coat.
 - 2. Offset longitudinal joints in successive courses a minimum of 12 inches.
 - 3. Offset transverse joints in successive courses a minimum of 24 inches.
 - 4. Construct transverse joints by bulkhead method or sawed vertical face method as described in AI's "The Asphalt Handbook".
 - 5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 - 6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.8 COMPACTION

- A. General: Begin compaction as soon as place hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in area inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Repair surfaces by loosening displaced material, filling with hot-mix asphalt, and re-rolling to required elevations.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling, while hot-mix is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
 - 1. Average Density: 96 percent of reference laboratory density according to AASHTO T245 but not less than 94 percent nor greater than 100 percent.
 - 2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

- D. Finish Rolling: finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method. Raveled or untamped edges will not be accepted.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials. Remove paving course over area affected and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened, and in no case sooner than 8 hours.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.9 INSTALLATION TOLERANCES

- A. Thickness: Compact each course to produce a surface smoothness within the following tolerances:
 - 1. Base Course: Plus $\frac{1}{2}$ inch, no minus.
 - 2. Surface Course: $\frac{1}{4}$ inch, no minus.
- B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course: $\frac{1}{4}$ inch.
 - 2. Surface Source: $\frac{1}{8}$ inch
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance form template is $\frac{1}{4}$ inch. In no case will water be allowed to puddle or stand on any finished pavement.
 - 4. Ribbons/waves in longitudinal runways will not be accepted. Replace as directed.

3.10 PAVEMENT MARKINGS

- A. Do not apply pavement markings until layout, colors, and placement and pavement conditions have been approved by the Architect. Conform to Form 816, Section 12.09 and the manufacturer's recommendations and instructions for application. Remove existing lines from remaining pavements as required and approved by Owner. Painting out lines is not acceptable.

- B. Allow paving to cure for a minimum of 14 days or per manufacturer's requirements before starting pavement marking.
- C. Thoroughly sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Avoid fogging and overspray. Note specific dimensions and layout requirements for markings:
 - 1. Parking Spaces – 4" wide.
 - 2. Handicap Seating – 2" wide.
 - 3. Diagonal Aisle Stripping – 4" wide, 3' on center.
- E. Apply preformed thermoplastic crosswalks and stop bars, through the use of heat, in accordance with manufacturer's instructions.
- F. After applying paint, erect suitable barriers to prevent tracking of paint before drying. Retouch and paint all marking which become smeared, discolored, worn, or otherwise marred before final acceptance of the project. Remove any evidence of smearing of paint.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.
 - 1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.
- B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.
- C. Thickness: In-place compacted thickness of hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement and will be secured by testing agency according to ASTM D 979.
 - 1. Reference laboratory density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 1559, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

WESTERN ELEMENTARY SCHOOL
NAUGATUCK, CT

ROOF REPLACEMENT AND RELATED WORK
STATE PROJECT NO. TMP-088-GZCK
KBA #15037.00

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SECTION 32 13 13 – CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 SUMMARY

- A. This Section includes exterior cast-in-place concrete pavement and cast-in-place curbs for the following:
 - 1. Concrete Curbs and Walkways.
 - 2. Joint Treatments.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.
- B. Form 816: “Standard Specifications for Roads, Bridges and Incidental Construction”, State of Connecticut, Department of Transportation, Form 816, 2004 edition, with 2005 supplement.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Batch slips certifying concrete mix, air content, slump, and time of loading.
- D. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:
 - 1. Cementitious materials and aggregate.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.
 - 5. Curing compounds.
 - 6. Applied finish materials.
- E. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
 - 1. Cementitious materials and aggregate.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Fiber reinforcement.
 - 4. Admixtures.
 - 5. Curing compounds.
 - 6. Applied finish materials.

- 7. Bonding agent or adhesive.
- 8. Joint fillers and sealants.

- F. Shop Drawings of all score and expansion joint layouts. All layouts shall include conformance to requirements of colored concrete patterns and project requirements.
- G. Submit Sample and data on plastic slip dowel system.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
 - 1. Manufacturer must be certified according to the National Ready Mix Concrete Association's Plant Certification Program.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant and each aggregate from one source.
- E. ACI Publications: comply with ACI 301, "Specification for Structural Concrete", unless modified by the requirements of the Contract Documents.
- F. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixes.
- G. Comply with requirements of Form 816, Article M.03.
- H. Walks, parking spaces and loading zones constructed for use by persons with accessibility challenges shall conform to the applicable portions of the Americans With Disability Act Accessibility Guidelines (ADA) and the Connecticut State Building Code.
- I. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings".
 - 1. Before submitting design mixes, review concrete pavement mix design and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with concrete pavement to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixes.
 - c. Ready mix concrete producer.
 - d. Concrete subcontractor.

1.6 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities. Provide temporary barricades and warning lights as required.

PART 2 - PRODUCTS

2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 - 1. Use flexible or curved forms for curves of a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. Conform to all State and local requirements for levels of toxicity.

2.2 STEEL REINFORCEMENT

- A. Epoxy-Coated Welded Wire Fabric: ASTM A 884/A 884M, Class A, plain steel. Flat sheets required.
- B. Joint Dowel Bars: Galvanized smooth steel dowels, ASTM A 615/A 615M, Grade 60. Cut dowels true to length with ends square and free of burrs. Provide polypropylene plastic slip dowel sleeves system. System shall be similar to “speed dowel” by Aztec Concrete Accessories, or approved equal.
- C. Tie Bars: ASTM A 615/A, Grade 60, deformed.
- D. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement bars, welded wire fabric, and dowels in place. Manufacture bar supports according to CRSI’s “Manual of Standard Practice” from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
 - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For epoxy-coated reinforcement, use epoxy or other dielectric-polymer coated wire bar supports.
- F. Epoxy Repair Coating: Liquid two-part epoxy repair coating, compatible with epoxy coating on reinforcement.

2.3 CONCRETE MATERIALS

- A. General: Use the same brand and type of cementitious material from the same manufacturer throughout the Project. Batch mixing at site not acceptable.
- B. Compressive Strength: Minimum 4,000 psi at 28 days.
- C. Portland Cement: ASTM C 150, Type I or II.
- D. Aggregate: ASTM C 33, uniformly graded, from a single source, with coarse aggregate as per Form 816, Article M.03.01, Class "F".
 - 1. Do not use fine or coarse aggregates containing substances that cause spalling.
- E. Water: ASTM C 94.

2.4 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.
- B. Air-Entraining Admixture: ASTM C 260, 5-6%.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water Reducing and Retarding Admixture: ASTM C 494, Type D.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: White polyethylene film or white burlap polyethylene sheet, ASTM C171; or resin-based, clear emulsion liquid dissipating cure which will not discolor the concrete, conforming to ASTM C309 Type I of ID, Class A & B and AASHTO M-148.
- C. Water: Potable

2.6 RELATED MATERIALS

- A. Expansion and Isolation Joint Filler Strips: ASTM D 1751, asphalt saturated, cellular fibers, as manufactured by Sealtight, W.R. Meadows, or approved equal.
 - 1. Thickness – one-half inch.

2. Depth – to match full section of concrete pavement/curb.

- B. Joint Sealer: Compatible with filler strips, two component polyurethane elastomeric type complying with FS-TT-S-00227, self leveling designed for pedestrian and vehicular traffic, as manufactured by Sika, Percora, or approved equal. Include primer and backing rods as required.
1. Type: Class II, non-load bearing, for bonding freshly mixed to hardened concrete.
 2. Type: Class I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 3. Type: Class IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 CONCRETE MIXES

- A. Prepare design mixes, proportioned according to ACI 211.1 and ACI 301, for each type and strength of normal weight concrete determined by either laboratory trial mixes or field experience.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the trial batch method.
1. Do not use Owner's field quality-control testing agency as the independent testing agency.
- C. Proportion mixes to provide concrete with the following properties:
1. Compressive Strength (28 Days): 4000 psi.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 3 inches.
 4. Sacks of Cement (minimum): 7 sacks per cubic yard.
- D. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements and with ASTM C 94, and Form 816.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Proof-roll prepared surface to check for unstable areas and verify need for additional compaction. Proceed with pavement only after nonconforming conditions have been corrected and sub grade is ready to receive pavement. Do not install concrete over saturated, muddy or frozen base.

- B. Remove loose material from compacted base surface immediately before placing concrete.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement and curbs to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement. At points where change of grades is more than 2% introduce approved vertical curve. No abrupt changes in grade will be accepted.
- B. Clean forms after each use and coat with form release agent to ensure separation from concrete without damage.
- C. Curb forms to be true to horizontal and vertical alignment. Forms to be true to radiuses specified.

3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating reinforcement and with recommendations in CRSI's "Placing Reinforcing Bars" for placing and supporting reinforcement.
 - 1. Apply epoxy repair coating to uncoated or damaged surfaces of epoxy-coated reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lap splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap to adjacent mats.

3.4 JOINTS

- A. General: Construct construction, expansion, score joints, and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
 - 1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.

- B. Expansion Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated. Approval required prior to pour.
1. Locate expansion joints at intervals of 20 feet maximum, unless otherwise indicated.
 2. Extend joint fillers full width and depth of joint.
 3. Terminate joint filler ½ inch below finished surface if joint sealant is indicated.
 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 6. Protect top edge of joint filler during concrete placement with metal cap after concrete has been place on both side of joint.
 7. Install dowel bars and support assemblies at joints where and as indicated.
- C. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour, unless pavement terminates at isolation joints.
1. Provide preformed galvanized steel or plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 2. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
 3. Provide tie bars at sides of pavement strips where indicated.
 4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 5. Use epoxy bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- D. Score Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to the following radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks (tool wings) on concrete surfaces. Maximum spacing 6'0" in any direction. Areas of concrete sidewalk replacement shall be patterned to match existing pavement. Joints shall be straight or true to radius shown – poor workmanship is just cause for rejection of pavement.
 - a. Radius: 1/4 inch.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to the following radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

- 1. Radius: $\frac{1}{4}$ inch.

- F. Rub all exposed vertical faces of curbs to eliminate blemishes, pockmarks, honeycombing, and all other defects. Plastering is not permitted.

3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcement steel, and items to be embedded or cast in. Notify other trades to permit installation of their work. Protect adjacent work from damage, splatter, and all other concrete operations.
- B. Remove snow, ice, or frost from sub base surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten sub base to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Engineer.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures to consolidate concrete according to recommendations in ACI 309R.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- H. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
 - 1. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer, or use bonding agent if approved by Architect.

- I. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading dry-shake surface treatments.
- J. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- K. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows when hot-weather conditions exist:
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover reinforcement steel with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - 3. Fog-spray forms, reinforcement steel, and sub grade just before placing concrete. Keep sub grade moisture uniform without standing water, soft spots, or dry areas.

3.6 CONCRETE FINISHING

- A. General: Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power driven floats, or by hand floating if area is small or inaccessible to paver units. Finish surfaces to true planes. Cut down high spots, and fill low spots. Refloat surface immediately to uniform granular texture.
 - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture (standard). Provide cleanly finished fine textured broom finish on all colored concrete pavements including varying directions of the brooming.
 - 2. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic (handicap access ramps).

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with Form 816, Section 4.01.03, and ACI 306.1 for cold-weather protection and follow recommendations in ACI 305R for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturers written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof.

3.8 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
 - 1. Elevation: $\frac{1}{4}$ inch.
 - 2. Thickness: Plus $\frac{3}{8}$ inch, minus $\frac{1}{4}$ inch.
 - 3. Surface: Gap below 10-foot long, unleveled straightedge not to exceed $\frac{1}{4}$ inch.
 - 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
 - 5. Vertical Alignment of Tie Bars and Dowels: $\frac{1}{4}$ inch.
 - 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel $\frac{1}{4}$ inch per 12 inches.
 - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel $\frac{1}{4}$ inch per 12 inches.
 - 8. Joint Spacing: 3 inches.
 - 9. Contraction Joint Depth: Plus $\frac{1}{4}$ inch, no minus.
 - 10. Joint Width: Plus $\frac{1}{8}$ inch, no minus.
- B. Typical cross slope of pavement is 2.0% unless otherwise indicated. In no case will water be allowed to stand or puddle on any finished pavement.

3.9 SEALANT INSTALLATION

- A. Install joint sealants in all expansion joints in accordance with the manufacturer's installation instructions. Clean and prime joints. Remove dirt and loose coatings.
- B. Apply sealant in continuous beads, without open joints, voids, or air pockets. Hand tool and finish all joints.
- C. Confine materials to joint areas with masking tape or other precautions. Insure joint sealing is cleanly executed with no override onto adjacent pavement.
- D. Remove excess compound promptly as work progresses and clean adjoining surfaces. Protect until full cured.
- E. In rough surfaces of joints of uneven widths, hold joint sealant well back into joints.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.
- B. Testing Services: Testing shall be performed according to the following requirements:
 - 1. Sampling Fresh Concrete: Representative samples of fresh concrete shall be obtained according to ASTM C172, except modified for slump to comply with ASTM C 94.
 - 2. Slump: ASTM C 143; one test at point of placement for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
 - 3. Air Content: ASTM C 231, pressure method; one test for each compressive-strength test, but not less than one test for each day's pour of each type of concrete. Additional tests will be required when concrete consistency changes.
 - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each set of compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
 - 5. Compression Test Specimens: ASTM C 31/C 31M; one set of four standard cylinders for each compressive-strength test, unless otherwise indicated. Cylinders shall be molded and stored for laboratory-cured test specimens unless field-cured test specimens are required.
 - 6. Compressive-Strength Tests: ASTM C 39; one set for each day's pour of each concrete class exceeding 5 cu. Yd., but less than 25 cu. Yd., plus one set for each additional 50 cu. yd. One specimen shall be tested at 7 days and two specimens at 28 days; one specimen shall be retained in reserve for later testing if required
 - 7. When frequency of testing will provide fewer than five compressive-strength tests for a given class of concrete, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 8. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive compressive-strength testing if adequate evidence of satisfactory strength is provided.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, current operations shall be evaluated and corrective procedures shall be provided for protecting and curing in-place concrete.
 10. Strength level of concrete will be considered satisfactory if average of sets of three consecutive compressive-strength test results equal or exceed specified compressive strength and no individual compressive-strength test result falls below specified compressive strength by more than 500 psi.
- C. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing agency, concrete placement, name of concrete testing agency, concrete type and class, location of concrete batch in pavement, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7- and 28 day tests.
- D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as the sole basis for approval or rejection.
- E. Additional Tests: Testing agency shall make additional tests for the concrete when test results indicate slump, air entrainment, concrete strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

3.11 REPAIRS AND PROTECTION

- A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 32 92 00 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”

1.2 SUMMARY

- A. The work of this Section includes the following:
 - 1. Fine grading and preparing lawn areas.
 - 2. Furnishing and applying soil amendments.
 - 3. Furnishing and applying fertilizers.
 - 4. Replanting unsatisfactory or damaged lawns.

1.3 DEFINITIONS

- A. Form 816: “Standard Specifications for Roads, Bridges and Incidental Construction”, State of Connecticut, Department of Transportation, Form 816, 2004 edition, with 2005 supplement.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for the following:
 - 1. Fertilizers.
 - 2. Limestone.
 - 3. Chemical preservatives and controls – also confirm that each of the materials proposed to be applied are permitted for use by the State of Connecticut.
- C. Certification of grass seed from seed vendor for each grass-seed mixture and sod grown stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging. Submit topsoil test of sod source to determine compatibility of sod material with project topsoil (borrow & stockpiled).

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed lawn development work similar in material, design, and extent to that indicated for this Project and with a record of successful grass establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that grass planting is in progress.

- B. Examine work to receive lawn development and notify the Architect of any defects. Specifically review the topsoil placement (depths, grades, and condition). Commencement of this work implies acceptance by Contractor of preparatory work by others.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Seed, Fertilizer and Lime: Deliver in original sealed, labeled, and undamaged containers, showing weight, analysis, and name of manufacturer.
- B. Protect materials from deterioration during delivery and while stored at site.

1.7 GUARANTEE

- A. Duration of guarantee shall be until the completion of the specified maintenance period and until Owner's final acceptance of all lawn areas.

1.8 CHEMICAL CONFORMANCE

- A. All chemical applications shall conform to the State of Connecticut statutes and Town Integrated Pest Management (IPM) plans.
- B. Contractor shall provide all necessary data and information to the Owner for amending or filing an IPM plan, including, but not limited to proposed chemicals and EPA number, applicator name and license number, and proposed application dates.
- C. All fertilizer, pesticide and herbicide applications must conform to the Town IPM, or in the absence thereof, must conform to the regulations of the State of Connecticut, in addition to any and all conditions listed in Division 1, Section "Project Environmental Permits" of this Specification.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.
 1. Seed Mixture: Provide seed of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this Section.

2.2 LIME

- A. ASTM C 602, class T, agricultural ground limestone containing a minimum 50 percent total oxides (calcium oxide plus magnesium oxide), with a minimum 50 percent passing a 100 mesh sieve, and 98% passing a 20-mesh sieve, for powder form of lime.
 - 1. Provide lime in the form of dolomitic limestone.

2.3 FERTILIZER

- A. Phosphorus: Commercial, soluble; guaranteed analysis of 0-46-0.
- B. Starter Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast release water soluble nitrogen, derived from natural organic sources of urea ammonium phosphate, or similar material.
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency, 14.28.14 guaranteed analysis.
- C. Secondary-Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium with guaranteed analysis of 15.15.15.
- D. Tertiary Fertilizer: guaranteed analysis of 46-0-0.

2.4 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew-and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Peat Mulch: Provide peat moss in natural, shredded, or granulated form, of fine texture, with a pH range of 4 to 6 and a water-absorbing capacity of 1100 to 2000 percent.
- C. Fiber Mulch: Biodegradeable dyed-wood cellulose-fiber mulch, nontoxic, free of plant growth or germination inhibitors, with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- D. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application, nontoxic and free of plant growth or germination inhibitors.

2.5 EROSION CONTROL MATERIALS

- A. Material shall be a lightweight, nonwoven erosion control/revegetation blanket comprised primarily of virgin wood fiber. The blanket shall be manufactured by blending thermal mechanically – defibrated wood fiber with a small percentage of recycled synthetic fibers and forming them into a drapeable blanket. An accelerated photodegradable polypropylene netting shall be laminated to the surfaces of the blanket.
- B. Material shall be similar to “Futerra”, as manufactured by Conwed Fibers of Statesville, North Carolina, or approved equal.

2.6 SALT MARSH HAY

- A. Naturally harvested salt marsh hay, certified weed free.

2.7 CHEMICAL PREVENTATIVE AND CONTROLS

- A. Commercial materials labeled for turf maintenance, State of Connecticut and EPA registered and approved for turf application.

2.8 WATER

- A. Potable: The Contractor is responsible for furnishing all water necessary to complete the establishment and maintenance of lawns until acceptance by Owner. This requirement includes providing all water for irrigated lawn areas, if any, until the irrigation system is activated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lawns and grass for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 COORDINATION AND SCHEDULING

- A. Planting Season: Sow lawn seed and install sod during normal planting seasons for type of lawn work required. Correlate planting with specified maintenance periods to provide required maintenance from date of Substantial Completion.
- B. Weather Limitations: Proceed with planting only when existing and forecast weather conditions are suitable for work.
- C. Construct lawns between April 1 and June 1, and between August 15 and October 1, unless otherwise approved.
- D. Examine areas to receive seeding or sod and notify Architect of any problems prior to commencing work. Specifically review the topsoil placement (depths, grades and conditions). Commencement of this work implies acceptance by Contractor of preparatory work of others.

3.3 PREPARATION

- A. Protect structures, utilities, sidewalks, pavement, and other facilities, trees, shrubs, and plantings from damage caused by lawn and operations.
 - 1. Protect adjacent and adjoining areas from hydroseed overspraying.

- B. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways.

3.4 TOPSOIL PREPARATION - GENERAL

- A. Apply lime, and phosphorus at the rates recommended by the topsoil tests in all areas where topsoil has been installed. Cultivate topsoil to its full depth by scarifying or other disking methods to thoroughly incorporate amendments into the topsoil. Maintain a loose friable seed bed. At no time will rubber tired loaders or graders having greater compaction than a small farm tractor be allowed on topsoil. Keep all heavy equipment and trucks off prepared topsoil. Do not prepare while ground is wet or frozen.
- B. Provide additional topsoil where and as required to properly meet all proposed finish grades.
- C. Remove any weeds, debris, foreign matter and stones having any dimension greater than 3/4 inch. (1/2" at Athletic Fields). Remove from property.
- D. Fine grade to a smooth uniform surface. The entire area shall present an even grade with no depressions where water will stand. Any protective fencing around existing trees shall be removed and disposed of by the Contractor at this time. Topsoil shall be smoothly blended to existing finish grades around erosion control devices and adjacent existing conditions, maintain existing surface drainage patterns. Round-off all top and toe of slopes. Reinstall erosion control devices and protective fencing as required.
- E. Approval of surface by Architect shall be obtained before seeding or sodding operations begin. Where directed, perform bulk density and nuclear compaction readings to monitor degree of soil compaction/seed bed friability.

3.5 LAWN DEVELOPMENT

- A. General: All disturbed areas not developed otherwise shall be developed as lawn as indicated on the Drawings and as specified.

3.6 SEEDING GENERAL LAWN AREAS

- A. Ensure that the soil has been prepared in accordance with Topsoil Paragraph of this Section. All disturbed areas not developed otherwise shall be developed as lawn.
- B. Seeding shall be done when wind does not interfere with uniform distribution of hydroseeding mixture.
- C. Sow seed at following rates:
 - 1. Seeding Rate: 5 lb per 1000 sq. ft.
- D. Hydroseeding of general lawn areas, only, is permitted. Mix specified seed, fertilizer, and maximum 10% of fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.

1. Mix slurry with non-asphaltic tackifier.
2. Apply slurry uniformly to all areas to be seeded in a 2-step process. Apply first slurry application at the minimum rate required to obtain specified seed-sowing rate.
3. Apply second slurry cover coat of fiber mulch at a rate of 1000 pounds per acre.

3.7 EROSION PREVENTATIVES

- A. Install erosion control material on all seeded slopes one foot (1') vertical to three (3) feet horizontal or steeper, or any seeded areas which receive concentrated run-off water, and areas as required by the Architect or Owner. Joints in these materials shall overlap no less than one foot (1') and the material shall be secured as recommended by the manufacturer.

3.8 WATERING LAWN AREAS

- A. Maintain a moist seed and sod bed at all times. Water seedbed daily with 1/4" water/day using three sets, keeping the surface moist. Apply complete coverage to insure proper germination/root growth conditions. Maintain soil moisture at or near field capacity during the period of germination and seeding development.
- B. Protect all lawn areas with barricades, if necessary, to keep all traffic off the area. Repair all damage to lawn areas including topsoil replacement, at no additional cost to Owner.
- C. Adjust watering requirement as required at request of Owner and after a full ground cover has been achieved.

3.9 EXISTING LAWN RENOVATION

- A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 1. Reestablish lawn where settlement or washouts occur or where minor regarding is required.
- B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.
- C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.
- D. Mow, dethatch, core aerate, and rake existing lawn.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required, Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till stripped, bare and compacted areas thoroughly to a soil depth of 8 inches.

- H. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches of existing soil. Provide new planting soil to fill low spots and meet finish grades.
- I. Apply seed and protect with straw mulch as required for new lawns.
- J. Water newly planted areas and keep moist until new lawn is established.

3.10 ACCEPTABLE LAWNS

- A. The Architect shall inspect all work for acceptance of lawns upon written request of the Contractor. The request shall be received at least 10 days before the anticipated date of inspection.
 - 1. Lawn areas will not be accepted in “pieces”, unless specifically agreed to by the Owner.
 - 2. If the lawn is in acceptable condition, the Contractor’s maintenance responsibility will end. If, in the opinion of the Architect, the grass stand is unacceptable, the Contractor’s complete maintenance responsibilities shall continue until an acceptable stand of grass is achieved.
- B. All lawns will be considered eligible for inspection and acceptance provided all requirements, have been met and a healthy, uniform, dense stand of grass is established, free of weeds, bare spots and surface irregularities, with coverage exceeding 90 percent over any 5 square feet selected by the Architect. The Architect will be the sole judge of acceptability. Lawns must be free of weeds, crabgrass, and other undesirable plants, with no disease present. Sodded lawns shall be free of open joints and uneven surfaces. Acceptance will not be made until all damaged areas, including areas outside the property limits, have been restored to original conditions.
- C. In no case will any lawns be accepted prior to Substantial Completion of the overall project.
- D. Replant lawns that do not meet requirements and continue maintenance until lawns are satisfactory. Upon stabilization of lawn areas, remove erosion control devices and protective fencing. Reseed bare areas as required.

3.11 WINTERIZATION

- A. At the end of the growing season, prior to the on-set of Winter, all newly-seeded areas, open earthen areas, or stockpiled earth materials, must be protected from erosion. This protection must form a continuous blanket over these areas. Protection may be:
 - 1. a hydro-seed mulch with a non-asphaltic tackifier, or;
 - 2. straw mulch spread uniformly at a rate of 2 tons per acre to form a continuous blanket 1-1/2 inches in loose depth over the areas with a slope not exceeding 1:6.

3.12 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of roads, walks, or other paved areas. Broom clean all walks and pavements.
- B. Erect barricades and warning signs as required to protect newly planted areas from traffic, vandalism, and unauthorized use. Maintain barricades throughout maintenance period until lawn is established and accepted by the Owner.

3.13 LAWN MATERIAL INSTALLATION

- A. Lawns: Provide materials in not less than the following quantities:
 - 1. Weight of lime per 1000 sq. ft: as per topsoil test report.
 - 2. Weight of phosphorous per 1000 sq. ft.: as per topsoil test report.
 - 3. Weight of commercial fertilizer per 1000 sq. ft.: as per topsoil test report.
 - 4. Cellulose Pulp 'Fiber: 32#/1,000 SF.
 - 5. Grass Seed: 130 lbs/acre.
 - 6. Starter Fertilizer: 310 lbs./acre.
 - 7. Secondary Fertilizer: 300#/acre.
 - 8. Tertiary Fertilizer 50#/acre, providing 22# of nitrogen/acre.

3.14 SEED

- A. Provide fresh, clean, new –crop seed; blue tag certified complying with the tolerance for purity and germination established by the Office of Seed Analysis of North America. Provide seed of the grass species, proportions and maximum percentages of weed seed.
- B. Provide seed in cleaned, sealed, properly labeled containers. Seed that is wet, moldy, or otherwise damaged will not be accepted. Handle seed to manufacturer recommendations for exposure to extremes of heat, cold, or moisture.
- C. Lawn Seed Quality:
 - 1. Weed Seed: maximum of 0.50%, no noxious weed seed.
 - 2. Purity: minimum of 97% pure.
 - 3. Crop: maximum 0.50%
 - 4. Germination Rate: minimum 85%.

D. Mixture for General Lawn Areas:

TYPE OF SEED	PERCENT BY WEIGHT
Perennial Ryegrass	30%
50% Manhattan	
50% Saturn	
Fine leaf or Creeping Fescue	25%
50% Pennlawn	
50% Jamestown II	
Kentucky Bluegrass	45%
50% Glade	
50% Cobart	

END OF SECTION 32 92 00

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SECTION 33 41 00 – STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”
- B. CTDOT Standard Specifications - The State of Connecticut Department of Transportation (a.k.a. CTDOT) current version of "Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004" together with all supplements thereto issued by CTDOT and dated January, 2013.

1.2 DESCRIPTION

- A. This work shall consist of the furnishing and installation of storm drainage pipe of the size, type and at the locations and grades as shown on the plans.
 - 1. Work will also include the connection of proposed storm drainage pipe/laterals to existing/proposed structures and existing storm drain mains.
- B. Related Sections include the following:
 - 1. Division 31 Section “Trench Excavation and Backfill”

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Type of pipe and joints, as ordered by the Architect shall be as follows:
 - 1. PVC pipe sized 6” – 15” shall conform to ASTM D3034 with minimum wall thickness to SDR 35. PVC pipe sized 18”-27” shall conform to ASTM F679, with minimum wall thickness to Type 1, SDR 35. PVC pipe shall have factory-installed integral bell gasketed joints and conform to ASTM F477. Connection to manholes shall be by use of manhole coupling adapters or flexible rubber connections. PVC shall not be grouted directly to concrete.

The materials used in the manufacture of wye and tees shall conform with the requirements for the pipe with which they shall be used and any variation of such requirements shall be subject to the approval of the Architect. Fittings shall be manufactured or recommended by the manufacturer of the approved pipe. Field fabricated or fittings fabricated by other than approved manufacturer shall not be allowed unless approved by the Architect. Joints shall be bell and spigot, push-on type using factory installed integral bell gasketed joints, as recommended by the pipe manufacturer.

- B. Clean-out pipe and bends shall be P.V.C. as specified above.
- C. Bedding material shall be in accordance with Section 31 30 01.
- D. Detectable Warning Tape.
 - 1. Refer to Section 31 30 01 – Trench Excavation and Backfill for Detectable Warning Tape requirements

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

A. GENERAL

- 1. Storm Drainage Sewer pipe shall be of the sizes, types and materials indicated by the Contract Documents with no substitutions. All pipe shall be installed, supported, jointed, tested and backfilled as indicated or required for the particular job, location or condition by the Contract Drawings, Technical Specifications, or other contract documents. All pipe, when in place, shall be precisely true to the line and grade indicated therefore in the Contract Documents or directed by the Architect, sound, well installed, jointed and bedded and free from defects.
- 2. Pipe installation in general shall start at the downstream and progress upstream with bell or groove ends placed upstream.
- 3. Where bends occur and on laterals less than 50 feet, the pipes shall be installed using a grade string stretched taut above the line of pipe between batter boards averaging 25 feet and not exceeding 30 feet apart and by measuring down to the bed for each prior to setting it in place and to the end of each pipe, when it has been placed, by means of a suitable grade pole, and brought to line with a plump bob, all of which tools and equipment shall be furnished and operated by competent Contractor's personnel satisfactory to the Architect.
- 4. At the start of the job, when the Contractor is in a position to start installation pipe, he shall notify the proper representative of the supplying pipe company who will come to the job and thoroughly instruct the Contractor, his men and the Inspector in the proper methods of installation said pipe. The Contractor shall notify his men who are actually doing the installation that this method shall be strictly enforced unless otherwise specified or directed by the Architect.

5. Details of gasket attachment and joint formation will, in general, follow the directions of the manufacturer of the joint material and of the pipe, based upon the design thereof and their experience with such joints elsewhere, all subject to the approval of the Architect.
 6. Pipe shall be installed and the joints made in the manner set forth by the manufacturer. Where applicable, immediately after pipes are put together, the position of rubber ring and the joint shall be inspected to be sure it has been properly put together. Gauges shall be furnished to the Contractor (and the Inspector) by the manufacturer for this purpose, and all joints shall be checked with such gauge. All defective joints shall be corrected immediately.
 7. Wyes or tee connections for laterals or chimneys should be installed as shown on the contract drawings or as directed by the Architect, in accordance with manufacturer's recommendations.
 8. At any time during pipe-installation operations, if the occasion arises, when instruction or advice is required from a pipe representative, he shall be notified and shall come to the site of pipe-installation operations for consultation before any further pipe is installed involving any such problems.
 9. Where the pipe connects with the outside faces of manhole walls or the outside faces of the walls of other structures, there shall be a short section of pipe (usually 2 feet) placed at the connections to the structure. In order to accomplish this, without cutting pipe and destroying water tight integrity by having other than the normal type joints, minor modifications in manhole locations may be made with the approval of the Architect. See manhole specification for pipe tie-in requirements.
 10. When crushed stone bedding is used around the pipe, provisions shall be made to physically prevent the encroachment into the voids between the stones of fine material present in the trench backfill material by placing the bedding and pipe within an envelope of geotextile, as shown on The Flexible Pipe Trench Standard Detail. The fabric shall be fitted around manholes and extend one foot up the manhole, all laps shall be a minimum of eighteen inches.
 11. All new pipe installations shall be cleaned of all construction debris and left in new condition. Cost for this cleaning shall be included in the price of the new sewer pipe.
- B. Refer to Division 31 Section "Trench Excavation and Backfilling" for trenching and backfilling requirements.
- C. DEWATERING
1. General
 - a. The Contractor shall provide all necessary pumps, dams, drains, ditches, flumes, well points and other means for excluding and removing water from trenches, tunnels and other parts of the work, and for preventing the slopes from sliding or carving all.

D. BEDDING MATERIAL FOR STORM DRAINAGE SEWERS

1. This section refers to bedding material under the sewer and its appurtenances. It does not apply to street pavement foundations above the sewer and its appurtenances.
2. Generally, pipe will be installed on Bedding Material and back-filled as shown on the details.
 - a. Pipe Installed on Bedding Material
Foundations of Bedding Material required by the Contract Drawings, other Contract Documents shall be constructed shown. The top of the Bedding Material shall be brought carefully to the proper grade well tamped or compacted as may be directed and shaped for the barrel of the pipe and the pipe installed thereon.

E. PIPE INSTALLATION GENERAL

Pipe installation in general shall start at the downstream end and progress upstream. If, however, due to restrictions imposed by land acquisition and/or other construction activities, construction may be done in sections as approved by the Architect.

1. Pipe Installed on Bedding Material - Where no underdrain, cradle, special bedding or haunching is required, the pipe shall be installed as follows:
 - a. The trench will be excavated to lines and grades shown on the drawings, the typical trench section or as ordered. Loose native material will be removed from the excavation.
 - b. The bedding material will be placed to the depth required by the Contract Drawings or Details for the bedding and compacted, then shaped by hand just before the pipe is set in place to conform as nearly as possible to the shape and grade of the outside of the lower part of the pipe barrel and bells. The grade of this bedding material shall be measured and check at least once for each length of pipe, and in any case, at intervals of not more than 4 feet apart, immediately before pipe is installed upon the base. The base must be such that the barrel of the pipe will be evenly supported for its entire length. Pipe must not be supported by bells or by lumps of soil, sills, shims, etc. Pushing fine material under any pipe installation on its bed in order to bring it up to grade or line will not be permitted. The bed must be formed to the correct grade before the pipe is placed on it.
 - c. After pre-shaping the bedding material, the pipe will then be installed accurately to line and grade, pushed home against the end of the last pipe previously installed, and held in position. Sufficient bedding material as required shall then be placed on each side to hold the pipe in position while the joint is being made. Joints will then be made, as described elsewhere, and inspected. After the pipe has been installed, additional bedding material as required shall be added along the full width of the trench and compacted on the sides of the pipe to the height required by the Contract Drawings or Details for trench excavation.
 - d. Holes under bells must be completely filled, suitable tools must be provided and used to ram the fill tightly under and against the rounded sides of the pipe so that all space on each side of each pipe is entirely filled with well-compacted material.

- e. From the top of the bedding material to a point 1 foot above the top of the pipe, the trench shall be backfilled and compacted in layers not to exceed 6", with granular material approved by the Architect. P.V.C. pipe shall have 6" below and above and 12" on both sides of 3/4" stone bedding material.

F. SPECIAL CONSTRUCTION METHODS

The following paragraphs shall apply as modifications to and detailed instruction for "Construction Methods, Pipe Installation General" for the particular type of pipe used. Only those portions of the "Construction Methods, Pipe Installation General" as are not modified hereafter, elsewhere in the Contract Documents or by the Architect shall apply.

1. Polyvinyl Chloride Pipe (P.V.C.)

a. Handling and Storage

- 1) Pipe and fittings should be protected from direct sunlight. Store pipe in a horizontal position and supported along its entire length. Do not stack pipe over two feet high. As with any kind of pipe, PVC pipe should be handled with reasonable care to prevent damage.

b. Installation

- 1) Cutting Pipe – Use a handsaw, pipe cutter with a thin cutting wheel or power saw with a fine tooth blade. Cut the pipe square and remove burrs inside and outside with a knife or coarse file.

c. Allowable Transverse Pipe Deflection

- 1) Plastic pipe provided under this specification shall be so installed in the ground that the maximum transverse deflection ("out-of-round") shall not exceed 5 percent. Such transverse deflection shall be computed by dividing the amount of transverse deflection (normal diameter less minimum diameter when measured) by the normal diameter of the pipe.
- 2) After an initial inspection by the Architect, if in his opinion the transverse deflection may be excessive, he may order the Contractor to arrange for and take accurate measurements of the pipe at whatever intervals and at whatever locations between such adjacent manholes as the Architect deems advisable.
- 3) The Architect may take or order such measurements to be taken at any time during the maintenance period. These measurements shall be taken in a manner and by such methods as approved by the Architect.

G. BACKFILLING AND COMPACTION

1. Backfilling and compacting of trenches above the bedding material shown on the details shall be performed in accordance with Section 31 30 01 of these specifications.

END OF SECTION 33 41 00

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