

*Project Manual &
Technical Specifications*

**INTERIOR
RENOVATIONS**

to the

TRUMBULL POLICE

DEPARTMENT

**158 EDISON ROAD
TRUMBULL, CONNECTICUT**

RFP 6320

NOVEMBER 8, 2018

J H

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158 EDISON ROAD
TRUMBULL, CONNECTICUT

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AIA[®] Document A701[™] – 1997

Instructions to Bidders

for the following PROJECT:

(Name and location or address)

Interior Renovations to Trumbull Police Department
158 Edison Road
Trumbull, CT 06611

THE OWNER:

(Name, legal status and address)

Town of Trumbull
5866 Main Street
Trumbull, CT 06611

THE ARCHITECT:

(Name, legal status and address)

Jacunski Humes Architects, LLC
15 Massirio Drive, Suite 101
Berlin, CT 06037

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 deposit sum, if any, stated therein. The deposit will be refunded to Bidders who submit a bona fide Bid and return the Bidding Documents in good condition within ten days after receipt of Bids. The cost of replacement of missing or damaged documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.

§ 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 shall reach the Architect at least seven days prior to the date for receipt of Bids.

§ 3.2.3 Interpretations, corrections and changes of the Bidding Documents will be made by Addendum. 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 four 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.

§ 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.

SUPPLEMENTARY INSTRUCTION TO BIDDERS

Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

Certain Articles of the AIA Instructions to Bidders are revised or replaced by requirements of the Supplementary Instructions, listed below. Such revisions are replacements and shall take precedence over the AIA Document A701, "Instructions to Bidders".

The following Articles, revised paragraphs and clauses have the same numerical designations occurring in the AIA Instructions to Bidders, and all additions follow in direct numbered sequence.

ARTICLE 2 - BIDDER'S REPRESENTATIONS

Add the following to Paragraph 2.1.3.:

2.1.3.1 The project site is identified in the Contract Documents and is available for viewing at all times. All Bidders, upon entering the sites, shall be prepared to identify themselves to Owner and state their purpose for being on the site.

Add the following as paragraph 2.1.5:

2.1.5 Bidders shall thoroughly examine and be familiar with the drawings and the specifications. The failure or omission of any Bidder to receive or examine any form, instrument, Addendum or other documents or to visit the sites and acquaint themselves with conditions there existing, shall in no way relieve any Bidder from any obligation with respect to their Bid or the Contract.

ARTICLE 3 - BIDDING DOCUMENTS

Revise Paragraph 3.1, Copies, as follows:

Delete "... within ten days after receipt of Bids."
and Substitute "... within ninety (90) days of receipt of Bids".

Add the following to Paragraph 3.2, Interpretation or Correction of Bidding Documents:

Add Subparagraph:

3.2.1.1 Any conflict existing between or within the Drawings and the Specifications and not brought to the attention of the Owner and clarified

before bids are submitted shall be resolved on the basis of furnishing the greatest quantity and/or highest quality indicated, without cost to the Contract.

Add Subparagraph:

3.2.4 A pre-Bid Conference will be held on **Thursday, December 6, 2108, at 10:00 a.m.** local time at the Trumbull Police Department, 158 Edison Road, Trumbull, CT. All prospective bidders are **ENCOURAGED** to attend.

Add the following to Paragraph 3.3, Substitutions:

Add Subparagraph:

3.3.4.1 After the award of the Contract, no substitutions will be considered for the brands specified except upon written request of the Contractor and written approval by the Owner's concurrence. Substitutions shall be submitted including the entire system and/or assembly attached thereto.

Add Paragraph:

3.3.5 Approval by the Owner of any such substitution shall not relieve the Contractor requesting the substitution of any responsibility for additional costs incurred by other trades for changes made necessary to accommodate the substituted item.

ARTICLE 4 - BIDDING PROCEDURES

Revise Paragraph 4.2, Bid Security, as follows:

Add Subparagraph:

4.2.1.1 Each Bid shall be accompanied by a Bid Security. Bid Security shall be in the form of a Surety Bond as stated herein or a certified or cashier's check made payable to "Town of Trumbull" in the amount of ten percent (10%) of the Base Bid. All sureties must also be listed on the most recent IRS Circular 570.

Delete Paragraph 4.2.2 and substitute the following:

4.2.2 Surety Bid Bonds shall be written on forms similar in content to AIA Document A310 and executed by a company authorized to transact business within the State of Connecticut, 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 his power of attorney.

Add Paragraph 4.4.1.1

- 4.4.1.1 Negligence on the part of the Bidder in preparing the Proposal shall not justify the withdrawal of such Proposal after all bids have been opened.

Add Paragraph 4.4.5:

- 4.4.5 Amendments to or withdrawals of Bid received later than the time and date set for Bid Opening will not be considered.

ARTICLE 5 - CONSIDERATION OF BIDS

Revise Paragraph 5.2, Rejection of Bids, as follows:

Add “, in its sole discretion,” after the word “right”

Revise Sub-Paragraph 5.3.1, as follows:

Add “, in its sole discretion,” after the word “right”

Revise Sub-Paragraph 5.3.2, as follows:

Add “, in its sole discretion,” after the word “right”

Add the following to Paragraph 5.3, Acceptance of Bid (Award):

Add Paragraphs:

- 5.3.3 Prior to the award of a Contract, if so requested, Bidders must present satisfactory evidence that they have been regularly engaged in the business of doing such work as they propose to execute and that they are prepared with the necessary supervisory staff, capital, materials and machinery to conduct and complete the work to be contracted for in accordance with the Drawings and Specifications and to begin it promptly when ordered.

- 5.3.4 A Bid may be rejected if the Bidder cannot show that he has the necessary capital and experience and owns, controls, or can produce the necessary plant to commence the work at the time prescribed and thereafter to prosecute and complete the work at the rate or time specified; and that he is not already obligated for other work which would delay the commencement, prosecution, or completion of this work. A Bid may also be rejected if the Bidder has previously failed to complete a Contract within the time required or had previously performed a similar work in an unsatisfactory manner.

ARTICLE 7 - PERFORMANCE BOND AND PAYMENT BOND

Revise Paragraph 7.1, Bond Requirements, as follows:

Delete Paragraph 7.1.1 and Replace with the following:

7.1.1 The successful Bidder shall furnish at his expense at the time of executing the Contract, and in the form of AIA Document A312, Performance and Labor & Material Payment Bonds in the penal amounts of 100% of the amount of the Contract. These bonds shall be executed by the bidder and a surety company duly authorized to conduct such business in the State of Connecticut and acceptable to the Awarding Authority. The terms of all applicable statutes shall be read into, govern, and be made a part of such bonds as if they were specifically included therein. All sureties must also be listed on the most recent IRS Circular 570.

Add Paragraph 8.2: Failure of Bidder to Execute Contract

Add Paragraph 8.2.1: When notification of award of Contract is made to the successful Bidder and he does not, within two (2) weeks thereafter, execute a Contract in the form herein before mentioned and furnish Satisfactory Bond, his Bid Security shall be paid over to and retained by the Awarding Authority as liquidated damages.

Add the following Article:

9.1 FAIR EMPLOYMENT PRACTICES

9.1.1 The Bidder agrees and warrants that in the submission of his sealed Bid he/she will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religion, age, national origin, sex, or physical disability including, but not limited to blindness, unless it is shown by such Bidder that disability prevents performance of that which must be done to successfully fulfill the terms of his sealed Bid or in any manner which is prohibited by the laws of the United States, State of Connecticut, or the Town of Trumbull.

9.2 MINORITY OWNED BUSINESS ENTERPRISE GOAL

9.2.1 The contractor should fill out the Contract Compliance Monitoring Report form and submit it as part of the bid and provide adequate information to show its good faith efforts to meet compliance.

Add the following Article:

10.0 TAXES

10.1 The Owner is exempt from the payment of taxes imposed by the Federal Government and/or the State of Connecticut. Such taxes

should not be included in the Bid Price. The Owner is also exempt from payment of the Federal transportation tax where applicable and such tax must not be included in Bid Price. No exemption certificate is required for this tax.

Add the following Article:

ARTICLE 11 - BID FORMS

11.1.1 All Bidders shall furnish the following documents with the sealed bid to avoid having their bid rejected for non-compliance. Other documents or certifications may be required to fulfill particular circumstances noted in the project manual and shall be included if required.

11.1.2 All Bidders shall furnish:

1. **ONE (1) original and SEVEN (7) exact copies** of fully executed Proposal, Bid Form, and related documents as follows (format as provided):
 - a. Proposal
 - b. Bid Form
 - c. Form of Bid Security (in an amount equal to ten percent (10%) of the bid amount)
 - d. Statement of Qualifications
 - e. Schedule A – Prior Experience
 - f. Schedule B – Current Experience
 - g. Schedule C – Key Personnel
 - h. References
 - i. Proposed Subcontractors
 - j. Non-Disclosure Agreement

11.1.4 Each bid shall be sealed in an opaque envelope with the following legibly marked on one side of the envelope:

1. Bid Form and required Bidding Documents Enclosed
2. Name of Bidder

11.1.6 If a bid is mailed, it shall be enclosed in an outer envelope with the Bidder's name and business address marked legibly thereon, addressed as follows:

Trumbull Town Hall
Office of the Purchasing Agent
5866 Main Street
Trumbull, CT 06611

Attn:
Interior Renovations to the Trumbull Police Department
158 Edison Road, Trumbull, CT

The Town of Trumbull must receive bid by date and time indicated in the Request for Proposals, or amended through Addendum.

- 11.1.5 Each General Contractor shall take this bid submittal as one (1) complete unit as further described by the contract documents and all bids shall be for the entire scope of work as advertised.
- 11.1.6 Partial bids will not be accepted and will be rejected by the Owner.

END OF SECTION SITB

BID FORM

**INTERIOR RENOVATIONS
to the
TRUMBULL POLICE DEPARTMENT
158 EDISON ROAD
TRUMBULL, CT**

Date _____

To: Mr. Kevin Bova, Purchasing Agent
Town of Trumbull
5866 Main Street
Trumbull, CT 06611

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, Contract Documents and complete Project Manual and Specifications dated November 8, 2018, together with all Addenda issued and received prior to the scheduled closing time for receipt of Bids as prepared by the Architect; Jacunski Humes Architects, LLC, 15 Massirio Drive, Suite 101, Berlin, CT; hereby offers and agrees as follows:

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

**INTERIOR RENOVATIONS
to the
TRUMBULL POLICE DEPARTMENT**

158 Edison Road, Trumbull, CT, to the satisfaction of the Architect and the Owner for the Base Bid Lump Sum of:

(\$ _____)

If awarded this Contract, we will execute an Agreement with the Town of Trumbull, Owner of the property.

ALTERNATES

The undersigned Bidder further proposes and agrees that should the following Alternates be accepted and included in the Contract, the amount of the Lump Sum 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 specifications and shall be in place prices.

Alternate No. 1: Provide all labor, equipment, materials, and whatever else necessary to furnish and install new detention cell "comby" penal fixtures (TOTAL OF 8) and associated plumbing and isolation ball valves at each detention cell as indicated on the drawings and specified herein.. **Add** to the Base Bid the lump sum of:

_____ Dollars (\$) _____)

Alternate No. 2: Provide all labor, equipment, materials, and whatever else necessary to furnish renovate existing Evidence Storage Room into new Physical Training Room 107 as indicated on the drawings and specified herein. **Add** to the Base Bid the lump sum of:

_____ Dollars (\$) _____)

CONTRACT TIME

If awarded the Contract, the undersigned agrees that the work will commence upon formalization of a Contract with the Owner, and shall be Substantially Complete according to AIA Document A201 from Owner's Notice to Proceed as follows:

- Phase I: One-hundred and fifty (150) calendar days
- Phase II: Thirty (30) calendar days

ADDENDUM

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 this project. The Bid includes Addenda listed below and they are hereby acknowledged:

Addendum # _____ Dated _____

Addendum # _____ Dated _____

BID SECURITY

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

Bid Bond () Certified Check ()

in the amount of: _____ (\$ _____)

COMPANY NAME: _____

ADDRESS: _____

BY: _____

(authorized signature, officer of bidder's company)

_____ (above name typewritten)

TITLE: _____

BID DEPOSIT

Attach a completed Bid Bond, or certified check, in the amount of 10% of submitted bid amount. Failure to do so shall result in rejection of bid.

END OF BID FORM

AIA[®] Document A201[™] – 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Interior Renovations to Trumbull Police Department
158 Edison Road
Trumbull, CT 06611

THE OWNER:

(Name, legal status and address)

Town of Trumbull
5866 Main Street
Trumbull, CT 06611

THE ARCHITECT:

(Name, legal status and address)

Jacunski Humes Architects, LLC
15 Massirio Drive, Suite 101
Berlin, CT 06037

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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. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 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 or (4) between any persons or entities other than the Owner and the Contractor. 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 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.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 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.

§ 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.

§ 1.3 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 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the

portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 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 surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but 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. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 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 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 commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, 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. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

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 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 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 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 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 under the Contract, unless the Contract Documents give other specific instructions concerning these matters. 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. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 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 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.

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§ 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.

§ 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 unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 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.

§ 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.

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

§ 3.7.3 If the Contractor performs Work knowing it 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.

§ 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 and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 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 Article 15.

§ 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 superintendent 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.

§ 3.9.2 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. The Architect may reply within 14 days 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. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's 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 reasonable time to review submittals. 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 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 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.

§ 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, or will do so 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 Owner and the Architect will specify all performance and design criteria that such services must satisfy. 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, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. 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.

§ 3.13 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.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, 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, 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 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 waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 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, arising out of or resulting from performance of the Work, 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), but only to the extent 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

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party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that 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 successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the 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.

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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. 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, unless otherwise specifically stated by the Architect, 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 and forward to the Owner, for the Owner's review and records, 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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 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 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, 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 may reply within 14 days 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 within the 14-day period 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 the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 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.

§ 6.1.2 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 or 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.

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§ 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.

§ 7.3 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;
- .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 a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 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.

§ 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.

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§ 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 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

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

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 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.

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§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, 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.

§ 8.3 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.

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

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

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.

§ 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.

§ 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, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 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.

§ 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 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

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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.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, 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. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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.

§ 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

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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 shall make payment in the manner and within the time provided 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.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 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.

§ 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.

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§ 9.8.3 Upon receipt of the Contractor's list, the Architect 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 substantially complete, the Architect will prepare a Certificate of Substantial Completion that 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. 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 will promptly make such inspection and, when the Architect 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 and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 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

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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.

§ 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 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.

§ 10.3 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.

§ 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. 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, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. 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. 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

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insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

§ 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 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 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 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 Owner 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, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 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 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 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 Owner's property insurance shall be adjusted by the Owner as fiduciary 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 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to 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.

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§ 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, 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. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. 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.

§ 12.2.2.2 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 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

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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. 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 except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 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. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 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 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 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, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

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 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.

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§ 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.

§ 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

- .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 costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

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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.

§ 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. 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

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein 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 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .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 mutual waiver is applicable, without limitation, to all consequential damages due to either party'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 10.3, 10.4, 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. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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§ 15.2.2 The Initial Decision Maker will review Claims and within ten 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 request the Owner to authorize retention of such persons at the Owner'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 mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings 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 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 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 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

SUPPLEMENTARY GENERAL CONDITIONS

REVISED, November 8, 2018

1.1 **GENERAL CONDITIONS**

- A. AIA Document A201, "General Conditions of the Contract for Construction," 2007, The American Institute of Architects, Articles 1 through 15 are bound herein and are hereby made a part of the Specifications and shall apply to Contractors and all Subcontractors.

1.2 **SUPPLEMENTARY GENERAL CONDITIONS**

- A. Certain articles of the AIA General Conditions are revised by, or are replaced by requirements of the following Supplementary Conditions. Such revisions for replacements shall take precedence over the AIA General Conditions.
- B. Where any Article of the AIA General Conditions is supplemented hereby, the AIA provisions of such Article shall remain in effect. All the supplementary provisions shall be considered as added thereto. Where any such article is amended, voided, or superseded thereby, the provisions of such Article not so specifically amended, voided, or superseded shall remain in effect.

AMENDMENT OF ARTICLE 3 - CONTRACTOR

Add the following to Paragraph 3.2, Review of Contract Documents and Field Conditions:

- 3.2.5 After reporting to the Architect any error, inconsistency, or omission it may discover in the Contract Documents, the Contractor shall not proceed with any work so affected without the Architect's written modification to the Drawings and/or Specifications.
- 3.2.6 In the event of conflict between portions of the Contract Documents, Contractor shall ask for written decision from the Architect as to which method or material will be required.

Add the following to Paragraph 3.4, Labor and Materials:

- 3.4.4 The Contractor is encouraged to use local labor where feasible, but not when it is at the expense of poor workmanship and/or higher cost.

Add the following to Paragraph 3.6, Taxes:

- 3.6.1 Under the terms of Regulation 16, referring to Contractors and Subcontractors, issued by the State Tax Commission in administration of the State Sales and Use Tax, to which Bidder is referred, the Contractor may purchase materials or

supplies to be consumed in the performance of the Contract without payment of tax and shall not include in his Bid nor charge any use or sales tax thereon.

Revise Paragraph 3.7.1 as follows:

Substitute the words "and pay for the" in the first and second lines, with "a", the Owner is waiving the permit fee for this project.

Add the following to Paragraph 3.7, Permits, Fees and Notices:

3.7.6 The requirements of Subparagraphs do not waive the Contractor's responsibility of complying with the requirements of the Contract Documents when such regulations and requirements exceed those of any laws, ordinances, rules, regulations, and orders of any public authority bearing on the work.

Add the following to Paragraph 3.15, Cleaning Up:

3.15.3 No burning of rubbish at the job site will be permitted. Provision for removal of rubbish will be made by the Contractor at no additional cost to the Owner.

Revise Paragraph 3.18, Indemnification, as follows:

Change to read:

3.18.1 The Contractor shall indemnify and save harmless the said Owner, and its respective officers, agents and servants, and the Architect and its agents and employees, named as co-defendant in any claim or suit and their respective officers, agents and servants, on amount of any and all claims, damages, losses, litigation, expense counsel fees and compensation arising out of injuries (including death) sustained by, or alleged to have been sustained by the servants, employees or agents of the Owner and their respective officers, agents and servants, or of the Contractor or of and Subcontractors or material men, and from injuries (including death) sustained by, or alleged to have been sustained by the public, any or all persons on or near the work, or by any other person, or damage to property, real or personal (including property of the Owner, and their respective officers, agents and servants) caused in whole or in part by the acts or omissions of the Contractor or any Subcontractor or material men or anyone directly or indirectly employed by them while engaged in the performance of any work for and/or in the Owner and its respective contract period specified in the Contract Permit or agreement and the Contractor agrees he will maintain insurance as required hereon.

ARTICLE 7 - CHANGES IN THE WORK

Add the following to Paragraph 7.2, Change Orders:

7.2.2 If the cost or credit to the Owner results from a change in the work, the value of such cost or credit shall be determined as follows:

- .1 The cost of labor performed and material used by the Contractor with their own forces.
- .2 The cost of Workmen's Compensation, Federal Social Security, and Connecticut Unemployment Compensation in established rates, actual additional cost of payment and performance bonds.
- .3 Actual cost of rental rates for equipment employed and used directly on the work.
- .4 Fifteen percent (15%) of .1, .2, and .3 above-mentioned for overhead, superintendence and profit; however, if the work to be performed results in a credit to the Owner, no percentage for overhead and profit will apply.
- .5 On work to be performed by a Subcontractor, the Contractor's allowance is to be ten percent (10%) applied to a total cost of Subcontractor's work, including Contractor's allowance as per Paragraph 7.
- .6 On any changes involving the Contractor, Subcontractor or any contractor of theirs, their total cost and/or omissions shall be combined as one before the application of the percentage allowed for the Contractor's overhead and profit in accordance with Paragraph .5 above.
- .7 On work to be performed by a Subcontractor, the Subcontractor's allowance is to be fifteen percent (15%) for his overhead and profit applied to Paragraphs .1, .2, and .3 above.
- .8 The Contractor, when performing work under .3 shall, when requested, promptly furnish in a form satisfactory to the Owner, itemized statements of the cost of the work so ordered, including but not limited to, certified payrolls and copies of accounts, bills and vouchers to substantiate the above estimates.

ARTICLE 9 - PAYMENTS AND COMPLETION

Revise Paragraph 9.3, Applications for Payment, as follows:

Change 9.3.1 to read:

- 9.3.1 In order to expedient monthly payments during the course of the project, the Contractor shall review with the Architect a preliminary draft of the aforementioned application for payment to assure agreement with the Contractor before final copies of the application are typed and formally submitted. The Architect shall then review the Contractor's formal application for payment and certify in writing in accordance with Section 9.4, the total value of work done, including an allowance for the value of material delivered and suitably stored at the site at the time of such estimate. The Owner shall retain five percent (5%) of such estimated value, said retainage to be held by the Owner as part security for the fulfillment of this Contract by the Contractor, and shall monthly pay the

Contractor, while carrying in the work, the balance not retained as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained under the provisions of this Contract. Final payment, including the retainage, shall be due within thirty (30) days after completion of the Contract fully performed as determined by the Architect. The Owner shall put forth its best effort to make payment within thirty (30) days after delivery of the item or receipt of a properly completed invoice, whichever is later. Payment period shall be net thirty (30) days unless otherwise specified.

Payment terms allowing less than twenty (20) days cannot be considered in determining the lowest Bidder.

No voucher, claim or charge against the Owner shall be paid without the approval of the Owner for correctness and legality. Appropriate checks shall be drawn by the Owner for approved claims or charges and they shall be valid without counter signature unless the Owner otherwise prescribed.

Add the following to Paragraph 9.3, Applications for Payment:

9.3.4 Applications for payments shall be submitted in four copies.

Add the following to Paragraph 9.6, Progress Payments:

9.6.8 No interest is to be allowed or paid by the Owner upon any monies retained under the provisions of this Contract.

Add the following to Paragraph 9.10, Final Completion and Final Payment:

9.10.6 It is also agreed that no partial payments on account by the Owner nor the presence of the Architect, or Inspectors or their supervisors or inspection of work or materials, nor the use of parts of the proposed structure shall constitute an acceptance of any part of the work prior to substantial completion as defined in Paragraph 9.8.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

Add the following to Paragraph 10.2, Safety of Persons and Property:

10.2.9 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.

10.2.10 The Contractor shall furnish 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.

10.2.11 The Contractor shall take immediate action to correct any hazardous conditions reported.

10.2.13 The Contractor shall comply with the requirements of the Occupational Safety Act of 1969, including all standards and regulations which have been promulgated by the governmental authorities which have administered such acts; and said requirements, standards and regulations are incorporated herein by reference.

The Contractor shall be directly responsible for compliance therewith on the part of its agents, employees, material men and all citations, assessments, fines or penalties which may be incurred by reason of its agents, employees, material men and Subcontractors, to so comply.

The Contractor shall indemnify the Owner and the Architect and save them harmless from any and all losses, cost and expenses, including fines and reasonable attorney's fees incurred by 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 have become effective in the future, by the Contractor, its Subcontractors or material suppliers.

AMENDMENT TO ARTICLE 11 - INSURANCE AND BONDS

AMEND ARTICLE 11 IN ACCORDANCE WITH THE FOLLOWING PROVISIONS:

Amend Paragraph 11.1. Contractor's Liability Insurance, as follows:

Delete "shall purchase from" and substitute "shall demonstrate and proved evidence of insurance in an industry-accepted certificate of insurance"

Delete the semi-colon at the end of Clause 11.1.1.1 and add:

, including private entities performing work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified to mandatory coverage for the duration of the Project.

Delete the semi-colon at the end of Clause 11.1.1.2 and add:

or persons or entities excluded by statute from the requirements of Clause 11.1.1.1 but required by the contract documents to provide the insurance required by that clause;

Add the following Clause 11.1.1.10 to Subparagraph 11.1.1:

11.1.1.10 General Liability must be provided on an occurrence basis.

Add the following Clause 11.1.2.1 to Subparagraph 11.1.2:

11.1.2.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:

1. Refer to the **Town of Trumbull Request for Proposals, Item 11** for required minimum insurance coverages and requirements.

Modify item 11.1.3:

Delete first sentence and replace with:

The General Contractor shall not commence work under this contract until he/she has obtained all the insurance required by the Owner, nor shall the General Contractor allow any subcontractor to commence work on his/her subcontract until the insurance required of the subcontractor has been so obtained and approved, and certificates attesting to the same have been provided to the Owner.

Add the following to subparagraph 11.1.3:

For purposes of insurance's, all notices shall be addressed to "**Trumbull Town Hall, Office of the Purchasing Agent, 5866 Main Street, Trumbull, CT 06611**".

Certificate of Insurance should be on the current Acord 25 (2010/05) form.

Add Item 11.1.4:

The Contractor shall furnish to the Owner copies of any endorsements subsequently issued amending coverage or limits.

2. **All policies, except Worker's Compensation, shall name the Town of Trumbull, and Jacunski Humes Architects, LLC as additional insured** on a primary and non-contributory basis and shall, in addition, indemnify and hold harmless the **Town of Trumbull, and Jacunski Humes Architects, LLC** and Agents and employees of any of them as required by paragraph 3.18 of the General Conditions. All policies shall also include a Waiver of Subrogation in favor of the Town.

Amend Paragraph 11.3. Property Insurance, as follows:

Add the following sentence to Clause 11.3.1.1:

The form of policy for this coverage shall be Completed Value.

Delete Clause 11.3.1.3 and substitute the following:

- 11.3.1.3 If the Owner obtains the property insurance and it includes deductibles, the Owner shall pay costs not covered because of such deductibles. The Owner is not responsible for the Contractor's deductibles.

Delete Clause 11.3.1.4 and substitute the following:

- 11.3.1.4 The General Contractor shall provide insurance coverage for portions of the work stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the work in transit.

Delete Clause 11.3.3: LOSS OF USE INSURANCE and substitute the following:

- 11.3.3 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, however caused.

Delete Subparagraphs 11.3.4, 11.3.5, and 11.3.6 in their entirety

Amend Paragraph 11.5. Performance Bond and Payment Bond, as follows:

Delete Subparagraph 11.5.1 and substitute the following:

- 11.5.1 The General Contractor shall furnish bonds covering faithful performance of the contract and payment of obligations arising thereunder. Bonds may be obtained through the General Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100% percent of the Contract Sum.
- 11.5.1.1 The General Contractor shall deliver the required bonds to the Owner upon the date the Agreement is entered into.
- 11.5.1.2 The General Contractor shall require the attorney-in-fact who executed the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney.
- 11.5.1.3 The General Contractor shall comply with the latest IRS Circular 570.

END OF SUPPLEMENTARY GENERAL CONDITIONS



POLICE DEPARTMENT
Town of Trumbull
158 Edison Road
Trumbull, CT 06611
(203) 261-3665 Fax (203) 452-5162



WAIVER OF CONFIDENTIALITY AUTHORIZATION FOR RELEASE OF INFORMATION

I hereby waive the privilege of confidentiality to which I otherwise am entitled and authorize the release and full disclosure of all records concerning me, including, but not limited to:

Arrests; traffic; other criminal and civil records;
All other data considered pertinent by the investigation officer.

This information is being collected as part of a background investigation to determine my suitability to work with/for the Trumbull Police Department. Therefore, the Trumbull Police Department is hereby authorized to review my personal records and history for that purpose.

APPLICANT: _____ DATE OF BIRTH _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

DRIVER LICENSE #: _____ STATE OF LICENSE: _____

APPLICANT'S COMPANY NAME: _____

SIGNATURE: _____ DATE: _____

WITNESS: _____ DATE: _____

Project: Interior Renovations To The Trumbull Police Department

**Minimum Rates and Classifications
for Building Construction**

ID# : B 25404

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

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

Project Number:

Project Town: Trumbull

State#:

FAP#:

Project: Interior Renovations To The Trumbull Police Department

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	38.25	27.96
<hr/>		
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**		
<hr/>		
1c) Asbestos Worker/Heat and Frost Insulator	40.21	29.30

As of: Friday, November 09, 2018

Project: Interior Renovations To The Trumbull Police Department

2) Boilermaker	38.34	26.01
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3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	33.48	32.06 + a
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3b) Tile Setter	34.90	25.87
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3c) Terrazzo Mechanics and Marble Setters	31.69	22.35
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3d) Tile, Marble & Terrazzo Finishers	26.70	21.75
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3e) Plasterer	33.48	32.06
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As of: Friday, November 09, 2018

Project: Interior Renovations To The Trumbull Police Department

-----LABORERS-----

4) Group 1: Laborers (common or general), acetylene burners, carpenter tenders, concrete specialists, wrecking laborers, fire watchers.	30.05	20.10
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4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofers/mixer/nozzleman (Person running mixer and spraying fireproof only).	30.30	20.10
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4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	30.55	20.10
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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.	30.55	20.10
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4d) Group 5: Air track operator, sand blaster and hydraulic drills.	30.55	20.10
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Project: Interior Renovations To The Trumbull Police Department

4e) Group 6: Blasters, nuclear and toxic waste removal. 31.80 20.10

4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped). 31.05 20.10

4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew. 28.38 20.10

4h) Group 9: Top men on open air caisson, cylindrical work and boring crew. 27.86 20.10

4i) Group 10: Traffic Control Signalman 16.00 20.10

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. 32.60 25.34

As of: Friday, November 09, 2018

Project: Interior Renovations To The Trumbull Police Department

5a) Millwrights 33.14 25.74

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) 38.82 26.25+3% of gross wage

7a) Elevator Mechanic (Trade License required: R-1,2,5,6) 51.71 32.645+a+b

-----LINE CONSTRUCTION-----

Groundman 26.50 6.5% + 9.00

Linemen/Cable Splicer 48.19 6.5% + 22.00

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8) Glazier (Trade License required: FG-1,2) 37.18 21.05 + a

9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection 35.47 35.14 + a

----OPERATORS----

Group 1: Crane handling or erecting structural steel or stone, hoisting engineer 2 drums or over, front end loader (7 cubic yards or over), work boat 26 ft. and over and Tunnel Boring Machines. (Trade License Required) 39.55 24.05 + a

Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required) 39.23 24.05 + a

Group 3: Excavator; Backhoe/Excavator under 2 cubic yards; Cranes (under 100 ton rated capacity), Grader/Blade; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade. (slopes, shaping, laser or GPS, etc.). (Trade License Required) 38.49 24.05 + a

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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper).	38.10	24.05 + 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)	37.51	24.05 + a
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Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller; Pile Testing Machine.	37.51	24.05 + a
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Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	37.20	24.05 + 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).	36.86	24.05 + 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.	36.46	24.05 + a
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Group 9: Front end loader (under 3 cubic yards), skid steer loader regardless of attachments, (Bobcat or Similar): forklift, power chipper; landscape equipment (including Hydroseeder).	36.03	24.05 + a
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Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	33.99	24.05 + a
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Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	33.99	24.05 + a
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Group 12: Wellpoint operator.	33.93	24.05 + a
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Group 13: Compressor battery operator.	33.35	24.05 + a
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Group 14: Elevator operator; tow motor operator (solid tire no rough terrain).	32.21	24.05 + a
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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	31.80	24.05 + a
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Group 16: Maintenance Engineer/Oiler.	31.15	24.05 + a
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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.05 + a
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Group 18: Power safety boat; vacuum truck; zim mixer; sweeper; (Minimum for any job requiring a CDL license).	33.04	24.05 + a
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-----PAINTERS (Including Drywall Finishing)-----

10a) Brush and Roller	33.62	21.05
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Project: Interior Renovations To The Trumbull Police Department

10b) Taping Only/Drywall Finishing	34.37	21.05
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10c) Paperhanger and Red Label	34.12	21.05
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10e) Blast and Spray	36.62	21.05
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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)	42.62	31.21
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12) Well Digger, Pile Testing Machine	37.26	24.05 + a
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Roofer: Cole Tar Pitch	41.50	17.00 + a
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Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	40.00	17.00 + 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)	43.70	42.40
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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)	42.62	31.21
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-----TRUCK DRIVERS-----

17a) 2 Axle	29.13	23.33 + a
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17b) 3 Axle, 2 Axle Ready Mix	29.23	23.33 + a
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Project: Interior Renovations To The Trumbull Police Department

17c) 3 Axle Ready Mix	29.28	23.33 + a
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17d) 4 Axle, Heavy Duty Trailer up to 40 tons	29.33	23.33 + a
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17e) 4 Axle Ready Mix	29.38	23.33 + a
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17f) Heavy Duty Trailer (40 Tons and Over)	29.58	23.33 + a
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17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	29.38	23.33 + a
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18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	43.92	15.84 + a
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As of: Friday, November 09, 2018

Project: Interior Renovations To The Trumbull Police Department

19) Theatrical Stage Journeyman	25.76	7.34
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Project: Interior Renovations To The Trumbull Police Department

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 \$4.00 premium in addition to the hourly wage rate and benefit contributions:

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

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

3) Cranes (under 100 ton rated capacity)

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

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

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

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

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

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

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time 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: Friday, November 09, 2018

Project: Interior Renovations To The Trumbull Police Department

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: Friday, November 09, 2018

LEAD REMEDIATION PLAN
TRUMBULL POLICE DEPARTMENT
LOWER LEVEL FIRING RANGE AREA
158 EDISON ROAD, TRUMBULL, CT
OCTOBER 27, 2018

Prepared by

Daniel Sullivan

Accredited Lead Planner Designer,
State of Connecticut, USEPA

Certificate # L-700-358 Chem Scope Training Division

Licensed Lead Consultant, State of Connecticut DPH,
Lead Planner Designer License # 002124, Validation # 03-663314

Chem Scope, Inc.
15 Moulthrop St
North Haven CT 06473
(203) 865-5605

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Appendix C		Lead XRF Pre-renovation Screening (CS#194-24, dated 10/24/2017)
Appendix D		Lead Planner/Designer Qualifications

PART 1 - BACKGROUND INFORMATION**1.1 REASON FOR THE WORK:**

- A. The lead remediation work at this property is being done to accommodate the clean-up of the existing firing range.

1.2 BUILDING DESCRIPTION:

- A. The subject approximately 28,200 sq ft, two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof. No children under the age of six currently reside at this property.

PART 2 - SCOPE OF WORK**2.1 DESCRIPTION OF WORK**

- A. Lead work areas are listed in Schedule 1.
- B. Examine all conditions, as they exist at the work site prior to submitting a bid for the work of this Section. Where amounts or quantities are given these amounts or quantities have been estimated. Contractor shall have no claim as to added work as the result of accepting said estimates.
- C. Furnish all labor, materials, and services for the removal, clean up, and disposal of all specified lead based paint hazards located at the subject site. The lead remediation work to be performed will be as needed to support the repair/restoration activities. All work shall be coordinated by the Contractor. If the drawings or specifications should provide a contradiction, the most stringent information or requirement shall apply, as determined by the Owner.

2.1 DESCRIPTION OF WORK:

- D. Contractor must have at a minimum OSHA Lead Awareness Training.
- E. The Owner shall retain an Industrial Hygiene firm, with a State of Connecticut Certified Lead inspector or lead inspector risk assessor (IH) that shall be designated as the authorized representative of the Owner for purposes of monitoring the lead removal work. The level of monitoring shall be at the discretion of the Owner. The Contractor will regard the IH's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, pre-removal work inspections and final completion of the removal work. Final visual inspection will be conducted by a CT DPH Certified Lead inspector or lead inspector risk assessor for all lead remediation work completed.
- F. Any deviation from these specifications requires the written approval and authorization from the Owner.
- G. Contractor is responsible for proper disposal of all lead wastes.
- H. Refer to drawings appended where work locations are shown schematically.
- I. In the event of disagreement between drawings and the specification, the specification shall take precedence.
- J. The Work of this Project Design is to be done in accordance with applicable regulations and these specifications. Where this design and regulations disagree, the strictest requirements shall be observed.
- K. The scope of work involves removal of lead dust down to a level of 40 micrograms/sq. ft.

2.2 DETAILED SCOPE OF WORK:

- A. The Contractor shall refer to the Lead Dust Informational Wipe Sampling Report (CS#196-646, dated 9/27/2018) in Appendix B of this Document and Lead XRF Pre-renovation Screening (CS#194-24, dated 10/24/2017) in Appendix C of this Document.
- B. Where removal or demolition is specified, the work also includes proper cleaning of the building areas and proper disposal.
- C. Remove all Lead Based Paint Hazards as delineated in Schedule 1. The quantities (if given) of Lead in Schedule 1 are approximate.
- D. Complete all work in compliance with Part 3 of this specification.
- E. Instructions in Part 3 cover the highlights of the requirements. The regulations cited provide additional details which the contractor is expected to follow.

2.3 SCHEDULE 1:

Path of Egress for Removal of Stored Items: Floors surfaces along the path of egress from the Firing Range to the Dumpster shall be cleaned using HEPA vacuuming and then covered with polyethylene sheeting. This work shall take place first, prior to the lead remediation work in order to avoid any tracking of dust.

Firing Range, FR Office and FR Hall:

1. HVAC is to be locked-out/tagged-out and the Firing Range HVAC to be demolished is to be isolated.
2. The work area is to be isolated from the non-work area by using critical barriers, negative air, and decontamination unit. Critical barriers will be established at openings to the work area (including windows, doors, air vents and the like). The decontamination unit shall be located in the Basement Hallway at the Entrance to the FR Hall.
3. Remove and properly dispose of all ceiling tile, wall tile and carpeting materials as lead hazardous waste.
4. All porous items in the work area will be disposed of as lead hazardous waste. These items will be photographed, itemized and disposed of. Labels shall be affixed to waste containers. Labels shall be printed in large, bold letters on a contrasting background. The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.
5. All electronics in the work area will be disposed of as lead hazardous waste. These items will be photographed, itemized and disposed of. Labels shall be affixed to waste containers. Labels shall be printed in large, bold letters on a contrasting background. The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.
6. Non-porous movable objects (such as the bicycles and chairs in the firing range) will be cleaned of all dust and contamination using HEPA vacuuming and wet wiping techniques, placed in clear plastic bags or boxes, labeled, and moved out of the work area by the contractor.
7. Thoroughly clean all horizontal and vertical surfaces from floor to ceiling throughout the entire work area using HEPA vacuuming and wet wiping procedures. Use TSP SOLUTION WITH at least 5% tri-sodium phosphate EQUIVALENT PHOSPHATE FREE CLEANING AGENT to wash floor surfaces of the Work Area or contaminated surfaces in adjacent areas. Follow the specific manufacturer's instructions for the proper use of the detergent. Use eye protection and waterproof gloves. The cleaning mixture should be changed at least after each room has been washed.
8. All HVAC is to be cleaned of visible dust and put into a dumpster for recycling metal. The IH will do a visual inspection of these items before they are removed from the containment.
9. The metal backstop is to be cleaned of visible dust and put into a dumpster for recycling metal. The IH will do a visual inspection of these items before they are removed from the containment.
10. After the lead inspector has determined that the area has passed the visual inspection with no visible residue, lead dust wipe samples will be collected from the same locations as were collected, as listed in our report Lead Dust Informational Wipe Sampling Report (CS#196-646, dated 9/27/2018). Additional lead dust wipe samples may be collected per the owner's request.

PART 3 - EXECUTION

3.1 REGULATIONS

- A. Conform to all applicable Federal State and Local Regulations. The principal Applicable Regulations are:
1. Construction Industry Lead Standard CFR 29 1926.62.
 2. Principal related OSHA regulations in 29 CFR:
 - a. 1910.134 (Respirators)
 - b. 1910.38, 1926.24 and 1926.150-155 (Fire safety and emergency response)
 - c. 1926.450 et seq (Ladder and Scaffold safety)
 - d. 1926.402 and .416-.417 (Electrical safety)
 - e. 1926.51 (Personal Hygiene, washing facilities)
 - f. Additional Regulations re: Protective Clothing and Equipment:
 - 1910.132-3 Protective Clothing
 - 1910.136 Foot protection
 - 1910.137 Electrical protective devices
 - 1910.94 ventilation
 - 1910.119 process safety
 - 1910.134 respirators
 - 1910.120 hazardous waste
 - 1910.preface 179.220-227 PPE program
 - 1910.146 permit required spaces
 - 1910.156 fire brigades
 - 1910.160 fire extinguishers
 - 1910.335 energized plugs and receptacles
 - 1910.1000 air contaminants
 - 1926.28 PPE
 - g. 1926.22 (Recording and Reporting of Injuries)
 - h. 1926.23 (First Aid and Medical Attention)
 - i. 1910.141 (Shower and Sanitation requirements)
 - j. 1926.59 (Hazard Communication)
 7. OSHA 29 CFR 1926.16 Arrangements made among contractors on multi-employer sites with respect to informing affected employees of potential exposure to lead and with respect to responsibility for compliance.
 8. Connecticut General Statutes Sec 22a 449 (c) sec 1-42 and 100-110, Hazardous wastes.
 9. Connecticut General Statutes Sec 25-54 cc (c) sec 1-48, Hazardous wastes.
 10. 40 CFR Parts 260-270 inclusive, US EPA Regulations for Hazardous wastes.
 11. All State, County, and City or Municipal codes and ordinances as applicable.
- B. Where applicable State, Federal and Local Regulations differ, the more stringent portion of the regulation applies.

3.2 SUBMITTALS:

A. Before the Work:

1. A list of any hazardous chemicals to be brought to the site including amounts to be brought in and Material Safety Data Sheets (MSDS's) for each chemical.
2. Contractor's lead compliance plan
3. A list of workers to be used and copies of training certificates
4. Assurance satisfactory to the Building Owner that any required building permits will be obtained; notifications and arrangements for transport and disposal of wastes made; and supplies, equipment and man power needed will be available for the project.
5. Insurance Coverage Provided

B. After the Work:

1. Personal air sampling records and lab results.
2. Waste disposal manifests for any Hazardous Wastes.

3.3 SPECIAL MATERIALS, TOOLS AND EQUIPMENT

A. Impermeable containers are to be used to receive and retain any Hazardous Wastes. Containers shall be labeled in accordance with DEEP regulations and shall be both water and air tight.

B. Sufficient hazardous waste labels shall be provided in conformity to DEEP Regulations.

C. High-Phosphate Wash or non-phosphate equivalent

1. Sufficient quantity of detergent with a high phosphate content (containing at least 5% tri-sodium phosphate (TSP) or non-phosphate equivalent.

D. Signs to be posted at the Work Areas shall be in sufficient quantity to post at all entries to Work Areas. Signs will be of sufficient size and contrast to be easily read. Minimum letter height will be 2 inches. The signs shall convey the following or equivalent information:

DANGER LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA
WEAR RESPIRATORY PROTECTION
AND PROTECTIVE CLOTHING IN THIS AREA

E. The Contractor shall have sufficient personal Air Monitoring equipment to monitor each type of activity in each Work Area, filter cartridges, spare fitted masks for each worker and air sample cassettes.

F Contractor shall have sufficient quantity of protective clothing and safety and control equipment including grounded power cables, GFCI units, HEPA vacuums, HEPA filtered negative air units and all other equipment required by Regulations.

3.4 EMPLOYEE INFORMATION AND TRAINING:

The work specified herein shall include the remediation of lead containing materials by DPH Certified persons who are knowledgeable, qualified, and trained in Lead Abatement. These employees shall be issued respirators and other protective equipment and be properly trained.

Training shall include:

- a. Contents of OSHA Construction Lead Standard CFR 29 1926.62
- b. OSHA Hazard Communication Standard, CFR 29 1926.59:
- c. OSHA Safety Training and Education, CFR 29 1926.21:
- d. OSHA Respiratory Protection Standard, CFR 29 1910.134
- e. Specific work operations: This training includes formal training at a Connecticut DPH approved training center and in-house and on-job-site training on specific equipment and operations. Contractor's workers shall be instructed on fire, electrical, and other hazards peculiar to this job site. Instructions will include spill response, power failure, safety equipment and respirator use and emergency evacuation procedures.
- f. Contents of the employer's lead compliance plan

3.5 REQUIRED PERSONAL AIR SAMPLES:

a. General:

Personal air sampling shall be conducted by the Contractor to ensure workers are using proper respiratory protection. Exposures shall not exceed the 8 hr OSHA PEL for Lead of 50 ug/m³ (micrograms per cubic meter). The Contractor is responsible for the cost of collection and analysis.

b. Method:

Personal air sampling is conducted according to NIOSH Method 7082.

The following sampling conditions shall be observed:

- 1) Flow rate of 1 - 2.5 liters per minute
- 2) Cassettes used are cellulose ester membrane filters with 0.8 micron porosity 37 mm diameter clear 3 piece cassettes are used.
- 3) Samples collected for a full shift hour exposure. Change filters to prevent overloading in heavy dust areas.
- 4) Pumps shall be calibrated using a ball rotometer upstream of the sampling filter to check actual flow. The ball rotometer must be initially factory calibrated and checked when new using a primary standard such as a soap bubble meter.
- 5) A blank cassette must be submitted with each set of samples.

c. Lab Information Needed:

The following information shall be provided to the lab with the samples:

- 1) Employee name and social security number
- 2) Date of collection
- 3) Flow rate
- 4) Start and end time or total minutes
- 5) Job activity during sampling
- 6) Location of the work area
- 7) Respirator type

d. Coverage of Workers:

- 1) Monitor at least 25% of the work force involved in the project.
- 2) Cover each type of work operation.

3.6 WORKER PROTECTION

a. Regulated Areas:

At the remediation site, the contractor shall establish a regulated area where the airborne lead concentration can reasonably be expected to exceed the permissible exposure limit of 50 micrograms/ cubic meter or where lead dust can reasonably be expected to accumulate and pose a threat to human health and the environment. The area thus regulated shall include a Decontamination unit. The regulated area shall include temporary enclosures and barricades clearly marked with signs as specified below and any other methods that will limit access to the site to authorized trained and properly equipped personnel.

b. Protective Clothing, Personal Equipment, Decontamination and Personal Hygiene:

1) Work Area Entry:

All persons entering the Work Area shall wear prescribed protective clothing, equipment and respirators which shall be provided by the contractor at no cost to his employees. This includes coveralls or similar full body covering, shoe covers, gloves, and hats and appropriate respirators. Workers must use protective clothing in a clean and dry condition daily. The respirator shall be inspected, put on, and then fit checked (for respirator types required) before entering the Work Area. Other protective equipment, appropriate for the application, such as hard hats and eye protection must be put on before entering the Work Area.

2) Work Area Exit: Exit from the Work Area shall include the following steps:

- a) Before leaving the Work Area, each person shall HEPA vacuum gross contamination from protective clothing and equipment and proceed to the Decontamination area which is a clean area just outside the regulated area.
- b) In the decontamination area, remove all protective garments and equipment. Suits shall be placed in a bag labeled contaminated suits and respirators (and used HEPA vacuum cartridges) in a hazardous waste container. (See disposal instructions to follow.) Clean reusable protective equipment such as the respirator, boots/shoes, safety glasses, hard hats, etc.
- c) Proceed to the wash room which is not part of the regulated area and thoroughly wash self with soap and water.
- d) Proceed to the clean change room, dry off, and dress in street clothes. Otherwise one may don disposable clothing of a different color or otherwise distinctively different, for use outside the Work Area, than suits used inside the Work Area.

3) Persons will not smoke, drink, eat, apply cosmetics or chew gum or tobacco in the Work Area. Food or beverages are not to be present or consumed. Tobacco products are not to be present or used and cosmetics are not to be applied in the Work Area. Employees must wash their hands prior to leaving the job site to eat, drink, smoke or apply cosmetics.

3.6 WORKER PROTECTION (CONT)

4) Designated change areas are to be equipped with separate storage facilities for equipment and protective clothing and for street clothes to prevent contamination with lead. Employees are not to leave the job site wearing any clothing or equipment worn during the work shift that may be contaminated with lead.

c. Respiratory protection

1) During grinding, abrasive blasting or similar disturbance of lead paint, each worker must use at least one of the following:

- a) Tight fitting PAPR with HEPA filters
 - b) Full face negative pressure respirator with HEPA filters
 - c) Full face supplied air in demand mode
 - d) 1/2 face supplied air continuous flow
- OR
- e) Full face SCBA, or

2) For wet scraping of paint, replacement, encapsulation, testing and cleanup, 1/2 or full face negative pressure respirators or a more protective respirator may be used.

3) Provide additional respiratory protection for other chemical substances which are to be used according to the MSDS for each chemical substance.

4) For other lead remediation operations than those specified above, consult the OSHA Lead Construction Standard 1926.62.

d. Health Monitoring: Health monitoring shall be conducted as required by 1926.62 which in summary includes the following:

1) Blood lead and erythrocyte protoporphyrin (EP) tested for all employees who work 30 days in 12 months in environments above the action level of 30 microgram/cubic meter of lead.

2) The above test to be done every 2 months for the first 6 months and every 6 months thereafter unless blood lead levels reach 40 ug/dl or higher, where testing is required every two months.

3) A Physical is required yearly.

4) Medical Removal Protection:

- a) 50 ug/dl temporary removal
- b) Return at 40 ug/dl or lower
- c) Earnings and benefits paid during medical removal. Employer pays the difference between normal pay and workers compensation benefits.

3.6 WORKER PROTECTION (CONT)

e. Engineering Controls During Lead Paint Removal

1) General:

Any feasible combination of engineering controls, work practices, and personal protective equipment may be used to reduce personnel exposure to Lead and other hazards.

2) HEPA Filtered Ventilation Equipment (Negative Air Units):

Portable local exhaust blowers equipped with HEPA filtration shall be used to create exhaust ventilation in the contained area and capable of maintaining a constant discharge of filtered air outside the Work Area perimeter and creating suction so that air flow direction moves from uncontaminated areas into the Work Area.

3.7 SAFETY AND SECURITY OF THE WORK AREA

a. The Contractor has responsibility to establish workplace safety and security. The Contractor shall maintain a foreman on site at all times. Duties of the Foremen shall include:

- 1) Posting warning signs at entries to the Work Area.
- 2) Guarding the Work Area against unauthorized intrusion and ensuring all persons entering the Work Area are properly trained and equipped and that each entry is recorded in the site log.
- 3) Ensuring proper decontamination procedures and that the safety equipment is properly functioning.
- 4) Maintaining at the work site daily logs of activities and the names of all persons entering the site. These same records will be faithfully kept by the Contractor and kept ready for inspection on site by the IH or Building Owner.
- 5) Ensuring the general condition of the Work Area during and at the completion of the work including cleanliness and avoiding improper disturbance of the neighborhood.
- 6) Ensuring compliance with the specifications and the regulations.

3.8 ON-GOING CLEANUP:

- a. Carry out a program of ongoing cleanup. This must include the regular cleaning of all tools, equipment, and worker protection gear to minimize worker exposure and the risk of transferring lead to and from other job sites.

3.9 CLEANUP PROCEDURES DURING AND AFTER LEAD REMEDIATION WORK:

a. Interior Work:

- 1) Use a high efficiency particulate air (HEPA) vacuum to clean the surfaces. Follow the operating instructions provided by the manufacturer of the machine used.
- 2) At the conclusion of the active remediation process, thoroughly and completely HEPA-vacuum all surfaces in the Work Area. This includes any areas where dust may be tracked such as the stairs, entry used and pathway used from entry to stairs.

b. Wet Cleaning:

- 1) Use TSP SOLUTION WITH at least 5% tri-sodium phosphate EQUIVALENT PHOSPHATE FREE CLEANING AGENT to wash floor surfaces of the Work Area or contaminated surfaces in adjacent areas. Follow the specific manufacturer's instructions for the proper use of the detergent. Use eye protection and waterproof gloves. The cleaning mixture should be changed at least after each room has been washed. TSP OR EQUIVALENT is only to be used on floor surfaces.

3.10 FINAL CLEANUP:**a. Remove plastic sheeting used for Containment.**

- 1) This contaminated plastic sheeting must be removed and disposed of very carefully. Removal must start with upper-level plastic, such as that on cabinets and counters. The plastic must first be sprayed or misted with water to hold down dust, and then folded in upon itself to trap any dust residues inside. Before removal of floor plastic, it must be HEPA vacuumed and must be folded carefully from the corners/ends to the middle to trap any remaining Lead-dust and placed into double 4-mil or single 6-mil plastic bags that are then sealed and removed.

b. HEPA-vacuum surfaces once again.**c. Wash with TSP:****d. HEPA-vacuum again.****e. Clean Workers, Tools, Equipment and Vehicles****1) Supplies**

- a) Consumable/disposal supplies such as mop heads, sponges, and rags shall be replaced regularly, at least at the end of each remediation project or monthly, whichever comes first. Soiled items must be treated as contaminated debris.

2) Equipment

- a) Durable equipment such as power and hand tools, generators, scaffolds, ladders, and vehicles must be cleaned at least at the end of each remediation project or monthly, whichever comes first. This cleaning shall consist of a thorough HEPA vacuuming and washing with a high-phosphate solution. If equipment is removed from the Work Area prior to cleaning it must be wrapped and sealed in 6 mil polyethylene sheeting or bags.

3.11 RE-OCCUPANCY INSPECTION AND TESTING:

a. Final surface dust wipe testing samples will be taken by an inspector who is independent of the contractor and who will be engaged by the owner. The procedure is as follows.

- 1) Interior: Visual inspection of all surfaces for visible dust. After passing a visual inspection dust wipes will be collected from floor and window sill surfaces. These samples shall be tested for total lead by AA. Interior dust shall comply with State Standards specified in the text to follow.

b. Lead in dust sampling:

- 1) Wipe sampling procedure: The inspector shall use wipes provided or recommended by the laboratory to be used. Moistening shall be performed using distilled or deionized water; no alcohol or other organic solvents shall be used. The standard sample size in this technique is one square foot, which is obtained with a plastic template or measuring device according to the formula: length times width divided by 144 equals the fraction or multiple of one square foot. Disposable gloves are worn throughout the sampling procedure. A pre-moistened wipe or towelette is placed flat on the surface to be sampled. The wipe is rubbed in a "S" pattern over the entire measured area. The wipes then folded in half and rubbed once over the surface again at a 90 degree angle to the first series of wipes. Finally, the wipe is folded and placed in a marked tube or plastic bag for laboratory determination of lead via AAS, GFAAS or ICP-AES. A minimum of 2 unused wipes or 1 wipe for every 20 used, whichever number is greater, is submitted to the laboratory as a blank.

c. Criteria for Re-occupancy:

- 1) Results must be below the following values:

- a. Floors: 40 micrograms/sq. ft.
- b. Window sills: 250 micrograms/sq. ft.

NOTE: Wall surfaces will be cleaned to the same level as floor surfaces.

- e. Contractor shall perform additional site work as required to comply with final test criteria and shall pay the cost of any re-testing until the site is in compliance with the specified criteria as delineated above.

3.12 RE-INSTALLATION OF DISPLACED EQUIPMENT AND BELONGINGS:

- a. After Final Clearance is complete, relocation of objects moved to temporary locations in the course of the work to their proper positions will be coordinated between the owner and contractor.
- b. Re-secure mounted objects removed in the course of the work in their former positions.
- c. Re-establish mechanical and electrical systems in proper working order and in conformance with all applicable building, mechanical and electrical codes.

3.13 WASTE DISPOSAL:

- a. All waste generated during the remediation work shall be treated as hazardous.
 - 1) Dust from lead paint remediation is expected to be hazardous, this includes all sweepings from lead remediation areas and dusts collected on HEPA vacuums, negative air machines and respirator cartridges.
 - 2) Used suits and plastic if HEPA vacuumed before discard as specified are not expected to be hazardous.
 - 3) If wastes are not classified as hazardous, the contractor is also responsible for proper disposal.
- c. If wastes are not classified as hazardous, the contractor is also responsible for proper disposal:
- d. Licensed TSD (Treatment Storage and Disposal) Arrangements
 - 1) Hazardous waste must be disposed of at a LICENSED treatment, storage, and disposal facility (TSD). A TSD must have an EPA ID Number and authorization (either a permit or "interim status") to operate. A licensed transporter must be used to carry the wastes.
- e. Hazardous Waste Storage:
 - 1) Storage of hazardous wastes on site is subject to DEEP and OSHA Regulation.
 - 2) The storage area shall be part of the regulated area, secured, covered, and on an impervious base.
 - 3) Containers shall be marked "HAZARDOUS WASTE", including the date of generation
 - 4) Contents shall be explicitly identified with identification of the material.
 - 5) Proper storage containers shall be used, usually 17 H 55-gal drums in good condition. Containers shall be inspected for leaks or corrosion every week if the project is ongoing.
 - 6) A bound log noting hazardous waste additions and deletions to this site must be maintained. This log shall show material identification and responsible person signatures for each entry.
 - 7) Contractor shall have documentation including a log entry tracing the life of each waste drum from site originally generated to the TSD, records of inspection, and training.
 - 8) Site specific employee training shall be given for management of wastes at the site in addition to the formal training given.
 - 9) No drums shall be stored for 90 days or longer. Proper manifesting, and transport including shipment to a licensed TSD must be accomplished within the allotted 90 days.
 - 10) Drums shall be stored only one drum high separated by an aisle of at least 3 ft.
- f. No Liquid Wastes can be placed in a land fill. Waste segregation will be needed to handle the waste liquid from washing. These liquids must be evaporated to remove the water. Immersion heaters and compressed air jets are used to evaporate the washings. Use a waste drum to contain the residue. Residues are expected to be hazardous waste.

3.14 TRANSPORTATION OF HAZARDOUS WASTES:

- a. Prior arrangements must have been made for transportation through the TSD or a licensed transporter
- b. For accidents or spills, report to the DEEP, Oil and Chemical Spills Section at 566-3338 (24 hour hotline).
- c. The Uniform Hazardous Waste Manifest shall be used. The generator gives the transporter copies 1-5, keeps copy 8 and sends copies 6 and 7 to the State DEEP. It is preferred to use the new electronic notification system.
- d. Once the waste is received at the disposal facility the operator of that facility must send a signed copy of the manifest back to the generator.
- e. The owner and the contractor must maintain a number of records for three years:
 - Manifests
 - Results of testing of waste
- f. Waste shall be transported to the disposal facility in covered vehicles. Covered dumpster services are acceptable.

3.15 DEFINITIONS:

- A. Action Level: OSHA exposure level of 30 ug/m³ over an 8 hour period.
- B. Air Monitoring: The process of measuring the contaminant content of a specific volume of air in a stated period of time.
- C. Atomic absorption spectrophotometer (AA) means an instrument which measures the lead content in parts per million (PPM) using a lead source lamp, a flame capable of measuring the absorbed energy and converting it to concentration.
- D. CFR: Code of Federal Regulations.
- E. Clean Change Area: An uncontaminated area or room adjacent to the work area with provisions for storage of worker's street clothes and protective equipment, a HEPA vacuum for removing contamination from protective clothing.
- F. Competent Person: As regards lead hazards. A person experienced in demolition of lead painted surfaces who meets the following requirements in 1926.32: "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them."
- G. Containment is a process for protecting workers, other individuals and the environment by controlling exposures to lead dust and debris created during removal work.
- H. Critical Barrier: Six mil polyethylene sheeting separating Work Areas from non-Work Areas and used to cover fixed objects to prevent contamination.
- I. Curtained Doorway: A device to allow passage from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Two curtained doorways spaced a minimum of six (6) feet apart form an Airlock.
- J. DEEP: Connecticut Dept. of Energy and Environmental Protection
- K. De minimis levels: HUD (24 CFR 35.1350) states that safe work practices are not required when maintenance or hazard reduction activities do not disturb painted surfaces that total more than:
 - 1. 20 square feet (2 square meters) on exterior surfaces;
 - 2. 2 square feet (0.2 square meters) in any one interior room or space; or
 - 3. 10 percent of the total surface area on an interior or exterior type of component with a small surface area. Examples include window sills, baseboards, and trim.
- L. EPA: US Environmental Protection Agency
- M. Fit Test: Check of the respirator fit every six months.

3.15 DEFINITIONS: (CONT)

- N. GFCI: Ground Fault Circuit Interrupter, a safety device to prevent death from electrical shock.
- O. Graphite furnace atomic absorption spectrophotometer (GFAA) is an instrument that functions the same as an AA with one exception. The flame is replaced by an electrically heated chamber, a graphite tube, into which the sample is deposited.
- P. Half-Mask, Half Face: type of respirator.
- Q. HEPA Filter: A high efficiency particulate air (HEPA) filter that traps extremely small, micron-sized particles. These filters can filter out particles of 0.3 microns or greater (from a body of air) at 99.97% efficiency or greater.
- R. HEPA Vacuum Equipment: Vacuum Equipment with a HEPA filter system for filtering the air effluent from the unit.
- S. High Efficiency Particulate Air or HEPA means a filtering system capable of filtering out particles of 0.3 microns or greater diameter from a body of air at 99.97% efficiency or greater.
- T. High Phosphate Detergent is detergent, which contains at least five (5%) percent tri-sodium phosphate (TSP).
- U. HVAC: Heating, ventilation and air conditioning system.
- V. Inductively coupled plasma atomic emission spectrophotometer (ICP) means an instrument which measures lead in PPM using a heat source (plasma torch) to dissociate and ionize lead atoms thereby emitting energy. This emission energy is measured and converted to concentration by the detector.
- W. Interim controls means a set of measures designed to reduce temporarily human exposure or likely exposure to lead-based paint hazards. Interim controls include, but are not limited to, repairs, painting, temporary containment, specialized cleaning, clearance, ongoing lead-based paint maintenance activities, and the establishment and operation of management and resident education programs.
- X. Lead: CAS # 7439-92-1. A naturally occurring metallic element, atomic number 82 atomic weight 207.2, chemical formula Pb and compounds thereof. It is a heavy ductile, soft gray solid in elemental form and forming compounds of white or colored solid material.
- Y. Lead Material / Lead Containing Material: A material which contains more than hazardous or toxic levels of lead: 1) EPA RCRA hazardous lead containing material is a material with extractable lead of 5 mg/l according to the test specified in regulations CFR 40-261. 2) A paint containing more than 0.5 % of lead in the dry film. 3) A floor surface with more than 200 micrograms/sqft, or a window sill with more than 500 micrograms/sqft or a window well with more than 800 micrograms/sqft. 4) For purposes of the OSHA lead construction standard; a material containing any detectable amount of lead.
- Z. m³: Cubic meter
- AA. Movable Object: A unit of Equipment or furniture in the Work Area, which can be removed from the Work Area.
- BB. MSDS: Material safety data sheet.
- CC. mg: Milligram

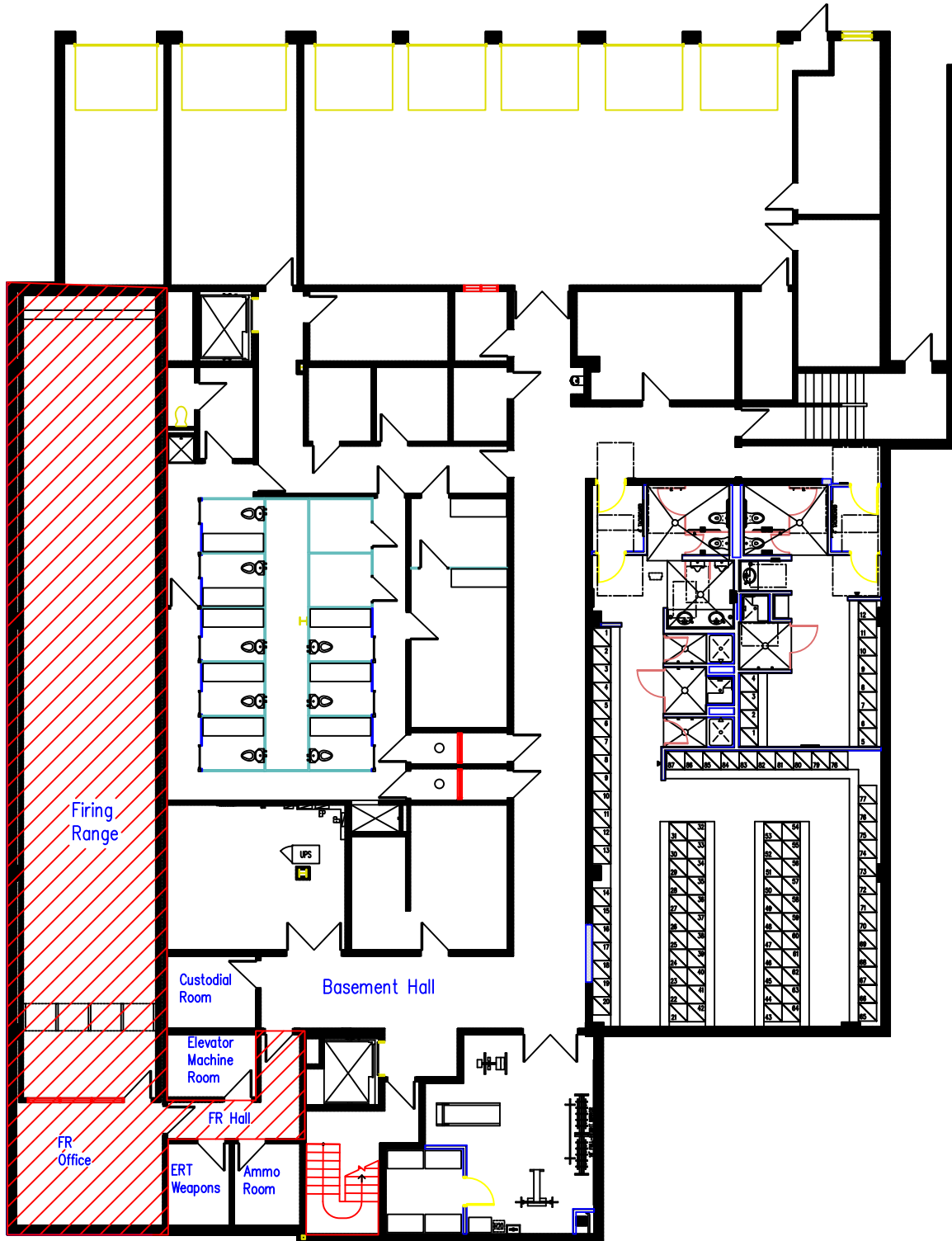
3.14 DEFINITIONS: (CONT)

- DD. Negative Air Units or Negative Air Pressure Equipment: A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a contaminated area (negative with respect to adjacent uncontaminated areas) and capable of maintaining a constant discharge of filtered air outside and creating suction so that air flow direction moves from uncontaminated areas into the Work Areas.
- EE. NIOSH: National Institute for Occupational Safety and Health.
- FF. Owner: Town of Trumbull.
- GG. Permissible Exposure Limit (PEL): OSHA Standard. The employer shall ensure that no employee is exposed to an airborne concentration of Lead, or its compounds in excess of the PEL of 0.200 mg/m³ for the construction industry and 0.050 mg/m³ for general industry (milligrams per cubic meter) as an eight (8) hour time weighted average (TWA).
- HH. Poly: Short for polyethylene, a plastic sheet.
- II. PPM: Parts per million.
- JJ. RCRA: Resource Conservation and Recovery Act
- KK. Regulated Area: The work area.
- LL. TCLP: Toxicity characteristic leaching procedure as specified by EPA- RCRA regulations (CFR 40 part 261).
- MM. TSD: Treatment, Storage and Disposal Facility. A list of authorized firms may be obtained from DEEP.
- NN. TSP means tri-sodium phosphate.
- OO. TWA means time- weighted average
- PP. ug: microgram.
- QQ. Wet Cleaning: The process of eliminating Lead contamination from building surfaces and objects by using cloths or other cleaning tools which have been dampened with TSP or non-phosphate equivalent and water, and by afterwards disposing of these cleaning items as Lead contaminated waste.
- RR. Work Area: An area where Lead Paint Demolition or other work involving disturbance of lead paint are performed which is isolated by physical boundaries and other controls to prevent the spread of lead dust or debris.

APPENDIX A

Trumbull Police Department
158 Edison Road,
Trumbull, CT
Lower Level

Drawing-196-995-1



 Location of Area with Lead Dust Contamination,
Scheduled for Clean-Up in Scope of Work

APPENDIX B

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Allen White, Town of Trumbull
5688 Main Street
Trumbull, CT 06611

9/27/2018

**LEAD DUST INFORMATIONAL INTERIOR WIPE SAMPLING
TRUMBULL POLICE DEPARTMENT – BASEMENT FIRING RANGE
158 EDISON ROAD, TRUMBULL CT
CS#196-646, 9/17/2018, PAGE 1 OF 4**

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2	Introduction
2	Lead Dust Sampling Report Summary
4	Recommendations

Attachments:

- Scope of Sampling Drawing(s), 1 page(s)
- Lead Dust Sample Analysis report & chain of custody documents, 7 page(s)
- Lead Dust Wipe Sample Location Drawing(s), 1 page(s)
- Lead Dust Contamination Drawing(s), 1 page(s)

Report Distribution:

Allen White (Town of Trumbull) awhite@trumbull-ct.gov

File Location:

NAS AAUM-Reports\LeadInsp\DS-XRFSVY_Sept2018.doc

**LEAD DUST INFORMATIONAL INTERIOR WIPE SAMPLING
TRUMBULL POLICE DEPARTMENT – BASEMENT FIRING RANGE
158 EDISON ROAD, TRUMBULL CT
CS#196-646, 9/17/2018, PAGE 2 OF 4**

INTRODUCTION

EXECUTIVE SUMMARY: Dust samples collected on 9/17/2018 in the Firing Range, Office and Adjacent Hallway exceeded EPA/HUD/CT-DPH standards for lead in dust for their respective surfaces. See Page 3 for Lead Dust Sample Results. All HVAC components, floor, wall, ceiling surfaces should be considered lead contaminated in these spaces.

BACKGROUND: We understand the following:

1. We performed a Lead XRF Pre-Renovation Screening (See CS#194-24 report dated 10/24/2017) in the basement of the subject building.
2. At that time it was believed that the firing range had been decontaminated for lead dust but that the duct work may not have been cleaned.
3. The lead dust found in the return ducts at that time was very high (7000-75000 ug/sq ft).
4. Since November of 2017, the owner had not been able to find documentation of the lead cleaning, so we were asked to return to the site to do lead testing of various surfaces to establish the level of lead dust contamination.

SCOPE OF WORK: Our work included the following:

1. Collected dust samples, as directed by our client.
2. Provide a report of findings including site drawings with sample locations.

BUILDING DESCRIPTION: The subject approximately 28,200 sq ft, two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof.

PROCEDURES USED/DOCUMENTED METHODS:

1. Regulations: CT DPH Regulations 19a-111-1 through 11.

METHOD OF TESTING: This work was done with a trained and licensed CT DPH lead inspector/risk assessor and the samples were sent for analysis to Eastern Analytical Services (EAS), a NLLAP accredited laboratory, an AIHA accredited Laboratory and a CT DPH approved Environmental Laboratory in regards to this test, using Atomic Absorption analysis.

REPORT CONVENTIONS: Rooms are sometimes given arbitrary numbers to avoid ambiguity. Please refer to the enclosed schematic drawings of the site. Tests are referenced by the side of the building they are facing as indicated on the drawings. Side A is the street side (front), Side B is the left side, Side C is the rear and Side D is the right side.

QUALIFICATIONS: The Inspection was conducted by Daniel P. Sullivan, CT DPH Certified DPH Lead Inspector/Risk Assessor #002131, Radiation Safety Training, RMD 12/2/94. Chem Scope's DPH lead license # is CC000164.

This investigation and information provided in this report depends partly on background information provided by the client. This report is intended for the use of the client. The scope of services performed may not be appropriate for other users and any use of this report by third parties is at their sole risk. This report is intended to be used in its entirety. No excerpts may be taken to be representative of this report.

**LEAD DUST INFORMATIONAL INTERIOR WIPE SAMPLING
TRUMBULL POLICE DEPARTMENT – BASEMENT FIRING RANGE
158 EDISON ROAD, TRUMBULL CT
CS#196-646, 9/17/2018, PAGE 3 OF 4**

FINAL INSPECTION/TESTING SYNOPSIS

LOCATION NAME AND ADDRESS: Trumbull Police Department
158 Edison Road, Trumbull CT

DATE(S) OF INSPECTION: 9/17/2018.

LEAD DUST SAMPLING REPORT SUMMARY:

Dust Wipe Results: Twelve of the Twenty-Four dust samples (including blanks) were above the EPA/HUD/CT-DPH standards for lead in dust for their respective surfaces (**Items in Bold** have exceeded the CT DPH and HUD standards for lead in dust):

Sample #	Date	Location	Surface	Dust Wipe Result (ug/sq ft)	CT-DPH Standard (ug/sq ft)
194-24-1L	10/11/17	Firing Range: Return Duct	Inside Duct	74641.1	-
194-24-2L	10/11/17	Firing Range: Return Duct	Inside Duct	7703.3	-
196-646-1	9/17/18	Firing Range: Concrete Floor	Floor	BDL <4.2	40
196-646-2	9/17/18	Firing Range: Concrete Floor	Floor	96315.8	40
196-646-3	9/17/18	Firing Range: Concrete Floor	Floor	56842.1	40
196-646-4	9/17/18	Firing Range: Concrete Floor	Floor	18578.9	40
196-646-5	9/17/18	Firing Range: Concrete Floor	Floor	48947.4	40
196-646-6	9/17/18	Firing Range: Concrete Floor	Floor	32263.2	40
196-646-7	9/17/18	Firing Range: Carpet Floor	Floor	2068.4	40
196-646-8	9/17/18	Firing Range: Carpet Floor	Floor	726.3	40
196-646-9	9/17/18	FR Office: Carpet Floor	Floor	143.7	40
196-646-10	9/17/18	FR Office: Carpet Floor	Floor	120.0	40
196-646-11	9/17/18	FR Hallway: 12x12 Floor Tile	Floor	148.9	40
196-646-12	9/17/18	FR Hallway: 12x12 Floor Tile	Floor	38.4	40
196-646-13	9/17/18	Bsmnt Hall: 12x12 Floor Tile	Floor	BDL <4.2	40
196-646-14	9/17/18	Firing Range: Window Sill	Window Sill	45686.4	250
196-646-15	9/17/18	FR Office: Window Sill	Window Sill	16592.5	250
196-646-16	9/17/18	Firing Range: CB wall 3'	Wall	963.2	-
196-646-17	9/17/18	Firing Range: CB wall 6'	Wall	1147.4	-
196-646-18	9/17/18	Firing Range: CB wall 3'	Wall	621.1	-
196-646-19	9/17/18	Firing Range: CB wall 6'	Wall	2436.8	-
196-646-20	9/17/18	Firing Range: 1x1 wall tile 3'	Wall	37000.0	-
196-646-21	9/17/18	Firing Range: 1x1 wall tile 6'	Wall	43315.8	-
196-646-22	9/17/18	Blank	-	BDL <4.2	-
196-646-23	9/17/18	Blank	-	BDL <4.2	-
196-646-24	9/17/18	Blank	-	BDL <4.2	-

BDL = Below Detection Limit

See enclosed laboratory reports for dust wipe test data with applicable standards and schematic drawing showing sample locations.

**LEAD DUST INFORMATIONAL INTERIOR WIPE SAMPLING
TRUMBULL POLICE DEPARTMENT – BASEMENT FIRING RANGE
158 EDISON ROAD, TRUMBULL CT
CS#196-646, 9/17/2018, PAGE 4 OF 4**

RECOMMENDATIONS

Based on our sampling results the entire interior of the Firing Range, Firing Range Office and Firing Range Hallway should be cleaned for lead dust by a CT DPH lead contractor and a comprehensive lead dust final clearance should be done at the conclusion of the cleaning.

Stored materials should be removed for the cleanup. Any visible dust should be cleaned from the items before moving. Porous materials should be removed and disposed of providing owner approves. An inventory of such materials should be kept.

Non-porous materials should be carefully cleaned and moved to a storage area for a visual inspection by the owner.

If you have any questions or need more information please call me. Thank you for calling on us.

Sincerely,



Dan Sullivan
President

ChemScope Inc.
 Trumbull Police Department
 158 Edison Road, Trumbull, CT
 Lead Inspection
 CS# 196-646, 9/17/2018

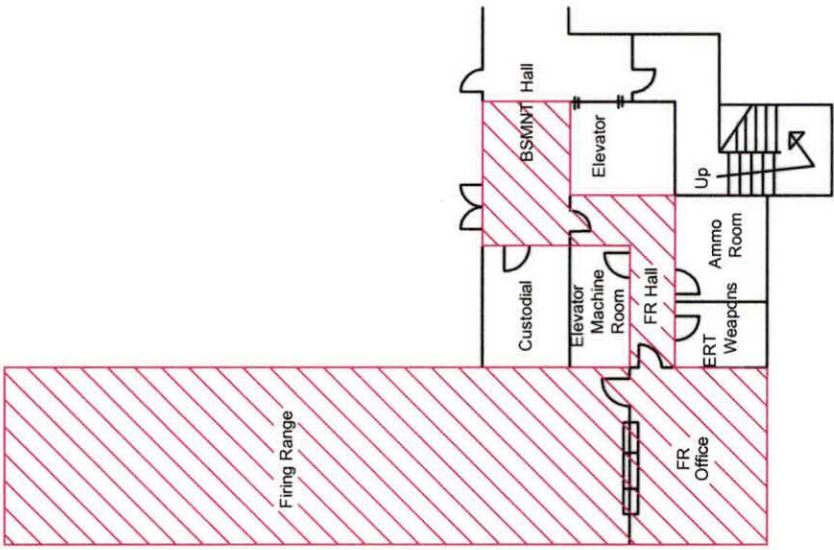
Side B

Location of Areas
 In Scope Of Sampling



Side C

Side D



Lower Level

Side A



NOTES

LEGEND OF SYMBOLS

NOTATIONS

DESIGNED BY Brian Hoang

ChemScope Inc.

PROJECT TITLE

FLOOR PLAN

196-646

NOT TO SCALE

DATE 9/17/2018



ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Town of Trumbull
366 Church Hill Road
Trumbull CT 06611

9/20/2018
CS# 196-646

LEAD ANALYSIS BY ATOMIC ABSORPTION

Lead dust wipe samples from Trumbull Police Department, 158 Edison Road, Trumbull CT, collected by ChemScope, Inc., on 9/17/2018:

See attached chain of custody form and EAS Analytical Services, Inc., report for sample descriptions and analytical data; and applicable standards on reverse side of this page.

Suzanne Cristante or
Laboratory Director

Izabela Kremens or
Quality Manager


Ronald D. Arena
Senior Consultant

LEAD STANDARDS AND GUIDELINES

(Revised 4/2013)

The following are some existing known standards and guidelines as they relate to lab analysis for lead by AAS. ChemScope assumes no liability for the use of these data. All values are expressed as pure lead, Pb.

1. Lead in Dust Standards: Connecticut DPH, EPA & HUD:

Dust-Wipe Re-Occupancy Testing:

Floors: 40 micrograms/sq ft

Sills: 250 micrograms/sq ft

Window Wells: 400 micrograms/sq ft

Toxic Level of lead in dry paint: 0.5%

*NOTE: City of Stamford has a stricter standard of .06%

2. For Air Samples: OSHA PEL (Permissible Exposure Limit) is 50 micrograms/cubic meter and the AL (Action Level) is 30 micrograms/cubic meter.

3. For Soil: 400 PPM is considered contaminated.

State regulations (CT DEEP RCSA 22a-133K) require lead-contaminated soil to be cleaned up to a concentration of 500 ppm in residential areas and 1,000 ppm in industrial and commercial areas. But in practice the Department of [Energy and] Environmental Protection (DEEP) and state and local health departments apply a 400 ppm standard in residential areas. DEEP has begun the process of adopting the 400 ppm standard in regulation.

OLR Research Report, October 11, 2006, 2006-R-0596

4. For any material to be disposed of: the DEP and EPA Standard for TCLP lead is 5 milligrams/liter. In addition, other substances besides lead may need to be tested which are not in the scope of this test report.

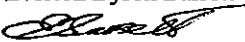

5. Consumer Product Safety Commission: Lead in paint for sale 0.06%.

6. For Drinking Water Samples (First Draw and Fully Flushed samples):

State of Connecticut Action Level: 0.015 mg/l

EPA Action Level: 15 ppb

NOTE: .015 mg/l = 15 ppb

**Eastern Analytical Services, Inc.****Wipe Sample Report**RE: CPN 196-646 - Town of Trumbull - Trumbull Police Department - 158 Edison Road -
Trumbull, CTDate Collected: 09/17/2018
Collected By: Dan Sullivan
Date Received: 09/18/2018
Date Analyzed: 09/18/2018
Analyzed By: Everton Byron BarrettClient: Chem Scope, Inc.
15 Moulthrop Street
North Haven, CT 06473Signature: 
Analyte: Pb Dust
Analytical Method: EPA 3050B/7000B
NYS Lab Number: 10851
Paul Stascavage , Lab Director

Sample ID# / Lab ID#	Sample Location	Sample Notes	Concentration
196-646-1 2579795	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	BDL < 4.2 µg/ft ²
196-646-2 2579796	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	96315.8 µg/ft ²
196-646-3 2579797	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	56842.1 µg/ft ²
196-646-4 2579798	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	18578.9 µg/ft ²
196-646-5 2579799	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	48947.4 µg/ft ²
196-646-6 2579800	Firing Range - Floor on Concrete	Dust Wipe - 12" x 12" Area	32263.2 µg/ft ²
196-646-7 2579801	Firing Range - Floor on Carpet	Dust Wipe - 12" x 12" Area	2068.4 µg/ft ²
196-646-8 2579802	Firing Range - Floor on Carpet	Dust Wipe - 12" x 12" Area	726.3 µg/ft ²
196-646-9 2579803	Firing Range Office - Floor on Carpet	Dust Wipe - 12" x 12" Area	143.7 µg/ft ²

BDL = Below Detectable Limits. Reporting Limit = 0.3 ppm

Liability Limited to Cost of Analysis

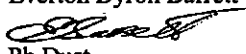

Results Applicable to Those Items Tested. Results are Not Blank Corrected. All QC within Control Limits Unless Otherwise Indicated. Samples received in acceptable condition unless otherwise noted.

AIHA Accreditation No. 100263 Rhode Island DOH No. LAO00107 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936



Wipe Sample Report

RE: CPN 196-646 - Town of Trumbull - Trumbull Police Department - 158 Edison Road -
Trumbull, CT

Date Collected: 09/17/2018
Collected By: Dan Sullivan
Date Received: 09/18/2018
Date Analyzed: 09/18/2018
Analyzed By: Everton Byron Barrett
Signature: 
Analyte: Pb Dust
Analytical Method: EPA 3050B/7000B
NYS Lab Number: 10851
Paul Stascavage , Lab Director

Client: Chem Scope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Sample ID# / Lab ID#	Sample Location	Sample Notes	Concentration
196-646-10 2579804	Firing Range Office - Floor on Carpet	Dust Wipe - 12" x 12" Area	120.0 µg/ft ²
196-646-11 2579805	Basement Hallway - Floor on 12 x 12 Tile	Dust Wipe - 12" x 12" Area	148.9 µg/ft ²
196-646-12 2579806	Basement Hallway - Floor on 12 x 12 Tile	Dust Wipe - 12" x 12" Area	38.4 µg/ft ²
196-646-13 2579807	Basement Hallway - Floor on 12 x 12 Tile	Dust Wipe - 12" x 12" Area	BDL < 4.2 µg/ft ²
196-646-14 2579808	Firing Range - Window Sill	Dust Wipe - 1" x 37" Area	45686.4 µg/ft ²
196-646-15 2579809	Firing Range Office - Window Sill	Dust Wipe - 3" x 37" Area	16592.5 µg/ft ²
196-646-16 2579810	Firing Range - 3' High on CB Wall	Dust Wipe - 12" x 12" Area	963.2 µg/ft ²
196-646-17 2579811	Firing Range - 6' High on CB Wall	Dust Wipe - 12" x 12" Area	1147.4 µg/ft ²
196-646-18 2579812	Firing Range - 3' High on 1' x 1' Wall Tile	Dust Wipe - 12" x 12" Area	621.1 µg/ft ²

BDL = Below Detectable Limits. Reporting Limit = 0.3 ppm

Liability Limited to Cost of Analysis

Results Applicable to Those Items Tested. Results are Not Blank Corrected. All QC within Control Limits Unless Otherwise Indicated. Samples received in acceptable condition unless otherwise noted.

AIHA Accreditation No. 100263 Rhode Island DOH No. LAO00107 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936



Wipe Sample Report

RE: CPN 196-646 - Town of Trumbull - Trumbull Police Department - 158 Edison Road - Trumbull, CT

Date Collected: 09/17/2018
Collected By: Dan Sullivan
Date Received: 09/18/2018
Date Analyzed: 09/18/2018
Analyzed By: Everton Byron Barrett
Signature: [Signature]
Analyte: Pb Dust
Analytical Method: EPA 3050B/7000B
NYS Lab Number: 10851
Paul Stascavage [Signature], Lab Director

Client: Chem Scope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Table with 4 columns: Sample ID# / Lab ID#, Sample Location, Sample Notes, Concentration. Rows include data for firing ranges on wall tiles and metal back steps, and blank samples.

BDL = Below Detectable Limits. Reporting Limit = 0.3 ppm
Liability Limited to Cost of Analysis
Results Applicable to Those Items Tested. Results are Not Blank Corrected. All QC within Control Limits Unless Otherwise Indicated. Samples received in acceptable condition unless otherwise noted.
AIHA Accreditation No. 100263 Rhode Island DOH No. LAO00107 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

Emailed _____
 Faxed _____
 Called _____
 Logged

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Chain of Custody

Trumbull Police Department

Sample Source: 158 Edison Road, Trumbull CT

CS Job # 196-646

Sampled By: Don Alk Date Sampled: 9/17/18 Customer Name: Town of Trumbull

CS Sample#	Client Sample#	Sample Description	Comments
196-646-1		Firing Range/Floor on concrete	12" x 12" 1 sq. ft
-2		" " " " "	" "
-3		" " " " "	" "
-4		" " " " "	" "
-5		" " " " "	" "
-6		" " " " "	" "
-7		" " " on carpet	" "
-8		" " " " "	" "
-9		Firing Range Office/Floor on carpet	" "
-10		" " " " "	" "
-11		Basement Hallway/Floor on 12x12 tile	" "
-12		" " " " "	" "
-13		" " " " "	" "
-14		Firing Range/Window sill	1" x 37" 0.126 sq. ft
-15		Firing Range Office/Window sill	3" x 37" 0.177 sq. ft
-16		Firing Range/3' high on CB wall	12" x 12" 1.0 sq. ft
-17		" " 6' high on CB wall	" "
-18		" " 13' high on 1' x 1' wall tile	" "

Sample Turnaround: ~~24 Hours~~ 48 hour

Analysis Requested (if variable, use comment column): Lead in Dust (results in ug/ft²)

Check if you want sample returned _____ (sample will be disposed of after 30 days).

Relinquished by: Don Alk Date: 9/17/18 Time: _____ Received By: Fedex

Relinquished by: _____ Date: _____ Time: _____ Received By: _____

Other Special Instructions: _____

Result Transmittal Instructions (for Chem Scope to transmit): _____

FOR CHEM SCOPE, INC. TO FILL OUT IF SAMPLES ARE GOING TO OUTSIDE LABORATORY:

Name of Laboratory: EAS, Inc.

Method of Transportation to Laboratory: FedEx 9.17.18

Result Transmittal Instructions (for outside Laboratory to Chem Scope, Inc):

Tell DS for report

The person submitting samples is responsible for obtaining true and representative samples, for complying with applicable regulations and for the use of the data obtained from the analysis. For example, many states have licensing and laboratory approval requirements. Please contact the individual states if you have any questions regarding specific sampling or approval requirements. For Connecticut, sites we have licensed inspectors available to collect client samples and to perform building inspections.

PO # 2265

PO # 2265

Form FL-4 Rev 11/12/13
(Issued By SC)

ChemScope

INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Emailed _____
Faxed _____
Called _____
Logged

Chain of Custody

Trumbull Police Department

Sample Source: 158 Edison Road, Trumbull CT

CS Job # 196-646

Sampled By: Jim Felte Date Sampled: 9/17/18 Customer Name: Town of Trumbull

CS Sample#	Client Sample#	Sample Description	Comments	
<u>196-646-19</u>		<u>Firing Range / 6' high on 1/2" wall tile</u>	<u>12" x 12"</u>	<u>1.0 S.Ft</u>
<u>-20</u>		<u>" " / 3' high on metal backstop</u>	<u>"</u>	<u>"</u>
<u>-21</u>		<u>" " / 5' " " " "</u>	<u>"</u>	<u>"</u>
<u>-22</u>		<u>Blank</u>	<u>-</u>	<u>-</u>
<u>-23</u>		<u>Blank</u>	<u>-</u>	<u>-</u>
<u>-24</u>		<u>Blank</u>	<u>-</u>	<u>-</u>

Sample Turnaround: 24 Hours 48 hr 25 9/12/18

Analysis Requested (if variable, use comment column): Lead in Dust

Check if you want sample returned _____ (sample will be disposed of after 30 days).

Relinquished by Jim Felte Date 9/17/18 Time _____ Received By Fedex
Relinquished by _____ Date _____ Time _____ Received By _____

Other Special Instructions: _____

Result Transmittal Instructions (for Chem Scope to transmit): _____

FOR CHEM SCOPE, INC. TO FILL OUT IF SAMPLES ARE GOING TO OUTSIDE LABORATORY:

Name of Laboratory: EAS IAC.

Method of Transportation to Laboratory: FedEx 9.17.18

Result Transmittal Instructions (for outside Laboratory to Chem Scope, Inc):
Tell DS for report

The person submitting samples is responsible for obtaining true and representative samples, for complying with applicable regulations and for the use of the data obtained from the analysis. For example, many states have licensing and laboratory approval requirements. Please contract the individual states if you have any questions regarding specific sampling or approval requirements. For Connecticut, sites we have licensed inspectors available to collect client samples and to perform building inspections.

Dear Laboratory Customer or Potential Customer,

New laboratory accreditation standards require us to provide our clients information about our services to make sure that your requirements for testing are adequately defined, documented and understood. The following is for your information. Please call us if you have any questions or comments.

Type of Samples

// PCM cassettes are routinely run by NIOSH Method 7400.

// Bulk materials are run by EPA Method: #600/R-93/116.

Air Samples: NIOSH 7400 Method counts all fibers. This method may be used for personal air samples and for finals. Two field blanks must be submitted for each set of samples. In the unlikely event that there is to be any deviation from the standard test, you will be consulted by phone before the work begins. Those clients who have not had NIOSH 582 or AHERA asbestos training courses (either supervisor or project monitor) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

Bulk materials: sampled are analyzed by the latest EPA Method: (#600/R-93/116) which uses polarized light microscopy (PLM). When asbestos is detected and the amount is estimated to be less than 10%, we automatically point count the samples. When there are interfering substances present, we may use ashing, acid washing or other procedures described in the method to handle the interference. Those clients who have not had AHERA asbestos training courses (either inspector, supervisor or project designer) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

All Samples must be clearly labeled with source name and identification number or sufficient information from the client to make this sample uniquely identified. (We will then add our notebook #, page # (batch) and unique number within the batch.) Samples must be in a clean, air tight package such as a zip loc bag. Appropriate completed paperwork must accompany the sample. Bulk and air samples may not be submitted in the same package.

As soon as available bench top results will be faxed to you and reports will then be mailed. We will retain air samples for at least three months and bulk samples for 6 months unless you advise us otherwise.

You are welcome to visit the laboratory at any time to discuss the work, monitor the work or verify our testing services. We appreciate your business and encourage any feedback regarding improving our services or our quality system. Please take a minute to complete the following survey and mail/fax it to ChemScope, Inc.

Customer Service Survey

To help us improve our services give your opinions to the following:

1- The printed laboratory report was complete and easy to understand. YES__ NO__
If no, please explain _____.

2- The turn around time for results met your expectations/needs. YES__ NO__
If no, please explain _____.

3- How likely are you to recommend ChemScope Inc. to someone?
Excellent__ Very Good__ Good__ Fair__ Poor__

4- How likely are you to return to ChemScope in the future if the need arises?
Excellent__ Very Good__ Good__ Fair__ Poor__

5. On a scale of 1 to 5 where 1 represents "Satisfied" and 5 represents "Dissatisfied", how would you rate your level of overall satisfaction.

1__ 2__ 3__ 4__ 5__

6- Please add any additional comments or suggestions that would be helpful when you use our services:


Name _____ Company _____

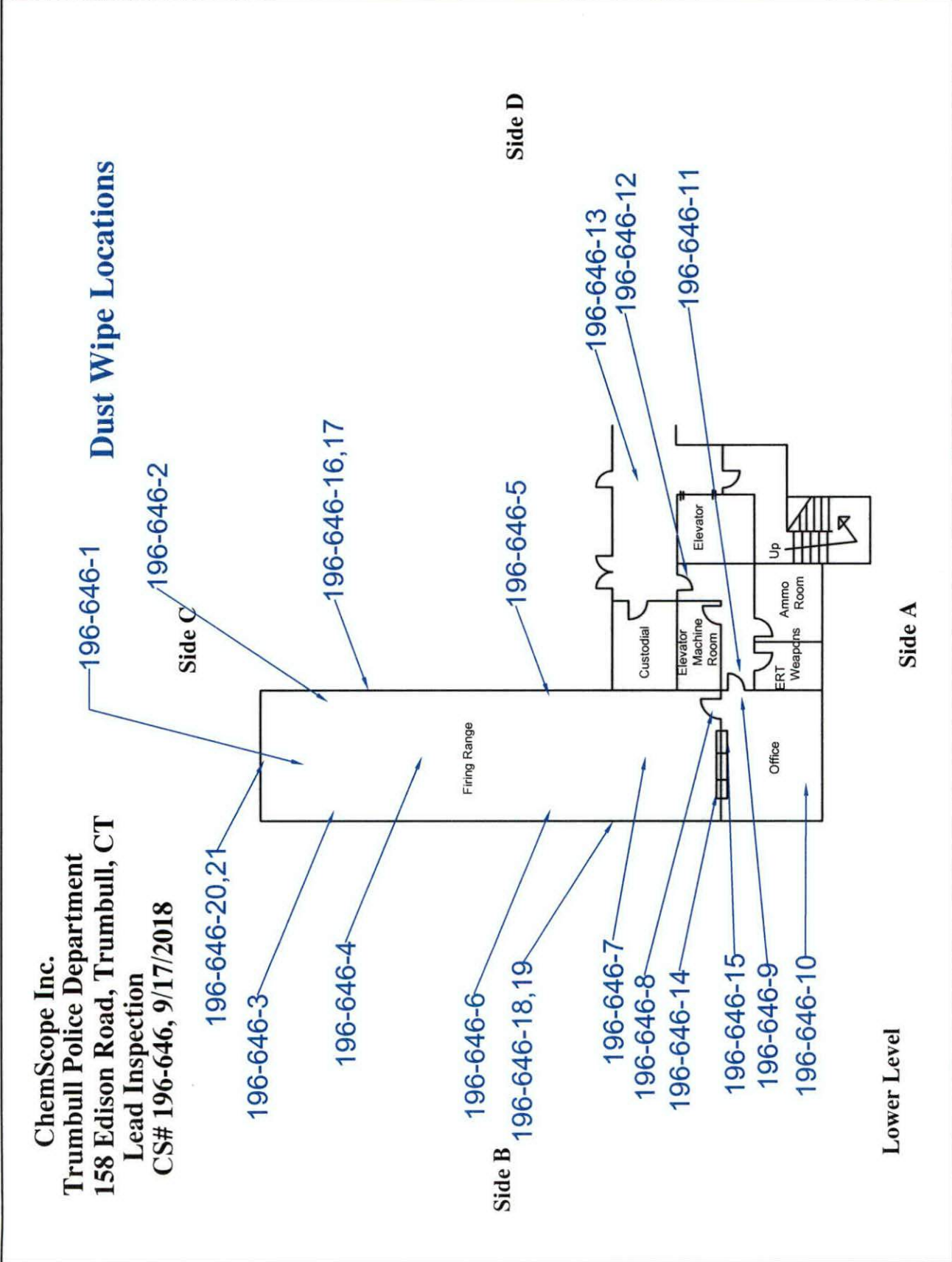
Address _____ Telephone/e-mail _____

Can we contact you regarding this survey? YES__ NO__

ChemScope Inc.
 Trumbull Police Department
 158 Edison Road, Trumbull, CT
 Lead Inspection
 CS# 196-646, 9/17/2018

Dust Wipe Locations

 STATE OF CONNECTICUT DEPARTMENT OF PUBLIC SAFETY LABORATORY	NO. _____
	DATE _____
	BY _____
	FOR _____
	REASON _____
	LOCATION _____
	TIME _____
	BY _____
	DATE _____
	BY _____



DRAWN BY Brian Hoang ChemScope Inc.	FLOOR PLAN 196-646 NOT TO SCALE DATE 9/17/2018 SLD
---	--

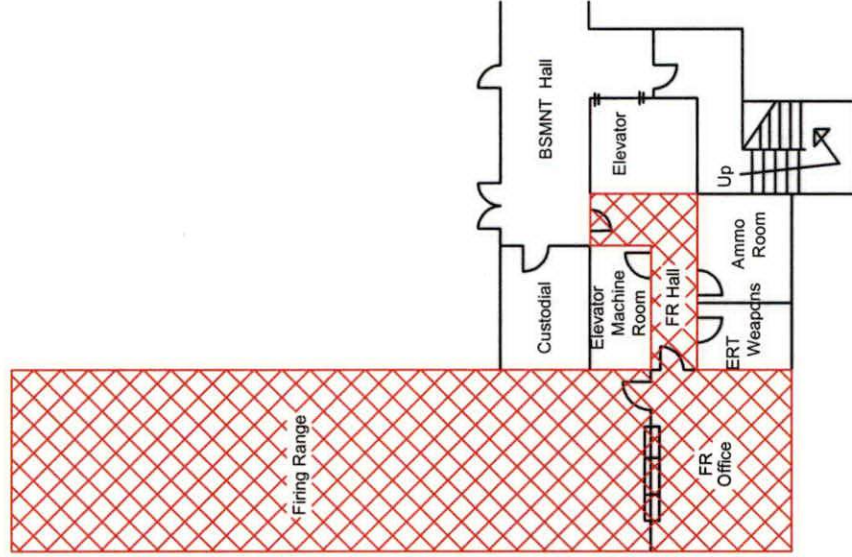
Lower Level

**ChemScope Inc.
Trumbull Police Department
158 Edison Road, Trumbull, CT
Lead Inspection
CS# 196-646, 9/17/2018**



**Location of Areas of Lead Dust Contamination
In Scope Of Sampling**

Side C



Side B

Side D

Lower Level

Side A

APPENDIX C

Greg Raucci
Bismark Construction Co
100 Bridgeport Ave,
Milford CT 06460

10/24/2017

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 1 OF 6**

TABLE OF CONTENTS

Contents	Page(s)
Table of Contents	1
Introduction	2-3
Inspection Report Synopsis	4-5
Recommendations	6

Attachments:

- Scope of Work Drawing, 1 page(s)
- XRF data sheets, 4 page(s)
- XRF quality evaluation sheet, 1 page(s)
- Hazardous Waste Evaluation, 1 page(s)
- Lead dust analytical report and chain of custody, 5 page(s)
- Lead Dust sample location drawing, 1 page(s)

Report Distribution:

Greg Raucci (Bismark Construction) – (gmraucci@bismarkconstruction.com)
Allen White (Town of Trumbull) - (awhite@trumbull-ct.gov)

File Location:

NAS AAUM-Reports\LeadInsp\KD – XRF Survey 2017.doc

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 2 OF 6**

INTRODUCTION

EXECUTIVE SUMMARY: Lead based paint (as defined and regulated by the EPA and DEEP) was detected within the scope of the inspection. Lead (as defined by OSHA regulations 29 CFR 1926.62) was also detected on surfaces and components within the scope of the inspection. Lead dust samples from the interior of the return air ducts in the firing range indicated that these ducts are contaminated with lead dust. This will require workers disturbing these surfaces and components during the upcoming renovations to be properly protected and trained. Because lead based paint was detected, a Hazardous Waste Evaluation was done per CT DEEP regulations to determine if the waste products from the renovation are potentially a hazardous waste. The hazardous waste evaluation was done using a modified “knowledge of process” technique. This modified method resulted in the waste being 84 mg/kg of lead, which is considered not likely to be a lead hazardous waste since it is < 100 mg/kg (the threshold for this modified method).

See summary of findings and recommendations for details.

BUILDING DESCRIPTION: The subject approximately 28,200 sq ft, two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof.

SCOPE OF INSPECTION: Lead Pre-Renovation XRF Screening as directed by Greg Raucci, Bismark Construction Co, our client. We understand that you have plans to renovate select areas (men and women’s locker rooms, gym, shooting range and holding cells) in the basement, as highlighted on the drawing dated 10/11/2017, which includes the disturbance of floor, walls, and ceilings. Please see attached Scope of Inspection Drawing for details.

Lead dust samples were taken from the interior of the accessible return ducts in the firing range area. The interior of the firing range had been cleaned a few years ago but the owner did not believe the ductwork in the area had been cleaned.

Lead water, soil and TCLP testing were not in the scope of this work.

METHOD OF TESTING: The dust samples were sent for analysis to Eastern Analytical Services (EAS), a laboratory accredited by AIHA Laboratory Accreditation Program, LLC and a CT DPH approved Environmental Laboratory in regards to this test, using Atomic Absorption analysis.

QUALIFICATIONS: The Inspection was conducted by:

Kristina Dykes, CT DPH Certified DPH Lead Inspector #002242, Radiation Safety Training.

Chem Scope’s DPH lead license # is CC000164.

This investigation and information provided in this report depends partly on background information provided by the client. This report is intended for the use of the client. The scope of services performed may not be appropriate for other users and any use of this report by third parties is at their sole risk. This report is intended to be used in its entirety. No excerpts may be taken to be representative of this report.

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 3 OF 6**

INTRODUCTION (CONT)

METHOD OF TESTING:

Spectrum Analyzer XRF (x-ray fluorescence). Instrument used: RMD LPA-1, Serial # 1647 in Quick Mode. The unit source (Cobalt 57) for unit 3527 was replaced July 11, 2017. The XRF detects paint in all layers down to the painted substrate. In other words, if lead paint is painted over with new paint, this procedure still detects the lead paint. When paint is covered with metal or plastic trim such as siding or by carpet, the lead paint is usually not detectable. This instrument is registered with the State of Connecticut Dept. of Energy and Environmental Protection and is Generally Licensed under the NRC. This is one of the two methods, which are approved under the CT Dept. of Public Health (DPH) regulations. This is a non-destructive test.

TEST PARAMETERS FOR XRF TESTING USING THIS INSTRUMENT:

XRF readings of 1.0 mg/cm² or higher are lead based paint.

XRF CALIBRATION CHECK:

Standard Reference Material (SRM) paint film nearest to 1.0 mg/cm² within the National Institute of Standards and Technology (NIST) SRM is used to calibrate the XRF. Calibration Readings are taken at the beginning and end of a job and every two (2) hours during the job with three (3) readings per set. The expiration date of the standard used is 7/1/20.

QUALITY CONTROL PROCEDURES:

The XRF is used in accordance with Manufacturer's Performance Characteristics Sheet and instructions. See test data attached for details. Ten (or if <10, then the total number of tests conducted) testing combinations for re-testing from each unit are selected and checked in either 15 second or 60 second readings.

STATEMENT ON ACCURACY:

The XRF Calibration checks were acceptable with each of the three (3) readings before, during (if applicable) and after the testing between 0.7 mg/cm² and 1.3 mg/cm². See attached XRF data sheets for documentation of proper calibration check sequence.

REPORT CONVENTIONS:

Rooms and objects are sometimes given arbitrary numbers to avoid ambiguity. Please refer to the enclosed schematic drawings of the site. Tests are referenced by the side of the building they are facing as indicated on the drawings. Side A is the street side (front), Side B is the left side, Side C is the rear and Side D is the right side.

METHOD OF TESTING:

The dust/soil samples were sent for analysis to Eastern Analytical Services (EAS), a laboratory accredited by AIHA Laboratory Accreditation Program, LLC and a CT DPH approved Environmental Laboratory in regards to this test, using Atomic Absorption analysis.

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 4 OF 6**

INSPECTION REPORT SYNOPSIS

LOCATION NAME AND ADDRESS: Trumbull Police Department
158 Edison Road, Trumbull CT

INSPECTION DATE(S): 10/11/2017

XRF Testing Results: *The following surface(s) and/or component(s) contained a toxic level of Lead based paint (at or above 1.0 mg/cm² as defined in CT DPH regulations 19a-111-1 through 11 and HUD guidelines as measured on site by an X-ray fluorescence analyzer):*

Component/Description	Location
Interior:	
Orange/yellow ceramic tile – wall*	Women’s Locker Room – Side D Men’s Locker Room – Side B & A
Black painted door frame	Cell 1 – Side D

*These ceramic wall tiles, while not painted did test positive for lead. It is common for lead to be present in the glazing and pigments of ceramics.

Dust Wipe Results:

Sample #	Date	Location	Surface	Dust Wipe Result (ug/sq ft)	CT-DPH Standard (ug/sq ft)
194-24-1L	10/11/17	Shooting Range	Inside Return Duct	74641.1	None
194-24-2L	10/11/17	Shooting Range	Inside Return Duct	7703.3	None
194-24-3L	10/11/17	Blank	-	BDL < 7.7	-
194-24-4L	10/11/17	Blank	-	BDL < 7.7	-

BDL = Below Detection Limit

See enclosed laboratory reports for dust wipe test data with applicable standards and schematic drawing showing sample locations.

NOTES: Please note that CT DPH regulations don’t apply to this subject site at this time since this is not a residence with children under the age of six OR considered a child occupied facility or a day care. HUD Regulations in CFR 24-35 do not apply either. They cover public and Indian housing and federally supported living quarters (regardless of children). They cover storm damage, CDA rehab work, and federal mortgages like Fanny May and Freddie Mac.

OSHA 1926.62 Definition: Lead means metallic lead, all inorganic lead compounds, and organic lead soaps. Excluded from this definition are all other organic lead compounds. OSHA regulates any detectable amount of lead.

EPA/HUD Definition: Lead-based paint means paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.

CT DPH Definition: A toxic level of lead is “when present in a dried paint on or in a residential dwelling contains equal to or greater than 0.50 percent lead by dry weight or equal to or greater than 1.0 milligrams lead per square centimeter”

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 5 OF 6**

INSPECTION REPORT SYNOPSIS (CONT)

Hazardous Waste Evaluation:

Because toxic levels of lead were detected, a Hazardous Waste Evaluation was done to determine if the waste products from the renovation are potentially a hazardous waste.

An initial hazardous evaluation was done using a modified (for XRF data as opposed to paint chip data) "knowledge of process" technique intended to approximate the method described by the CT Department of Energy and Environmental Protection (DEEP). That method is one of six methods outlined in the CT DEEP "Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation and Demolition Industries" (11/4/94) for hazardous waste evaluation. For our modified method, data gathered during the XRF inspection is used to calculate for hazardous waste vs. other methods that require TCLP (Toxicity Characteristic Leaching Procedure) testing.

This modified method resulted in the waste being **84 mg/kg of lead**, which is considered **not** likely to be a lead hazardous waste since it is < 100 mg/kg (the threshold for this modified method).

This method is the least expensive method of hazardous waste evaluation but has limited applicability. The other methods include the following:

- Demolish and Test (TCLP test and needs to be done during the renovation or demolition)
- Composite-Sample and Demolish (TCLP test done before the renovation and destructive testing required and challenging to do for renovations if we don't know what the waste stream is actually going to be in the dumpster)

**LEAD BASED PAINT PRE-RENOVATION XRF SCREENING
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 6 OF 6**

RECOMMENDATIONS

Contaminated metal ducts should be handled by properly trained workers and re-cycled. The large ventilation ducts behind the shooting backstop were inaccessible but are assumed to be contaminated as well.

OSHA 1926.62 (worker protection): Work that disturbs surfaces that contain Lead Based Paint (or any detectable amount of Lead) such as is the case for this work must be done according to OSHA regulation 1926.62 OSHA requires employers to conduct air sampling on workers disturbing lead to establish exposure levels to lead for those workers. The recorded levels are then compared to two different airborne concentrations in the OSHA standard: the action limit (AL) and the permissible exposure limit (PEL). Currently, the AL is set at 30 micrograms of lead per cubic meter of air ($\mu\text{g}/\text{m}^3$) and the PEL is 50 $\mu\text{g}/\text{m}^3$. At a minimum, the following is required even for air sample results below the action level (this is known as Category 1):

1. Train employees
2. Conduct Exposure Monitoring (air sampling, as mentioned above)
3. Maintain Records

See details below if your sampling exceeds the standards. Chem Scope, Inc could help with compliance assistance as needed.

OSHA 1926.62 – Additional Details:

Category 2: OSHA regulations require; Same as category I, plus: Provide respirator at employee request, Conduct exposure monitoring every 3 months, and Conduct blood lead monitoring when the exposure monitoring results are 30–50 $\mu\text{g}/\text{m}^3$ (above the action level, but below the PEL).

Category 3: OSHA Regulations require; Same as category II, plus, enforce respirator use, enforce use of protective clothing, develop monitoring every 6 months, enforce housekeeping, provide hygiene facilities, and enforce washing when the exposure monitoring results are 50 $\mu\text{g}/\text{m}^3$ and over (above the PEL).

Sincerely,


Kristina Dykes
Lead Inspector

Site Name: Trumbull Police Department Date of Inspection: 10/11/17
 Site Address: 158 Edison Road, Trumbull CT CS# 194-24
 Customer Name: - Greg Raucci - Bismark Construction Co., Inc.
 Customer Address: 100 Bridgeport Avenue, Milford CT 06460
 Work Area: Basement Page 1 of 4
 Site Description: Police Station Year of Construction: 1980
 Name of Individual Doing Testing: Kristina Dukes CT DPH Lic# 002242
 CO-57 Date Source Installed: 3/11/2016 Software version # N/A Serial # 1647

Test #	Clock Time	NIST Calibration Standard	Results QM (mg/CM2)
1	11:04	NIST SRM 2573 Red	1.0
2	11:05	NIST SRM 2573 Red	1.0
3	11:06	NIST SRM 2573 Red	1.0
81	1:24	NIST SRM 2573 Red	1.0
82	1:25	NIST SRM 2573 Red	1.0
83	1:26	NIST SRM 2573 Red	1.0
		NIST SRM 2573 Red	
		NIST SRM 2573 Red	
		NIST SRM 2573 Red	
4	11:07	NIST SRM 2570 White (Blank)	0.1
84	1:27	NIST SRM 2570 White (Blank)	-0.3

Note: each entry represents a single test on the surface indicated.

- Acceptance limits for calibration are 0.7-1.3.
- 1.0 mg/cm² or higher = lead based paint (LBP)
- All values run under Quick Mode (QM), unless noted otherwise under comments above.
- Calibration std SRM 2573 has 1.0 mg/cm² of lead, expiration of std is 7/1/20.
- DEF under comments means the surface has defective lead based paint

INSPECTOR SIGNATURE/Date/REVIEWED BY/Date: Kristina Dukes 10/11/17 / _____ / _____

Site Name: Trumbull Police DepartmentDate of Inspection: 10/11/17Site Address: 158 Edison Road, Trumbull CT

CS# 194-24

Work Area: BasementPage 2 of 4

Test # / Side	Int/Ext	Room #	Component	Defective (Y/N)	Color	Substrate	Results QM (mg/CM2)	LBP (Y/N)		
5	C	Int.	WL	wall	N	white	CB	-0.4	N	
6	C	"	"	"	N	"	"	-0.3	N	QC
7	C	"	"	floor	N	black/brown	concrete	-0.5	N	
8	C	"	"	"	N	"	"	-0.4	N	QC
9	B	"	"	floor	N	brown	ceramic	-1.1	N	
10	B	"	"	"	N	"	"	-1.1	N	QC
11	B	"	"	wall	N	white	"	-0.5	N	
12	B	"	"	"	N	"	"	-0.4	N	QC
13	D	"	"	door	N	yellow	metal	-0.2	N	
14	D	"	"	"	N	"	"	-0.1	N	QC
15	D	"	"	door wall	N	"	"	-0.4	N	
16	D	"	"	"	N	"	"	-0.1	N	QC
17	D	"	"	wall	N	orange/ylw	ceramic	79.9	Y	
18	D	"	"	"	N	"	"	79.9	Y	QC
19	D	"	"	"	N	white	"	-0.4	N	
20	D	"	"	"	N	"	"	-0.7	N	QC
21	B	"	"	lockers	N	light brown	metal	-0.2	N	
22	B	"	"	"	N	"	"	-0.2	N	QC
23	B	"	"	ceiling	N	white	SK	-0.2	N	
24	B	"	"	"	N	"	"	-0.2	N	QC
25	B	"	WL Hall	wall	Y	yellow	concrete	-0.6	N	
26	D	"	"	"	N	white	CB	-0.3	N	
27	C	"	"	back door	N	tan	metal	-0.1	N	
28	C	"	"	door frame	N	"	"	-0.2	N	
29	C	"	"	door stop	N	"	"	-0.2	N	
30	C	"	"	floor	N	dark grey	concrete	-0.3	N	
31	A	"	"	ceiling	N	white	SGT	-0.0	N	
32	C	"	"	door entrance	N	"	metal	-0.4	N	
33	C	"	"	door stop	N	"	"	-0.4	N	

Signature: Kristina Gykes Date: 10/11/17

Site Name: Trumbull Police DepartmentDate of Inspection: 10/11/17Site Address: 158 Edison Road, Trumbull CT

CS# 194-24

Work Area: BasementPage 3 of 4

Test # / Side	Int/Ext	Room #	Component	Defective (Y/N)	Color	Substrate	Results QM (mg/CM2)	LBP (Y/N)	
34	A	Int.	WL Hall	door frame	N	white	metal	-0.0	N
35	A	"	"	door casing	N	"	"	-0.2	N
36	D	"	Cell B	door	N	"	"	-0.5	N
37	D	"	"	door frame	N	"	"	-0.4	N
38	D	"	Cell A	door	N	"	"	-0.3	N
39	D	"	"	door frame	N	"	"	-0.6	N
40	D	"	Cell 1	door	Y	black	metal	-0.4	N
41	D	"	"	door frame	N	"	"	1.0	Y
42	D	"	"	ceiling	N	white	"	-0.4	N
43	D	"	Cell 2	door	Y	black	metal	-0.4	N
44	D	"	"	door frame	N	"	"	-0.4	N
45	D	"	"	ceiling	N	white	metal	-0.3	N
46	D	"	Cell 3	door	Y	black	metal	-0.5	N
47	D	"	"	ceiling	N	white	"	-0.4	N
48	D	"	"	door frame	N	black	"	-0.3	N
49	B	"	Cell 5	door	Y	"	"	-0.4	N
50	B	"	"	door frame	N	"	"	-0.1	N
51	B	"	"	ceiling	N	white	"	-0.5	N
52	B	"	Cell 8	door	Y	black	metal	-0.4	N
53	B	"	"	door frame	N	"	"	-0.1	N
54	B	"	"	ceiling	N	white	"	-0.5	N
55	A	"	ML	wall	N	"	ceramic	-0.5	N
56	B	"	"	bath door	N	yellow	metal	-0.2	N
57	A	"	"	floor	N	brown	ceramic	-0.8	N
58	B	"	"	wall	N	yellow/orig	ceramic	79.9	Y
59	D	"	"	floor	Y	brown	concrete	-0.5	N
60	D	"	"	lockers	N	tan	metal	-0.1	N
61	A	"	"	wall	Y	white	CB	-0.4	N
62	D	"	"	ceiling	N	"	SR	-0.1	N

Signature: Kristina DybisDate: 10/11/17

Site Name: **Trumbull Police Department**Date of Inspection: 10/11/17Site Address: **158 Edison Road, Trumbull CT**

CS# 194-24

Work Area: **Basement**Page 4 of 4

Test #/ Side	Int/Ext	Room #	Component	Defective (Y/N)	Color	Substrate	Results QM (mg/CM2)	LBP (Y/N)
63	D	Int.	ML Hall wall	N	red	CB	-0.3	N
64	B	"	base board	N	brown	concrete	-0.6	N
65	A	"	door	Y	white	metal	-0.3	N
66	A	"	door frame	N	"	"	-0.1	N
67	A	"	door stop	N	"	"	-0.1	N
68	A	"	Gym wall	N	"	CB	-0.6	N
69	C	"	"	N	"	concrete	-0.3	N
70	A	"	door	N	"	metal	-0.1	N
71	A	"	door stop	N	"	"	-0.2	N
72	A	"	door frame	N	"	"	-0.2	N
73	A	"	door casing	N	"	"	-0.1	N
74	A	"	ceiling	N	"	SR	-0.3	N
75	A	"	Shoonya Range wall	N	white	CB	-0.1	N
76	A	"	wall	N	"		-0.0	N
77	B	"	door	N	"	metal	-0.1	N
78	B	"	door frame	N	"	"	-0.1	N
79	B	"	door casing	N	"	"	-0.1	N
80	A	"	ceiling	N	"	SCT	-0.2	N

Signature: Kristina RybaDate: 10/11/17

Site Name: Trumbull Police Department
 Site Address: 158 Edison Road, Trumbull CT

CS# 194-24
 Date: 10/11/2017

Building Component	Average XRF Readings w/ hot spot w/o hot spot	Material Mass g/cm ²	mg Lead/kg of Mass w/hot spots w/o hot spots	Component Est % of Mass	Weighting Factor	Weighting Factor x mg/kg of lead w/ hot spots w/o hot spots
Unpainted Wood	0	0.6	0.0	5	0.05	0.0
Painted Wood	0	0.6	0.0	0	0.00	0.0
Sheetrock	0	0.45	0.0	30	0.30	0.0
Ceramic Wall Tile	4.2	1.5	2800.0	3	0.03	84.0
Cinderblock	0	60	0.0	55	0.55	0.0
Concrete	0	0.2	0.0	3	0.03	0.0
Metal	recycle	recycle	0.0	4	0.04	0.0
				100	Total*	84.0

*Compared to criterion of > 100 mg/kg lead - (DEP: "Guidance for the Management and Disposal of Lead-Contaminated Materials Generated in the Lead Abatement, Renovation and Demolition Industries" (11/4/94))

A value by this method of >100 mg/kg lead indicates the material is potentially a hazardous waste.

NOTES:

Wood Trim 3/4" = .60 g/cm2
 SR 5/8" = .45 g/cm2
 Plaster (typical two coat) = 1 g/cm2
 Brick (one course - 2 1/4") = 32 g/cm2
 Brick (two course - 4 1/2") = 64 g/cm2
 Concrete 4" = 60 g/cm2
 Cinder Block 5" = 60 g/cm2

Ceramic Tile (typical fl. 1.3 g/cm2
 Ceramic Tile (typical w. 1.5 g/cm2
 Linoleum = 0.2 g/cm2
 Carpet = 0.2 g/cm2
 Fiberboard = 0.4 g/cm2
 Roof Shingle=0.36 g/cm2

EVALUATING THE QUALITY OF XRF:

Site Name: Trumbull Police Department
 Site Address: 158 Edison Road, Trumbull CT

CS# 194-24

Date: 10/11/2017

Location	Original Reading	Retest Reading	Square of Original Reading	Square of Retest Reading
1. Interior - Women's Locker - Wall - Side C	-0.4	-0.3	0.16	0.09
2. Interior - Women's Locker - Floor - Side C	-0.5	-0.4	0.25	0.16
3. Interior - Women's Locker - Floor - Side B	-1.1	-1.1	1.21	1.21
4. Interior - Women's Locker - Wall - Side B	-0.5	-0.4	0.25	0.16
5. Interior - Women's Locker - Door - Side D	-0.2	-0.1	0.04	0.01
6. Interior - Women's Locker - Door Wall - Side D	-0.4	-0.1	0.16	0.01
7. Interior - Women's Locker - Wall - Side D	9.9	9.9	98.01	98.01
8. Interior - Women's Locker - Wall - Side D	-0.4	-0.7	0.16	0.49
9. Interior - Women's Locker - Lockers - Side B	-0.2	-0.2	0.04	0.04
10. Interior - Women's Locker - Ceiling - Side B	-0.2	-0.2	0.04	0.04
Sum of ten squared averages ("C"):			100.32	100.22
	"C" times 0.0072 ("D"):		0.722304	0.72158
	"D" plus 0.032 ("E"):		0.754304	0.753584
	Square root of "E" ("F"):		0.86851	0.868092161
	"F" times 1.645 (Retest Tolerance Limit):		1.4287	1.4280
Average of the ten XRF Readings:				
			0.60	0.64
Absolute difference of the two averages:				
			0.0400	
If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest.				

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Bismark Construction Co., Inc.
100 Bridgeport Avenue
Milford CT 06460

10/25/2017
CS# 194-24

LEAD ANALYSIS BY ATOMIC ABSORPTION

Lead dust wipe samples from Trumbull Police Department, 158 Edison Road, Trumbull CT, collected by ChemScope, Inc., on 10/16/2017:

See attached chain of custody form and EAS Analytical Services, Inc., report for sample descriptions and analytical data; and applicable standards on reverse side of this page.

Suzanne Cristante or
Laboratory Director

Izabela Kremens or
Quality Manager


Ronald Arena
Senior Consultant

LEAD STANDARDS AND GUIDELINES

(Revised 4/2013)

The following are some existing known standards and guidelines as they relate to lab analysis for lead by AAS. ChemScope assumes no liability for the use of these data. All values are expressed as pure lead, Pb.

1. Lead in Dust Standards: Connecticut DPH, EPA & HUD:

Dust-Wipe Re-Occupancy Testing:

Floors: 40 micrograms/sq ft

Sills: 250 micrograms/sq ft

Window Wells: 400 micrograms/sq ft

Toxic Level of lead in dry paint: 0.5%

*NOTE: City of Stamford has a stricter standard of .06%

2. For Air Samples: OSHA PEL (Permissible Exposure Limit) is 50 micrograms/cubic meter and the AL (Action Level) is 30 micrograms/cubic meter.

3. For Soil: 400 PPM is considered contaminated.

State regulations (CT DEEP RCSA 22a-133K) require lead-contaminated soil to be cleaned up to a concentration of 500 ppm in residential areas and 1,000 ppm in industrial and commercial areas. But in practice the Department of [Energy and] Environmental Protection (DEEP) and state and local health departments apply a 400 ppm standard in residential areas. DEEP has begun the process of adopting the 400 ppm standard in regulation.

OLR Research Report, October 11, 2006, 2006-R-0596

4. For any material to be disposed of: the DEP and EPA Standard for TCLP lead is 5 milligrams/liter. In addition, other substances besides lead may need to be tested which are not in the scope of this test report.

5. Consumer Product Safety Commission: Lead in paint for sale 0.06%.

6. For Drinking Water Samples (First Draw and Fully Flushed samples):

State of Connecticut Action Level: 0.015 mg/l

EPA Action Level: 15 ppb

NOTE: .015 mg/l = 15 ppb





Eastern Analytical Services, Inc.

Wipe Sample Report

RE: CPN 194-24 - Greg Raucci - Bismark Construction Co., Inc. - Trumbull Police
Department - 158 Edison Road - Trumbull, CT

Date Collected: 10/11/2017
Collected By: Daniel Sullivan
Date Received: 10/16/2017
Date Analyzed: 10/16/2017
Analyzed By: Everton Byron Barrett

Client: Chem Scope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Signature: 
Analyte: Pb Dust
Analytical Method: EPA 3050B/7000B
NYS Lab Number: 10851
Paul Stascavage , Lab Director

Sample ID# / Lab ID#	Sample Location	Sample Notes	Concentration
194-24-1L 2518505	Basement Range - Inside Return Duct - Front	Dust Wipe - 1 Sq. Ft. Area	74641.1 µg/ft ²
194-24-2L 2518506	Basement Range - Inside Return Duct - Back	Dust Wipe - 1 Sq. Ft. Area	7703.3 µg/ft ²
194-24-3L 2518507	Not Applicable	Field Blank	BDL < 7.7 µg
194-24-4L 2518508	Not Applicable	Field Blank	BDL < 7.7 µg

BDL = Below Detectable Limits. Reporting Limit = 0.3 ppm
Liability Limited to Cost of Analysis
Results Applicable to Those Items Tested. Results are Not Blank Corrected. All QC within Control Limits Unless Otherwise Indicated. Samples received in acceptable condition unless otherwise noted.
AIHA Accreditation No. 100263 Rhode Island DOH No. LAO00107 Massachusetts DOL No. A A 000072 Connecticut DOH No. PH-0622 Maine DEP No. LA-024 Vermont DOH No. AL-709936

PO# 1996

Form FL-4 Rev 11/12/13
(Issued By SC)

ChemScope

INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Emailed _____
Faxed _____
Called _____
Logged

Chain of Custody

Trumbull Police Department

Sample Source: 158 Edison Road, Trumbull CT

CS Job # 194-24

Sampled By: Du Date Sampled: 10/11/17 Customer Name: Greg Raucci - Bismark Construction Co., Inc.

CS Sample#	Room Client Sample#	Sample Description	Comments
194-24-1L	Basement Pump	Inside Return Out Front	15g ft Lead in Dust
-2L	" "	" " " Back	15g ft " "
-3L	-	Blank	"
-4L	-	"	"

Sample Turnaround: 72-hr
 Analysis Requested (if variable, use comment column): PLM of 10/11/17 Lead in Dust (ug/ft²)

Check if you want sample returned _____ (sample will be disposed of after 30days).

Relinquished by: Du Date: 10/13/17 Time: _____ Received By: _____
 Relinquished by: _____ Date: _____ Time: _____ Received By: _____

Other Special Instructions: _____

Result Transmittal Instructions (for Chem Scope to transmit): Tell DS for Report

FOR CHEM SCOPE, INC. TO FILL OUT IF SAMPLES ARE GOING TO OUTSIDE LABORATORY:

Name of Laboratory: EAS
 Method of Transportation to Laboratory: Fed Ex
 Result Transmittal Instructions (for outside Laboratory to Chem Scope, Inc): _____

The person submitting samples is responsible for obtaining true and representative samples, for complying with applicable regulations and for the use of the data obtained from the analysis. For example, many states have licensing and laboratory approval requirements. Please contract the individual states if you have any questions regarding specific sampling or approval requirements. For Connecticut, sites we have licensed inspectors available to collect client samples and to perform building inspections.

Dear Laboratory Customer or Potential Customer,

New laboratory accreditation standards require us to provide our clients information about our services to make sure that your requirements for testing are adequately defined, documented and understood. The following is for your information. Please call us if you have any questions or comments.

Type of Samples

// PCM cassettes are routinely run by NIOSH Method 7400.

// Bulk materials are run by EPA Method: #600/R-93/116.

Air Samples: NIOSH 7400 Method counts all fibers. This method may be used for personal air samples and for finals. Two field blanks must be submitted for each set of samples. In the unlikely event that there is to be any deviation from the standard test, you will be consulted by phone before the work begins. Those clients who have not had NIOSH 582 or AHERA asbestos training courses (either supervisor or project monitor) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

Bulk materials: sampled are analyzed by the latest EPA Method: (#600/R-93/116) which uses polarized light microscopy (PLM). When asbestos is detected and the amount is estimated to be less than 10%, we automatically point count the samples. When there are interfering substances present, we may use ashing, acid washing or other procedures described in the method to handle the interference. Those clients who have not had AHERA asbestos training courses (either inspector, supervisor or project designer) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

All Samples must be clearly labeled with source name and identification number or sufficient information from the client to make this sample uniquely identified. (We will then add our notebook #, page # (batch) and unique number within the batch.) Samples must be in a clean, air tight package such as a zip loc bag. Appropriate completed paperwork must accompany the sample. Bulk and air samples may not be submitted in the same package.

As soon as available bench top results will be faxed to you and reports will then be mailed. We will retain air samples for at least three months and bulk samples for 6 months unless you advise us otherwise.

You are welcome to visit the laboratory at any time to discuss the work, monitor the work or verify our testing services. We appreciate your business and encourage any feedback regarding improving our services or our quality system. Please take a minute to complete the following survey and mail/fax it to ChemScope, Inc.

Customer Service Survey

To help us improve our services give your opinions to the following:

1- The printed laboratory report was complete and easy to understand. YES__ NO__
If no, please explain _____.

2- The turn around time for results met your expectations/needs. YES__ NO__
If no, please explain _____.

3- How likely are you to recommend ChemScope Inc. to someone?
Excellent__ Very Good__ Good__ Fair__ Poor__

4- How likely are you to return to ChemScope in the future if the need arises?
Excellent__ Very Good__ Good__ Fair__ Poor__

5. On a scale of 1 to 5 where 1 represents "Satisfied" and 5 represents "Dissatisfied", how would you rate your level of overall satisfaction.

1__ 2__ 3__ 4__ 5__

6- Please add any additional comments or suggestions that would be helpful when you use our services:

Name _____ Company _____

Address _____ Telephone/e-mail _____

Can we contact you regarding this survey? YES__ NO__

APPENDIX D

1003567 01 AB 0.405 **AUTO T8 0 0864 06473-368615 -C01-P03572-I



DANIEL P. SULLIVAN
CHEMSCOPE, INC.
15 MOULTHROP STREET
NORTH HAVEN CT 06473-3686

Dear DANIEL P. SULLIVAN,

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
opl.c.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
DANIEL P. SULLIVAN

VALIDATION NO 03-663314	CERTIFICATE NO 002124	CURRENT THROUGH 04/30/19
----------------------------	--------------------------	-----------------------------

PROFESSION
LEAD PLANNER/PROJECT DESIGNER

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
LEAD PLANNER/PROJECT DESIGNER

DANIEL P. SULLIVAN

CERTIFICATE NO
002124

CURRENT THROUGH
04/30/19

VALIDATION NO
03-663314

SIGNATURE

COMMISSIONER

INSTRUCTIONS:

1. Detach and sign each of the cards on this form
2. Display the large card in a prominent place in your office or place of business.
3. The wallet card is for you to carry on your person. If you do not wish to carry the wallet card, place it in a secure place.
4. The employer's copy is for persons who must demonstrate current licensure/certification in order to retain employment or privileges. The employer's card is to be presented to the employer and kept by them as a part of your personnel file. Only one copy of this card can be supplied to you.

WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
DANIEL P. SULLIVAN

VALIDATION NO 03-663314	CERTIFICATE NO 002124	CURRENT THROUGH 04/30/19
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PROFESSION
LEAD PLANNER/PROJECT DESIGNER

SIGNATURE COMMISSIONER

CERT#: L-700-358

**CHEMSCOPE TRAINING DIVISION
LEAD PLANNER DESIGNER REFRESHER
8HOUR TRAINING CERTIFICATE**

Daniel Sullivan

15 Moulthrop Street, North Haven CT

Has attended an 8hour course on the subject discipline in English on
8/24/2018 and has passed a written and hands on skills examination.

The above individual has successfully completed the above training course approved in accordance with the Department of Public Health Standards established pursuant to Section 20-477 of the Connecticut General Statutes.

Course syllabus includes all required topics of State of Connecticut DPH and EPA.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (U.S.C. 1001 and 15 U.S. C. 2615), I certify that this training complies with all applicable requirements of Title IV of TSCA, 40 CFR part 745 and any other applicable Federal, State or local requirements.

Examination Score: 92%

Exam Date: 8/24/2018

Expiration Date: 8/24/2019



Ronald D. Arena
Training Manager

Chem Scope, Inc.
15 Moulthrop Street
North Haven CT 06473
Phone: 203.865.5605
www.chem-scope.com

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610 • chem-scope.com

ASBESTOS ABATEMENT SPECIFICATIONS

TRUMBULL POLICE DEPARTMENT

LOWER LEVEL

158 EDISON ROAD, TRUMBULL, CT

OCTOBER 31, 2018

Prepared by

Daniel Sullivan

Accredited Lead Planner Designer,
State of Connecticut, USEPA

Certificate # PD-001-462 Chem Scope Training Division

Licensed Asbestos Consultant, State of Connecticut DPH,
Asbestos Project Designer Certificate # 000096, Validation # 03-663672

Chem Scope, Inc.
15 Moulthrop St
North Haven CT 06473
(203) 865-5605

1003576 01 AB 0.405 **AUTO T8 0 0864 06473-368615 -C01-P03581-I



DANIEL P. SULLIVAN
CHEMSCOPE, INC.
15 MOULTHROP STREET
NORTH HAVEN CT 06473-3686

Dear DANIEL P. SULLIVAN,

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
opl.c.dph@ct.gov
www.ct.gov/dph/license

Sincerely,

RAUL PINO, MD, MPH, COMMISSIONER
DEPARTMENT OF PUBLIC HEALTH

EMPLOYER'S COPY

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
DANIEL P. SULLIVAN

VALIDATION NO 03-663672	CERTIFICATE NO 000096	CURRENT THROUGH 04/30/19
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PROFESSION
ASBESTOS CONSULTANT-PROJECT DESIGNER

SIGNATURE COMMISSIONER

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

PURSUANT TO THE PROVISIONS OF THE GENERAL STATUTES OF CONNECTICUT

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ASBESTOS CONSULTANT-PROJECT DESIGNER

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CURRENT THROUGH
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SIGNATURE

COMMISSIONER

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WALLET CARD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

NAME
DANIEL P. SULLIVAN

VALIDATION NO 03-663672	CERTIFICATE NO 000096	CURRENT THROUGH 04/30/19
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PROFESSION
ASBESTOS CONSULTANT-PROJECT DESIGNER

SIGNATURE COMMISSIONER

CERT#: PD-001-462

**CHEMSCOPE TRAINING DIVISION
ASBESTOS PROJECT DESIGNER REFRESHER
8 HOUR TRAINING CERTIFICATE**

Daniel Sullivan

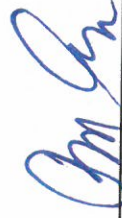
15 Moulthrop Street, North Haven CT

Has attended an 8 hour annual refresher course on the subject discipline on
2/23/2018 and has passed a written examination.

"The person receiving this certificate has completed the requisite training required for asbestos accreditation as a project designer under TSCA Title II"
Course topics include Background Information on Asbestos, Abatement Construction Projects, Safety System Design Specifications, Personal Protective Equipment, Additional Safety Hazards, Fiber Aerodynamics and Control and Designing.

This training course has been accredited by the State of Connecticut.

Examination Score: 97%
Exam Date: 2/23/2018
Expiration Date: 2/23/2019



Ronald D. Arena
Training Manager

Chem Scope, Inc.
15 Moulthrop Street
North Haven CT 06473
Phone: 203.865.5605
www.chem-scope.com

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PART 1 - BACKGROUND INFORMATION

1.1 REASON FOR THE WORK:

- A. The asbestos abatement work at this property is being done to accommodate planned renovations.

1.2 BUILDING DESCRIPTION:

- A. The subject approximately 28,200 sq ft, two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof. No children under the age of six currently reside at this property.
- B. The building has spray-on fireproofing and overspray which has tested as containing vermiculite. The presence of vermiculite requires treatment as an ACM based on DPH and EPA recommendations. In addition the material is regulated by OSHA since it has <1% asbestos. Vermiculite and materials which contain vermiculite will need to be properly removed (abated) and disposed of prior to renovation or demolition that would disturb it. Abatement work should be done by a licensed asbestos abatement contractor using proper procedures and practices with certified and trained individuals.

PART 2 - SCOPE OF WORK:

2.1 General Notes:

- A. The Work of this Contract is for work to be done in accordance with applicable regulations and these specifications.
- B. Asbestos work areas are listed in 2.2 Detailed Scope of Work.
- C. Where amounts or quantities are given, these amounts or quantities have been estimated by eyeball or from plans and not measured. Contractor shall have no claim as to added work as the result of accepting said estimates. Contractor is required to verify quantities and report any discrepancies before the bid due date or to accept the amounts or quantities to be correct as herein stated.
- D. Where square footage is given for floor tile and spray-on, this is the approximate total floor area and work includes all specified floor covering in that space.
- E. Prices must include all costs including proper abatement and disposal.
- F. Coordinate removals and protection to maintain building security and to prevent dust from entering as the result of outside abatement work. Securing window openings after asbestos abatement will be the responsibility of others.
- G. Contractor is responsible for proper disposal of all wastes.
- H. **Except where noted**, perform incidental demolition to access materials to be removed where removal is indicated on Drawing-ASB-196-995-1 to facilitate the work as outlined in the architects drawing A-1.1 and D-1.1.
- I. Prior to the Work, furniture and stored materials in the intended Work Areas will be relocated by others to non-Work Areas.
- J. Refer to drawings appended where work locations are shown schematically.
- K. All replacement materials will be put in by others except were noted otherwise. Only non-ACM replacement materials can be used.

SCOPE OF WORK (CONT)

2.2 DETAILED SCOPE OF WORK:

A. ASBESTOS ABATEMENT:

Remove all Asbestos Containing Materials (ACM) as delineated below and on Drawing-ASB-196-995-1. The asbestos contractor is responsible for any demolition to access these materials.

A. Remove all spray-on surfacing on metal beams and corrugated deck including all over spray (on walls, ducts, beams, wires, etc.) as delineated below to facilitate the work as outlined in the architects drawing A-1.1 and D-1.1 .

1. In areas were ACM spray-on is to be removed and soft lay-in ceiling tiles exist, remove the soft lay-in ceiling tiles (which are contaminated with ACM spray-on which has delaminated and fallen on top of the ceiling tiles), metal T-grid, and support wires. The soft lay-in ceiling tiles are to be disposed of as ACM waste. The soft lay-in ceiling tiles will be replaced by others after the abatement project. Clean or replace metal t-grid.
2. In areas were ACM spray-on is to be removed and plaster ceilings exist, remove the plaster ceilings (which are contaminated with ACM spray-on which has delaminated and fallen on top of the plaster ceilings) and wire mesh. The plaster ceilings are to be disposed of as ACM waste. The ceilings will be replaced by others after the abatement project. The black struts can be left in place clean, disposed of as ACM waste, or removed, cleaned and disposed of as clean waste.
3. In areas were ACM spray-on is to be removed and sheetrock ceilings exist, remove the sheetrock ceilings (which are contaminated with ACM spray-on which has delaminated and fallen on top of the plaster ceilings). Dispose of the sheetrock as ACM waste.
4. Remove all fiberglass and/or mineral wool insulation pipe insulation as part of this work. The fiberglass/mineral wool is to be removed and disposed of as ACM waste.
5. The asbestos contractor will be responsible for removing light fixtures. The fixtures can be cleaned and removed as clean waste or wrapped and disposed of as ACM waste. As part of this work remove associated BX wire back to the junction box. This wiring will be locked out and tagged out by others; However, the asbestos contractor is responsible for verifying that all wiring to be removed is properly locked out and tagged out. Also, label each fixture and indicate each fixture location on drawings provided. This will insure that they can be properly re-installed by others after the project.
6. The asbestos contractor will be responsible for isolating the sprinkler system. Follow local fire protection regulations and Police Department's in house policy. Generally this is done, by bagging each sprinkler head with a light gauge plastic.
7. The asbestos contractor will be responsible for providing temporary power and lighting.
8. Fire retardent poly is to be used for all applications were poly is required. In addition, non see through poly will be used for critical barriers which separate occupied non-work areas and containment work areas in areas where the non-work areas.

2.3 ADDITIONAL DETAIL OF EXECUTION OF WORK

A. General Instructions:

1. Work will be executed according to the preceding instructions in the general section of this Specification except as modified by instructions under this section as follows:
2. Spray glue, tape and other residues must be removed from wall and ceiling surfaces to be preserved.
3. The asbestos contractor is to provide means of reaching high work such as lifts, scaffolding, ladders and the like. Use of combustion engine driven equipment inside the building is prohibited.
4. Any temporary lighting will be supplied by the asbestos contractor. Fixtures should be floor mounted or otherwise strategically located so that they are out of the way of the work and provide adequate lighting in accordance with OSHA requirements.
5. Project Monitor Services will be provided by Owner. Air clearance testing and monitoring shall be performed by the Project Monitor, Chem Scope, Inc. Cooperate with Owner and the Construction Manager (CM) and testing laboratory in scheduling and obtaining samples.
6. Specifics as to locations of Negative Air and Decon Unit will be coordinated between Contractor and IH.
7. Space will be provided for a truck to enter and unload and to load waste bags. Locations will be provided for an on site dumpster. Any dumpsters must be properly labeled and properly secured.
8. There are windows at outside walls that can be opened sufficiently to discharge negative air exhausts; some adapting will be needed.
9. Perform related work to access the asbestos materials to be removed including minor demolition.
10. When replacement is to be done, only asbestos free replacement materials shall be used and a MSDS and certification that the materials are asbestos free shall be provided by the installer to the owner.
11. Pre-existing damage to any equipment, fixture or surface in the area must be documented with narrative and photographs before the work by the Contractor and verified by the Project Monitor during the week before project start. A report of pre-existing damage, signed by the Project Monitor, must be faxed and mailed to the owner before project start up. Otherwise Contractor will be held responsible. This provision does not apply where damage is caused by roofing operations or by influx of water.
12. Protect all surfaces and equipment against damage. Contractor shall be responsible for repairing any damage or marring caused to surfaces or equipment except surfaces to be abated. Clean all marks from surfaces left by glue, duct tape or otherwise restore and refinish if necessary to restore surfaces.
13. The owner is to provide heated make up air through a roof top unit. Some adapting will be required. This air should be brought into the building at the decontamination unit location.
14. Once adequately wetted, double bagged and properly sealed, the waste from the containment will be brought from the second floor, out a window on to a same level roof top and lifted to the ground in a manner not to jeopardize the integrity of the waste containers. If there is to be an onsite dumpster, the dumpster will need to be secured and properly labeled at all times.

2.3 ADDITIONAL DETAIL OF EXECUTION OF WORK (CONT)

B. Phasing and Scheduling of Work

1. Phasing:
 - a. The second floor will be separated in too three (3) work areas, two (2) larger areas of equal size and a smaller area covering the stairwell to be done over a long weekend.
2. General:
 - a. Early phasing and scheduling of Work shall be as established by the owner with the understanding that work shall be scheduled for completion within the time period stated in Contract.
 - b. Each Contractor shall at all times conduct his operations in such a manner so as to cause as little interruption and inconvenience as possible to Owner and to adjoining property owners, and permitting the safe and normal use of existing buildings, facilities, grounds, walks, etc.
 - c. Scheduling of work shall be closely monitored and shall adhere to the phasing and scheduling approved unless the owner agrees to a requested modification which will permit an earlier completion.
 - d. No extra costs will be allowed any Contractor due to his being required to adjust his scheduling to conform to the Owner's needs. Such as being asked to conduct some work off-hours and during week end hours.

DIVISION 1 - ASBESTOS ABATEMENT

1. Principal Regulations:

The Asbestos Abatement Contractor, the Contractor, will conform to all applicable Federal State and Local Regulations. The principal Applicable Regulations are:

General: The Work includes the Removal of Asbestos containing materials by persons who are knowledgeable, qualified, and trained in Asbestos Abatement.

OSHA 29 CFR 1926.1101 (Construction Industry Asbestos Standard)

NESHAP (National Emissions Standards for Hazardous Air Pollutants) 40 CFR 61 Subpart M.

Connecticut General Statutes Sections 19a-332-1 through 19a-332-16 inclusive. (Standards for Asbestos Abatement).

Regulations of Connecticut State Agencies Sections 20-440-1 through 20-440-9 inclusive. (Licensing and Training Requirements for Asbestos Abatement)

Worker Protection Rule 40 CFR 763 Subpart G (Applies to school workers).

OSHA 29CFR 1910.134 (Applies to Respirator Use.)

OSHA 29CFR 1910.38; 1926.24 and 1926.150-155 (Fire Safety)

OSHA 29CFR 1926.401 and 1926.416-.417 10.134 (Electrical Safety)

OSHA 29CFR 1926.450 (Ladder Safety)

OSHA 29CFR 1926.451 (Scaffold Safety)

OSHA 29CFR 1910.141 (Shower and Sanitation requirements)

State, County, and City or Municipal codes and ordinances as applicable.

United States Patent Laws and Regulations.

CFR 49 parts 171-173 US Dept of Transportation.

New pending applicable regulations if promulgated during the project.

Connecticut General Statutes Sec 22a-209-8 (i) (DEP Applies to Waste Disposal in Connecticut)

Public Act 91-260, effective 12/1/92 (Applies to School Buildings)

Note: Where applicable State, Federal and Local Regulations differ, the more stringent regulation applies.

2. Air Monitoring

a. Provided by: All samples other than contractors personal air samples will be provided by the Building Owner who will hire an industrial hygienist (IH) to continuously monitor the work as herein specified.

b. Methods:

Samples will be collected and analyzed according to NIOSH Method 7400 (PCM) except where TEM analysis is specified for final air samples.

Final air samples will be collected aggressively and analysis conducted by TEM or PCM as specified in 40 CFR 763 Subpart E. TEM is required for reoccupancy testing of Work Areas with >500 lin ft or >1500 sq ft of Asbestos Materials to be Abated. PCM shall be used in all other cases.

c. Lab Qualifications:

1) Analysis of the air samples by NIOSH 7400 will be made by a laboratory Accredited by AIHA (American Industrial Hygiene Association). The Laboratory must be a State Approved Public Health Laboratory (approved by Connecticut Department of Health Services Laboratory Division) for Asbestos analysis in air and must participate in and be Proficient in the NIOSH PAT Program for Asbestos.

2) Analysis of TEM samples will be made by a NIST/NVLAP Accredited Lab for TEM analysis. (National Institute of Standards and Technology/National Voluntary Laboratory Accreditation Program)

3) Air sample analysis by PCM (NIOSH 7400 or OSHA ORM) must be conducted by individuals trained in the National Institute for Occupational Health (NIOSH) course # 582, Sampling and Analysis of Airborne Asbestos Fibers and/or equivalent course.

d. IH Air Sampling Program (optional):

1) Pre-Abatement Air Sampling:

Pre-Abatement air samples will be collected at strategic locations inside and outside the planned Work Area to establish prevalent ambient air concentrations under normal building activity before the Abatement Work begins.

2) During Abatement Monitoring, Area Samples:

Daily samples will be collected which are representative of the air outside each Decontamination Enclosure System (Decon), and in each Negative Air Unit exhaust. Sampling will be also done where feasible in the closest approach corridor(s) or other spaces outside the Work Area in locations determined by the IH.

3) Post Abatement Testing (only visual inspection required for exterior roof work):

After completion of Removal in a Work Area, the Contractor will make the first visual inspection and notify Chem Scope at least 24 hours in advance when the area is ready for testing. Following completion of the Contractor's visual inspection, the IH will perform a visual inspection to ensure that no visible residue remains. The final air samples will be collected aggressively and analysis conducted by TEM or PCM as specified in 40 CFR 763 Subpart E.

e. Contractor's Personal Air Samples

Personal air sampling shall be conducted by the Contractor according to CFR 29 1926.1101 to ensure workers are using proper respiratory protection. Samples will include daily 30 min excursion limit (EL) samples and 8 hour time-weighted average concentration (PEL) samples. PEL Samples must cover each type of work operation for each shift in each Work Area and at least 25% of the work force must be sampled. For each shift, at least one EL sample must be taken at the time of expected peak exposure during the shift in each Work Area. All personal air sampling results must be recorded at the work site within 24 hours and be available for review until the job is complete. These results must be included with the Contractor's submittals at the conclusion of the project. Each sample report must have the worker's name, Social Security Number, time of collection, properly calibrated flow rate at the start and end of sampling, the date, the nature of the work done, the type of respirator used, and the name of the Work Area. Each set of air samples must be accompanied by two field blanks.

f. Qualifications of Persons Collecting Air Samples:

All persons collecting area air samples or supervising personal air sampling must hold a current EPA AHERA and Connecticut Accredited Training Course Asbestos Supervisor's/Monitors Certificate and be licensed by DPH.

3. Notifications

- A. Connecticut DPH: Contractor will prepare and submit 10-day notification forms required by the State of Connecticut Department of Public Health. Notification 10 calendar days before the project will be sent to:

**Connecticut Dept of Public Health (DPH)
410 Capitol Ave - MS # 51AIR,
P.O. Box 340308
Hartford, CT 06134
(860) 509-7367**

- B. For projects involving any demolition regardless of RACM amount or renovation which may disturb more than 260 linear ft or 160 Sq ft of RACM:
1) Prepare and submit 10- (weekday) notification forms required by the USEPA.
2) Submit forms to:

**Asbestos Reno Demo Notification USEPA,
Region 1 5 Post Office Square
Mail Code OES05-4
Boston MA 02109-3912**

- 3) Remember, for demolition, notification is required even if no asbestos is involved.
4) If amount of RACM changes by 20% or more, a revised notice is needed.
5) If start date of project changes, a revised notice is needed.

4. Pre-Work Meeting;

a. Technical Submittals

1) Copies of all required permits and notifications.

2) Copy of Contractor's Asbestos Abatement license.

3) Copies of supervisor and worker certificates and CT DPH licenses (original and all refreshers up to current refresher of certificates) for each employee. To be used for the project training including EPA - ASHARA, OSHA and may be Connecticut DPH required training in a State of Connecticut Approved training center: 5 days for supervisors and 4 days for workers. For each worker proof of up to date fit testing and medical surveillance required by CFR 29 1926.1101 and 1910.134.

4) Documentation, when rental equipment is to be used, that the renter is aware of the intended use of the rented equipment for Asbestos Work.

5) Insurance Coverage Required.

6) Copies of State Notifications and any alternate work practice approvals.

7) Vacuums, Negative Air equipment, and other local exhaust/ventilation equipment conform to ANSI Z9.2-1979.

8) Fire safety: Contractor is responsible for applicable notifications, coordination regarding fire safety, alarm and sprinkler management. Emergency response plans must be determined in advance. The contractor must have provided worker fire extinguisher training according to OSHA 1926.50 (a)(5). Escape route breakthroughs and avenues of exit in the event of a fire must be visibly marked inside the containment. Fire extinguishers must be provided inside and outside the containment. Emergency lighting must be installed and properly operating.

9) Copies of any Contractor requests for Approval of Alternate Work Practices to Connecticut DPH (Dept. of Public Health) including copies of any DPH approval correspondence and the Contractor request itself must be forwarded to the IH and the Building Owner and kept on site at all times during the project.

10) Required OSHA Hazard Communication information and training for any hazardous chemicals at this site according to CFR 29.1926.59. A list of all the hazardous chemicals to be brought to the site including amounts to be brought in, the intended use, and Material Safety Data Sheets (MSDS's) for each chemical.

5. Qualifications of Contractor:

a. General:

Contractor must have sufficient ability and experience in Asbestos Abatement and must be capable of meeting all the requirements of the regulations and the specification to enable him to prosecute and complete the Work successfully within the time named, or where such time is not named, within a reasonable period of time as is determined by the owner. The owner's decision of judgement on these matters shall be final, conclusive and binding.

b. Qualifications of Contractor Personnel: Contractor personnel must meet all the requirements in item 4 above as evidenced by the submittals.

c. Subcontractors: Any personnel who are not on the contractor's direct payroll are considered subcontractors and full submittals as to qualifications, insurance and experience shall be required for any such subcontractors.

5A. Contractor performance items to be monitored by the IH:

a. Personal Protection including appropriate respirators, disposable suits, and other safety equipment. All persons entering any Work Area shall wear prescribed protective clothing and respirators until the final clearance tests are successfully completed for that Work Area.

b. Posting signs to comply with OSHA 1926.1101 and NESHAP Supervisor's training Certificate. Proof of AHERA Accreditation and State of Connecticut DPH required Asbestos Supervisor/Monitor training is required to be posted to show compliance with the NESHAP requirement.

c. Maintaining copies of Regulations on site including 1926.1101 and 40 CFR.61 and the Connecticut General Statutes Sections 19a-332-1 through 19a-332-16 inclusive.

d. Proper Decontamination procedures such as proper use of suits and shower and that the shower and other safety equipment are properly functioning. There must be at least one shower for each ten persons or less of each sex.

e. Ensuring OSHA requirement for no smoking is observed.

f. General Condition of the Work Area and operation of control equipment at each phase of the project is in accordance with regulations including:

g. Proper preparation of the Work Areas including:

Electrical preparation.

Temporary power and lighting.

Locations of Decons and negative air units.

Shut down and/or isolation of heating, cooling and ventilating air systems to prevent contamination and fiber dispersal to other areas of the facility.

Integrity test of critical barriers.

Pre-cleaning completeness

Airlocks at entrances to and exits from the Work Areas.

Maintenance and marking of emergency exits.

Preparation of the Decontamination (Decon) Unit

Proper separation of Work Areas from Occupied Areas

Proper tent enclosure, walls and floors as applicable.

Access Routes controlled

Negative air pressure

Signs posted

h. Proper Abatement:

Respirators
Fit testing
Suits
Wet removal
Shower and Decon use
Security
Double bagging, proper labeling
Disposal practices

6. Contractor Insurance Coverage Provided:

Contractor shall provide General Liability and Workers Compensation insurance as required by the Building Owner. See Certificate of Insurance.

7. Alternate Work Practices:

Contractor shall promptly forward copies of any correspondence related to Alternate Work Practice requests and approvals to the IH and the Building Owner and keep this correspondence on site at all times during the project.

8. Compliance with Safety Requirements and Regulations vs Specifications:

No requirement in these Specifications shall be construed as forcing the Contractor or his employees or agents to commit an unsafe act or to violate any code or regulations. Where there is a conflict between the specifications and the regulations the most stringent condition shall apply. In any case where the Contractor determines that compliance with any condition of this Specification is not feasible for safety reasons and supports this determination with engineering and/or other appropriate data in writing together with an acceptable alternate method which is consistent with the regulations, the alternate method will be duly considered. Any proposed changes are subject to approval by the IH.

9. Personnel Protection

a. Contractor's workers shall be instructed on fire, electrical, and other hazards peculiar to this job site. Instructions will include spill response, power failure and emergency evacuation procedures. The workers will receive the required OSHA Hazard Communication information required by CFR 29 1926.59 and training for any hazardous chemicals brought to this site.

b. Respiratory protection shall meet the requirements of OSHA as described in 29CFR 1910.134 and 1926.1101 for Asbestos. The Contractor will provide appropriate respirators, disposable suits, and other safety equipment at no cost to his employees, for Asbestos and as needed for other physical and health hazards at the work site.

c. Any feasible combination of engineering controls, work practices, and personal protective equipment may be used to reduce personnel exposure to Asbestos and other hazards.

d. All persons entering the Work Area shall wear prescribed protective clothing and respirators until the Final Clearance Tests are successfully completed for the Work Area. Contractor has responsibility to establish and maintain at the work site daily logs of activities and the names, social security numbers and job titles of all persons entering the site.

e. The Contractor shall maintain His Supervisor on site at all times. Duties of the Supervisor shall include:

1) Posting signs to comply with OSHA 1926.1101 and NESHAP certificates.

2) Maintaining copies of Regulations including 29 CFR 1926.1101 and 40 CFR 61 Subpart M, and a copy of these Specifications on site.

3) Guarding the Work Area against unauthorized intrusion and ensuring all persons entering the Work Area are properly certified, trained, and equipped. Maintaining the job narrative including proof of control of the Work Area and that each entry into the Work Area is recorded in the site log.

4) Providing workers with safety equipment, except any person will have his own personal, fitted respirator provided by the Contractor.

5) Ensuring proper decontamination procedures such as proper use of suits and shower are followed without exception and that the shower and other safety equipment are properly functioning.

6) Ensuring that all records of the Abatement are kept including a copy of the Notifications, the methodology and results of all air sampling conducted during the Abatement, a complete list of the names and social security numbers of all Abatement Workers and Supervisors and other Contractor employees involved in the Abatement process on this project and all other individuals entering the Work Area, a log of control of access to the Work Area, all records of compliance with OSHA, DEP and EPA regulations and as applicable, Connecticut OSHA regulations, and documentation to demonstrate compliance with post abatement reoccupancy criteria.

f. Before leaving the Work Area each person shall: vacuum gross contamination from protective clothing, proceed to the Equipment Room and remove all clothing except respirator, and still wearing the respirator proceed naked to the shower and clean the respirator and self using soap and water and rinse self in the shower. Dispose of the wet respirator cartridges in a receptacle for Asbestos waste.

g. Following showering and drying off, each person shall proceed directly to the Clean (change) Room and dress in street clothes at the end of each days work or before eating or taking a break. Otherwise one may don disposable clothing of a different color or otherwise distinctively different, for use outside the Work Area, than suits used inside the Work Area.

h. Persons will not smoke, drink, eat, or chew gum or tobacco in the Work Area.

i. The prescribed protective clothing, respirator use and decontamination measures in the Work Area, including all those described in this Specification and prescribed in the Regulations will remain in effect from the moment Asbestos disturbance begins until Final Clearance of the Area.

10. Work Schedule and Sequence:

a. The condition of the Work Area is subject to IH approval before proceeding to the next operation. The following sequence shall be observed.

1) Precleaning (Establish Critical Barriers and Negative Air flow at the earliest possible time to protect against fiber release during setup)

2) Containment construction, Decon and Negative Air setup.

3) Removal and cleanup

4) Initial Clearance Inspection.

5) Final Clearance Testing

6) Shut down of Negative Air Units, removal of Critical Barriers and Negative Air Units. Leave one clean layer of critical barriers over windows.

7) Reinstallation of Displaced Equipment

8) Post Abatement Walkthrough

b. Sequence of Work Areas:

1) Sequence of Work Areas is coordinated between the Contractor and IH on site who will observe the Building Owners/ Contractors/IH mutually agreed plan.

11. Materials

a. Deliver all materials in original containers with original manufacturers labels.

b. Damaged or deteriorated materials shall not be used and shall be removed from the premises.

c. Use polyethylene sheet of 4-mil thickness for walls unless otherwise specified and 6-mil thickness for floors. Use sizes to minimize the number of seams.

d. Polyethylene bags shall be 6-mil and of sufficient size for the application.

e. When tie wraps of plastic are used to secure waste bags, they must be at least five inches long, pointed, and looped.

f. Tape will be used that is capable of sealing joints in adjacent plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under the anticipated load and amended water usage.

g. Surfactant (wetting agent) shall consist of 50% polyoxethylene ether and 50% polyoxyethylene ester at a concentration of one ounce to 5 gal of water or as directed by manufacturer.

h. Signs to be posted at the Work Area shall be in sufficient quantity to post at all entries to Work Areas. Signs will comply with OSHA 1926.1101.

i. Chemicals to be used shall not leave objectionable odor or residues or create any hazardous condition.

j. Use only Asbestos-free replacement materials and according to applicable fire or building codes. Replacement materials must provide equivalent or better performance than the original Asbestos materials.

12. Neighborhood Considerations:

- a. Work will be conducted so as to avoid disturbing the neighborhood. Contractor will coordinate with IH suitable locations for Negative Air and Decons, egresses, and waste storage facilities.
- b. After the Asbestos waste container is deployed, it will remain locked unless in immediate use. The Supervisor will maintain control of the key.
- c. Littering of the area is prohibited. Contractor will provide suitable receptacles for beverage and food containers and all other such litter and ensure that no litter is generated on the premises.

13. Equipment Removal Procedures:

Clean surfaces of contaminated containers and equipment by HEPA vacuuming and wet sponging or wiping before moving them into the Decon for final cleaning. Persons will not leave via the Equipment Decontamination enclosures.

14. Preparation of the Work Areas

- a. Establish Decontamination facilities as delineated below in item 16 and Negative Air HEPA filtered air flow at the first opportunity to produce a minimum of 0.02 inches of water negative pressure in the work area relative to the non-work area and at least 4 air changes/hour. These values must be verified initially and daily.
- b. Where necessary, shut down the electric power including receptacles and lighting fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operated when spraying or water based materials may contact the fixtures.
- c. Provide temporary power and lighting and ensure safe installation of temporary power sources and equipment per applicable code requirements. Provide safety lighting and ground fault interrupter circuits (GFCI) for all power cords and electrical equipment. Only 3 prong grounded cords will be permitted in the Work Area.
- d. Contractor will coordinate locations of Decons and Negative Air Unit locations with the IH.
- e. Shut down and isolate any heating, cooling and ventilating air systems, if present, to prevent contamination and fiber dispersal to other areas of the facility. Seal any vents within the Work Area. Isolation will be accomplished by sealing air tight using plastic, tape and other means.
- f. Establish Critical Barriers: Seal off all openings and any penetrations into the Work Area with plastic sheeting at least 6-mil thick. Do not seal off sprinkler heads, smoke/heat detectors or other such safety equipment. Consult the Owner for advice or instructions on such items. Doorways and corridors which will not be used for passage during Work must be sealed with barriers.
- g. Preclean movable objects within the proposed Work Area using HEPA vacuums and/or wet cleaning methods as appropriate and remove such objects from Work Areas to a temporary location.
- h. Preclean fixed objects within the Work Areas using HEPA vacuums and/or Wet Cleaning methods as appropriate and enclose with a minimum of 4-mil plastic sheeting and tape.
- i. Clean the Work Area surfaces using HEPA vacuums and/or Wet Cleaning methods as appropriate.

j. Containment construction: Cover flooring and wall surfaces with plastic sheeting sealed with tape. Use a minimum of two layers of 4-mil plastic on walls and 6-mil plastic on floors. Cover floors first so that plastic extends at least twelve inches up on walls, then cover walls with plastic sheeting to the floor thus overlapping the first layer by at least 12 in. Provide Airlocks at entrances to and exits from the Work Areas.

k. Maintain emergency exits including fire exits satisfactory to fire officials.

l. Any ceiling protrusions, ceiling panels, porous surfaces, or irregularities which may become contaminated, interfere with the Work or permit contamination beyond the confines of the Work Area must be managed to prevent contamination or release of fibers. Clean and remove ceiling mounted objects, such as lights and other items not sealed off, that interfere with Asbestos Abatement. Use hand-held water spraying or HEPA vacuum equipment during fixture removal to reduce fiber dispersal. Where no ceiling exists, to separate the Work Area from the non-Work Area, construct a critical barrier to isolate the work area. Where ceilings are to be demolished to.

m. Any barriers constructed and structural members of Decon units using framing must conform to applicable building codes. This construction must be sufficiently sturdy to resist breaching or collapsing under active work conditions. Portable or prefabricated structures with comparable strength and effectiveness may be used

n. In all cases, access between contaminated and uncontaminated areas must be through an Airlock. In all cases, access between any 2 rooms within the Enclosure System shall be through a Curtained Doorway.

15. Preparation of the Decontamination Enclosure System (Decon):

In general, the Decon unit will conform to drawings appended, and consist of 3 totally enclosed chambers contiguous to the Work Area plus a provision for managing dirty equipment as delineated below:

a. An Equipment Room with 2 curtained doorways; one to the Work Area and one to the Airlock.

b. A Shower Room with 2 curtained doorways; one to each Airlock. Plastic on Shower Room and adjoining Equipment and Clean Rooms shall be non-transparent. Showers with hot and cold water shall be provided and used at all Asbestos Removal operations. Careful attention shall be paid to the shower construction to prevent leakage of any kind. The shower will be supplied with soap, water and towels at all times. Wastes from the shower shall be filtered using best available technology prior to disposal in the drain.

c. A Clean Room with one Curtained Doorway into the Airlock and one entrance or exit to non-contaminated areas of the building. The Clean Room shall have sufficient space for storage of the workers street clothes, towels and other non-contaminated items. Joint use of this space for other functions such as offices, extraneous equipment, materials or tools shall be prohibited.

d. Equipment Decontamination Enclosure. Provide or construct an Equipment Decontamination enclosure consisting of 2 totally enclosed chambers including: a) a Washroom consisting of an Airlock with a Curtained Doorway to a designated staging area of the Work Area and a Curtained Doorway to the Holding Area. b) A Holding Area constituting an Airlock with a Curtained Doorway to the Washroom and a Curtained Doorway to a designated uncontaminated area.

16. Separation of Work Areas from Occupied Areas:

Work areas shall be separated by means of airtight barriers.

- a. Where doors are at the boundary, cover both sides of the door with a double layer of plastic sheet with joints staggered and sealed with tape.
- b. Where corridors or other open spaces are to be the boundary, build suitable building code conforming framing and apply 3/8 inch minimum thickness sheathing on work side only unless noted otherwise. Cover both sides of partition with double layer of plastic sheet with joints staggered and sealed with tape. Edges of partition at floor, walls and ceiling shall be caulked airtight.

17. Maintenance of Enclosure Systems:

The Contractor is responsible for maintaining the Enclosure in proper condition to serve the intended purpose and meeting the requirements of the Regulations and these Specifications as verified by the IH. The Competent Person will inspect the Enclosure initially and daily:

- a. Visual inspection for conformity.
- b. Chemical smoke tests and air pressure/ flow measurements. Must have manometric readings of negative pressure of 0.02 inches of water or greater.

18. Final Check List before Commencement of Asbestos Abatement Work:

- a. Arrangements made for disposal of waste at an acceptable site.
- b. Work areas and Decon units conform to requirements specified above.
- c. Materials, tools and equipment specified including waste receptors are on hand.
- d. All worker training has been completed.
- e. All submittals have been received and are in proper order.

19. Asbestos Removal and Cleanup

- a. Spray Asbestos materials with Amended Water using the airless sprayer to produce a fine spray. Wet Asbestos material freshly before Abatement Work in manageably sized sections. Do not let Asbestos materials dry out once disturbed during the Work.
- b. Bag the wet Asbestos waste immediately to prevent drying and to prevent possible tracking of Asbestos wastes.
- c. Seal filled containers with the wet Asbestos waste in the Work Area. Wet clean the outside of the sealed bag and move to the Holding Area (bagout) for double bagging by workers who have entered from uncontaminated areas dressed in clean disposable suits. Only the double sealed bags and other cleaned materials will exit via the bagout. Persons will leave only via the Decon-shower route.
- d. The Asbestos materials must be packaged in impermeable dust tight containers (i.e., heavy duty six mil plastic bags or sealed fiber pack drums).
- e. All containers must be labeled in large legible letter:

**DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST**

- f. Any waste container regulated by the NESHAP amendment of 11/20/90 (40 CFR Part 61) shall be tagged or labeled clearly with the name of the generator i.e. the Contractor and the name of the work site.
- 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. During this Work the surfaces shall be kept wet. Wire brushes are not permitted.
- h. Remove visible accumulations of Asbestos material and debris. Wet clean all surfaces within the Work Area.
- i. Subsequent to the completion of all Asbestos Removal Work, clean all dried surfaces with a HEPA filtered vacuum
- j. Apply a thin coat of Encapsulant to cleaned surfaces and to plastic barriers after cleaning.
- k. At appropriate times in the cleaning sequence, remove the first layer of plastic facing the Work Area, walls first and then floors. Clean and remove sealed containers and equipment; Change HEPA filters.

20. Initial Clearance Inspection:

- a. After cleaning the Work Area, the Contractor will make an initial visual inspection and issue notice to the IH that Work is complete. An inspection by the IH shall then be conducted. If this Inspection finds that the Work is incomplete or that there are visible accumulations of residue, the Contractor shall repeat the cleaning at His expense until the Work Area is in compliance.
- b. After successful completion of the above visual inspection, the Contractor must apply Encapsulant (lockdown) i.e., apply a thin coat of Encapsulant to cleaned surfaces and to polyethylene barriers.
- c. Allow the Work Area to dry at least overnight and then remove the cleaned outer layer of polyethylene from walls and floors leaving Critical Barriers in place.
- d. Perform a final cleaning using wet wiping and HEPA vacuuming as appropriate. The Contractor may use optional leaf blowing to aid as a touch-up cleaning provided the blower does not impinge on Critical Barriers where any dust may enter contiguous areas.

21. Final Clearance Testing:

- a. After surfaces have dried, a final visual inspection by the Licensed Project Monitor (IH) is performed. If this inspection reveals no visible residue, Final Air Sampling shall be carried out.
- b. Aggressive air sampling and analysis shall be undertaken by the IH who will select locations of the samples in the Work Area. At least 5 samples shall be taken in each Work Area. Sampling and analysis shall be carried out according to 40 CFR Part 763.
 - 1) For PCM analysis (areas < 1500 sq ft or 500 linear ft), NIOSH Method 7400, Air Monitoring volumes shall be sufficient to provide a detection limit of 0.010 fibers/cc. (and preferably 1200 liters). Each of 5 aggressive air samples in the Work Area must have a concentration of 0.010 fibers/cc or less.
 - 2) For TEM analysis (areas > or = 1500 sq ft or 500 linear ft), collect 5 samples of at least 1200 liters aggressively in the Work Area, and five samples non-aggressively at the same time outside the Work Area. The average concentration of 5 aggressive air samples taken within the Work Area must be less than 70 structures/ sq. mm or statistically less than the average Asbestos concentration determined in five ambient air samples outside the Work Area.
- c. Work Areas which do not comply with the visual inspection or Final Air Clearance concentrations specified, shall continue to be cleaned at the Contractor's expense until the specified criteria are achieved. The Contractor will be responsible for delays to the project resulting from failure to comply with the Final Air Clearance and inspection criteria.
- d. Upon successful Final Air Clearance, mandatory respiratory protection in the Work Area may be waived, the Critical Barriers removed, and the Negative Air and Decontamination Units shut down and removed.

22. Reinstallation of Displaced Equipment:

- a. Relocate objects moved to temporary locations in the course of the Work to their proper positions.
- b. Re-secure mounted objects removed in the course of the Work in their former positions.
- c. Reestablish HVAC, mechanical and electrical systems in proper working order and in conformance with all applicable building, mechanical and electrical codes.

23. Disposal:

- a. The Contractor will dispose of Asbestos wastes according to Applicable Regulations.
- b. The Contractor will forward to the Owner and IH a copy of the Asbestos Disposal Documentation.
- c. Impermeable double containers are to be used to receive and retain any Asbestos-containing or contaminated materials until disposal at an acceptable disposal site. Containers shall be labeled in accordance with OSHA 1926.1101 and shall be both water and air tight. All containers must be labeled in large legible letters:

**DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST**

- d. After the Asbestos waste container is deployed, it will remain locked unless in immediate use. The job Foreman or designated person will maintain control of the key.
- e. Any waste container regulated by the NESHAP amendment of 11/20/90 (40 CFR Part 61) shall be tagged or labeled clearly with the name of the generator i.e. the Contractor and the name of the work site.
- f. Each Asbestos waste pickup will be signed for using chain of custody forms provided in the EPA regulations CFR 40 Part 61.
- g. The Contractor will turn over to the IH a copy of the custody document for the waste within 24 hours after the material has left the site and forward the complete disposal documentation to the IH and Owner within 45 days.

24. Multi-Employer Worksites: New OSHA Requirements: 1926.1101

- a. The asbestos contractor shall inform other employers at the site of:
 - 1) the nature of the work with asbestos
 - 2) the existence of and the requirements of regulated areas,
 - 3) the measures to be taken to protect employees of the other employers from exposure.
 - 4) any breaches in the containment or enclosure
 - 5) that these employers must ascertain on a daily basis that the containment or enclosure is secure, or otherwise:
 - a) move their employees away from the regulated area until any breaches are corrected or
 - b) Provide the same protective equipment as specified herein for the asbestos contractor.
- b. Comply with the supervision of the general contractor on the site with respect to the general contractor's determination of whether the asbestos contractor is in compliance with the OSHA asbestos standard cited herein.
- c. Regardless of who creates any asbestos hazard, the employer of exposed employees is required to comply with applicable protective provisions of 1926.1101 to protect his employees.

d. Employers who discover the presence (of ACM or PACM) on the worksite must notify the project or building owner. On worksites having multi employers, the person who discovers the material is also to notify the other employers. An employer on a multi job worksite who is planning class I or class II asbestos work is to inform all the other employers on the site . They are to be informed of the location and quantity of these materials and the measures to be taken to protect them from exposure.

e. Transmit data to the Owner any knowledge of the location and amount of ACM or PACM who must in turn pass this information to employers of employees who may be exposed.

f. Before class I, II or III work, is initiated, building and or project owners must notify their own employees and employers who are bidding on such work, of the quantity and location of ACM or PACM present in such areas. Owners must also notify their own employees who work in or adjacent to such jobs. Employers who are not owners planning any such covered activity must notify the owner of the location and quantity of ACM and PACM known or later discovered. The building owner must keep records of all information received through this notification scheme, or through other means, which relates to the presence, location and quantity of ACM and PACM in the owner's building, project or vessel and transfer all such information to successive owners. OSHA has defined 'building owner' to include those lessees who control the management and record keeping functions of a building/facility.

g. Within 10 days of completion of Class I or II asbestos work, the asbestos contractor shall inform the owner and employers who will be working in the area of the quantity and PACM or ACM remaining in the former regulated area and the final monitoring results.

h. For inadvertently discovered ACM/PACM there is a 24 hour notification requirement to the owner and all employers at the site.

25. Exposure Assessment:

Requirements of 1926.1101:

a. Each employer who has a workplace where asbestos abatement is conducted, must ensure that a competent person conducts an exposure assessment in accordance with 1926.1101 immediately before or at the initiation of the abatement to ascertain expected exposures.

b. Each Initial Exposure assessment by the Competent Person shall include:

- 1) Air monitoring historical data
- 2) Degree and quality of supervision
- 3) Employee training and experience
- 4) Techniques used for wetting the ACM or PACM in the various circumstances encountered
- 5) Placing and repositioning the ventilation equipment, and
- 6) Impacts due to weather conditions

Irrespective of the results of the assessment, the requirement of this specification must be followed since these are predicated on additional State and Federal regulations.

26. Prohibitions:

- a. High speed abrasive disc saws to cut ACM or PACM shall not be used unless inside the containment with HEPA filtered negative exhausts as herein specified or unless equipped with local HEPA filtered ventilation to collect contamination from cutting.
- b. Compressed air use for cleaning ACM or PACM contaminated surfaces unless conducted inside the containment with HEPA filtered negative exhausts as herein specified.
- c. Dry shoveling or sweeping or other dry clean-up of dust and debris containing ACM or PACM is prohibited.
- d. Employee rotation as a means of reducing employee exposure is prohibited.
- e. Sanding ACM or PACM flooring, backing or mastic is prohibited.

27. DEFINITIONS:

Abatement: Procedures to control fiber release from Asbestos-containing materials; includes Removal, Encapsulation, and Enclosure.

Airlock: A system for permitting ingress and egress while assuring air movement to a contaminated area from an uncontaminated area.

Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time.

Licensed Project Monitor (IH): A DPH Licensed professional capable of conducting air monitoring and analysis schemes. This individual is responsible for recognition of technical deficiencies in worker protection equipment and procedures during both planning and on-site phases of an Abatement project. Monitoring and worker protection. Air sampling shall be in accordance with NIOSH Method 7400 and as described in OSHA standards 29 CFR 1926.1101, or (as applicable for TEM) according to 40 CFR Part 763 Subpart E.

Amended Water: Water to which a surfactant has been added.

Asbestos: Asbestos is a name given to a number of naturally occurring fibrous silicates. There are two varieties of Asbestos; the serpentine form (Chrysotile) characterized by long, soft, flexible, and wavy fibers, and the amphiboles which occur as straight, needle-like fibers, and consist of crocidolite, amosite, anthophyllite, tremolite and actinolite.

ACM / Asbestos Containing Material: A material which contains more than 1% Asbestos by volume per EPA test Method 600/R-93/116.

DPH: Connecticut Department of Health

Category 1 and 2 Asbestos materials: Non-friable materials as defined in the amended NESHAP regulation 40 CFR 61, 11/20/90.

Class I Asbestos Abatement Work: Removal of Thermal System Insulation and surfacing removal of ACM or PACM (TSI and Surfacing have the same meaning as in EPA AHERA except drywall is not classed as surfacing but plaster is.

Class II Asbestos Abatement Work: Removal of ACM or PACM other than TSI and surfacing.

Class III work: Repair involving disturbance of ACM or PACM.

Class IV work: = Maintenance and custodial work in areas with ACM or PACM such as dusting surfaces, vacuuming carpets, sweeping or mopping asbestos containing floors or floors in areas where ACM or PACM is present; cleaning up ACM or PACM, changing a light bulb or battery in a smoke detector on a surfaced ceiling, polishing floor tile.

Clean Change Area: An area equipped as specified herein so that workers can decontaminate their suits and change into street clothes without passing back through the regulated area.

Clean Room: An uncontaminated area or room which is a part of the Worker Decontamination Enclosure with provisions for storage of worker's street clothes and protective equipment.

Competent Person: A person experienced in Asbestos Abatement with a current Asbestos Abatement Supervisor's Certificate from an EPA Approved Training Center. In addition, a person meeting the following requirements in 1926.32: "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them."

Critical Barrier: The last layer of plastic sheeting separating Work Areas from non Work Areas

Curtained Doorway: A device to allow passage from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. Two curtained doorways spaced a minimum of six feet apart form an Airlock.

Decontamination Enclosure System (Decon.): A series of connected rooms, with Curtained Doorways between any two (2) adjacent rooms, for the decontamination of workers and of materials and equipment which is connected to and adjacent to the regulated area. A Decontamination Enclosure System always contains at least one (1) Airlock.

Encapsulant (sealant): a liquid material which can be applied to Asbestos-Containing Material and which controls the possible release of Asbestos fibers from the material either by creating a membrane over the surface (bridging Encapsulant) or by penetrating into the material and binding its components together (penetrating Encapsulant). Any such Encapsulants shall be in conformance with Building and/or Fire Safety Code requirements.

Encapsulation: All herein specified procedures necessary to apply an encapsulant to Asbestos-containing building materials to control the possible release of Asbestos fibers into the ambient air. The practice of spraying water damaged, loose, or hanging Asbestos material is not considered a satisfactory control method and is not considered Encapsulation for the purposes of this Specification.

Encapsulation includes all the steps specified below:

- a. Remove damaged, loose, or hanging areas of existing Asbestos material and place in sealable plastic bags for transport.
- b. Repair damaged and missing areas to obtain a suitable base for sealing using Asbestos free replacement material in accordance with manufacturer's instructions.
- c. Encapsulation disturbing more than 3 linear or 3 square feet of Asbestos material is considered an Abatement project and subject to all the procedures specified herein for Asbestos Removal.
- d. Apply a final spray with Encapsulant.

Equipment Decontamination Enclosure: That portion of a Decontamination Enclosure System (Decon) designed for controlled transfer of materials and equipment, typically consisting of a Washroom and a Holding area.

Encase: To directly cover pipe insulation with an airtight impermeable cover such as remoistenable cloth or conduit.

Equipment Room: A contaminated area or room which is part of the Worker Decontamination Enclosure with provisions for storage of contaminated clothing and equipment.

Fixed Object: A unit of equipment or furniture in the Work Areas which cannot be removed from the Work Area.

Friable Asbestos Material: An Asbestos material that can be crumbled, pulverized or reduced to powder when dry by hand pressure and which releases Asbestos fibers into the environment.

HEPA Filter: A high efficiency particulate air (HEPA) filter in compliance with ANSI Z9.2-1979.

HEPA Vacuum Equipment: Vacuum equipment with a HEPA filter system for filtering the air effluent from the unit.

Holding Area: A chamber in the Equipment Decontamination Enclosure located between the Washroom and an uncontaminated area. The Holding area comprises an Airlock.

Movable Object: A unit of equipment or furniture in the Work Area which can be removed from the Work Area.

Negative Air Units or Negative Air Pressure Equipment: A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a contaminated area (negative with respect to adjacent uncontaminated areas) and capable of maintaining a constant discharge of filtered air outside and creating suction so that air flow direction moves from uncontaminated areas into the Work Areas.

NESHAP: National Emission Standards for Hazardous Air Pollutants, including Asbestos, administered by the EPA.

NIOSH; National Institute for Occupational Safety and Health.

Owner: Town of Trumbull

PACM: Presumed Asbestos Containing Material. OSHA definition: TSI or Surfacing. Note: OSHA also assumes roofing and resilient flooring to contain asbestos but the work practices differ. EPA assumed ACM covers a much broader range of building materials.

Permissible Exposure Limit (PEL): OSHA Standard. The employer shall ensure that no employee is exposed to an airborne concentration of Asbestos, tremolite, anthophyllite, actinolite, or a combination of these materials in excess of the PEL of 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average (TWA), or in excess of 1 fiber/cubic centimeter as a 30-min excursion limit as determined by the method prescribed in appendix A to OSHA Regulations 29 CFR 1926.1101, or by an equivalent method.

Plasticize: To cover floors and walls with plastic sheeting as herein specified.

Removal: All herein specified procedures necessary to remove Asbestos Containing Materials from the designated areas and to transport and dispose of these materials at an acceptable site.

Shower Room: A room between the Clean Room and the Equipment Room in the Worker Decontamination Enclosure with hot and cold or warm running water and suitably arranged for complete showering during decontamination. The Shower Room comprises an Airlock between contaminated and clean areas.

Stripping: Taking of Asbestos materials from any surface.

Surfactant: A chemical wetting agent added to water to improve penetration.

Surfacing Material: Material that is spray applied or troweled on or otherwise applied to surfaces.

Thermal System Insulation (TSI): Material applied to pipes, fittings, boilers, breeching, tanks, ducts or other components to prevent heat loss or gain.

Washroom: A room between the Work Area and the Holding Area in the Equipment Decontamination Enclosure with provisions for storage of contaminated clothing and equipment.

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 by afterwards disposing of these cleaning items as Asbestos contaminated waste.

Work Area: An area where Asbestos Abatement operations are performed which is isolated by physical boundaries to prevent the spread of Asbestos dust, fibers, or debris; Designated rooms, spaces or areas of the project in which Asbestos Abatement actions are to be undertaken or which may become contaminated as a result of such Abatement actions. A contained Work Area is an area which has been sealed, plasticized and equipped with a Decontamination Enclosure System.

Worker Decontamination Enclosure System (Decon) That portion of a Decontamination Enclosure System designated for controlled passage workers and other personnel and authorized persons typically consisting of a Clean Room, a Shower Room and an Equipment Room.

LIST OF DRAWINGS

DRAWING NUMBER

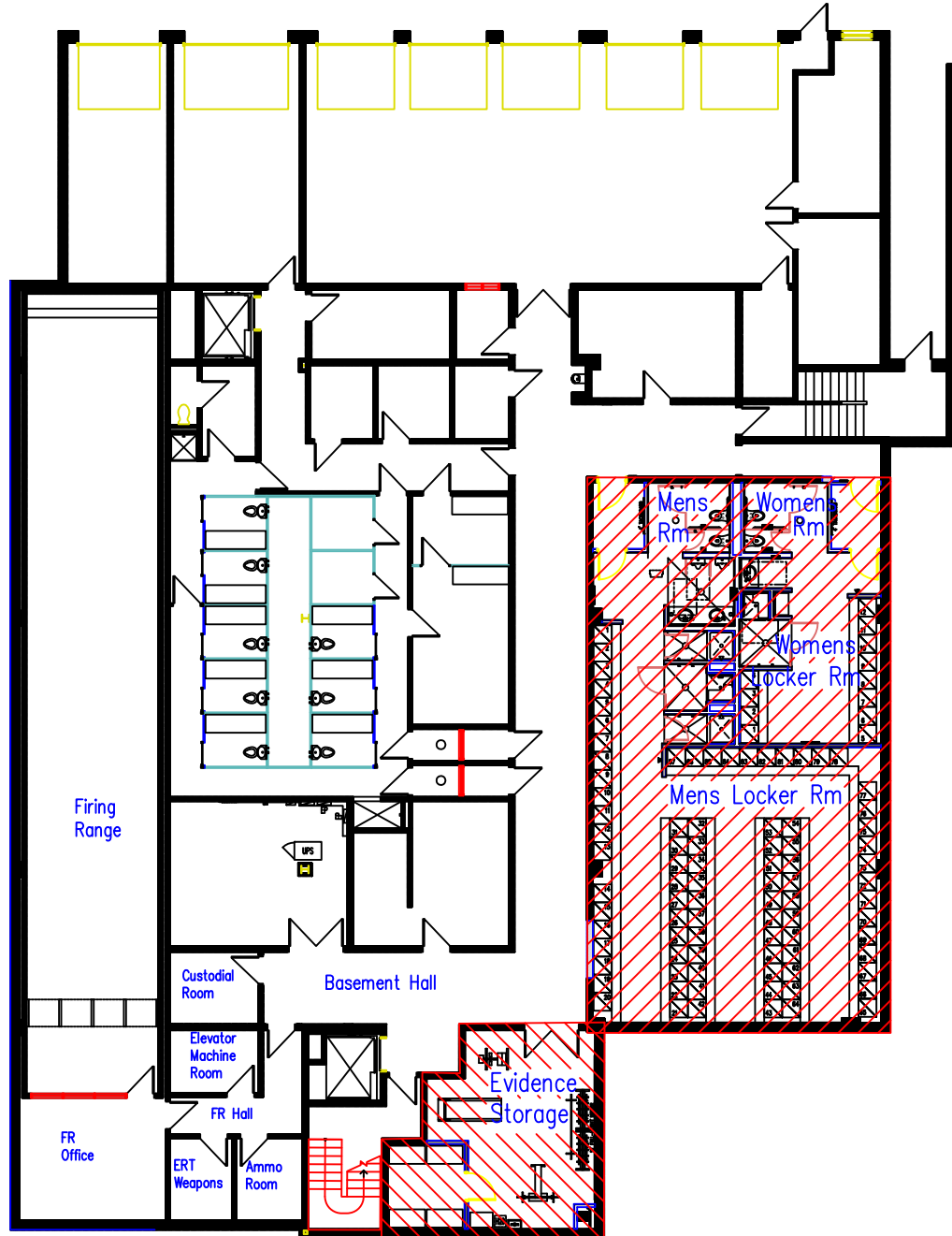
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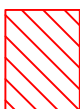
Lower Level- ACM SPRAY-ON INSULATION LOCATIONS
In Scope of Work.

DECONTAMINATION UNIT DETAIL (FOUR DRAWINGS)

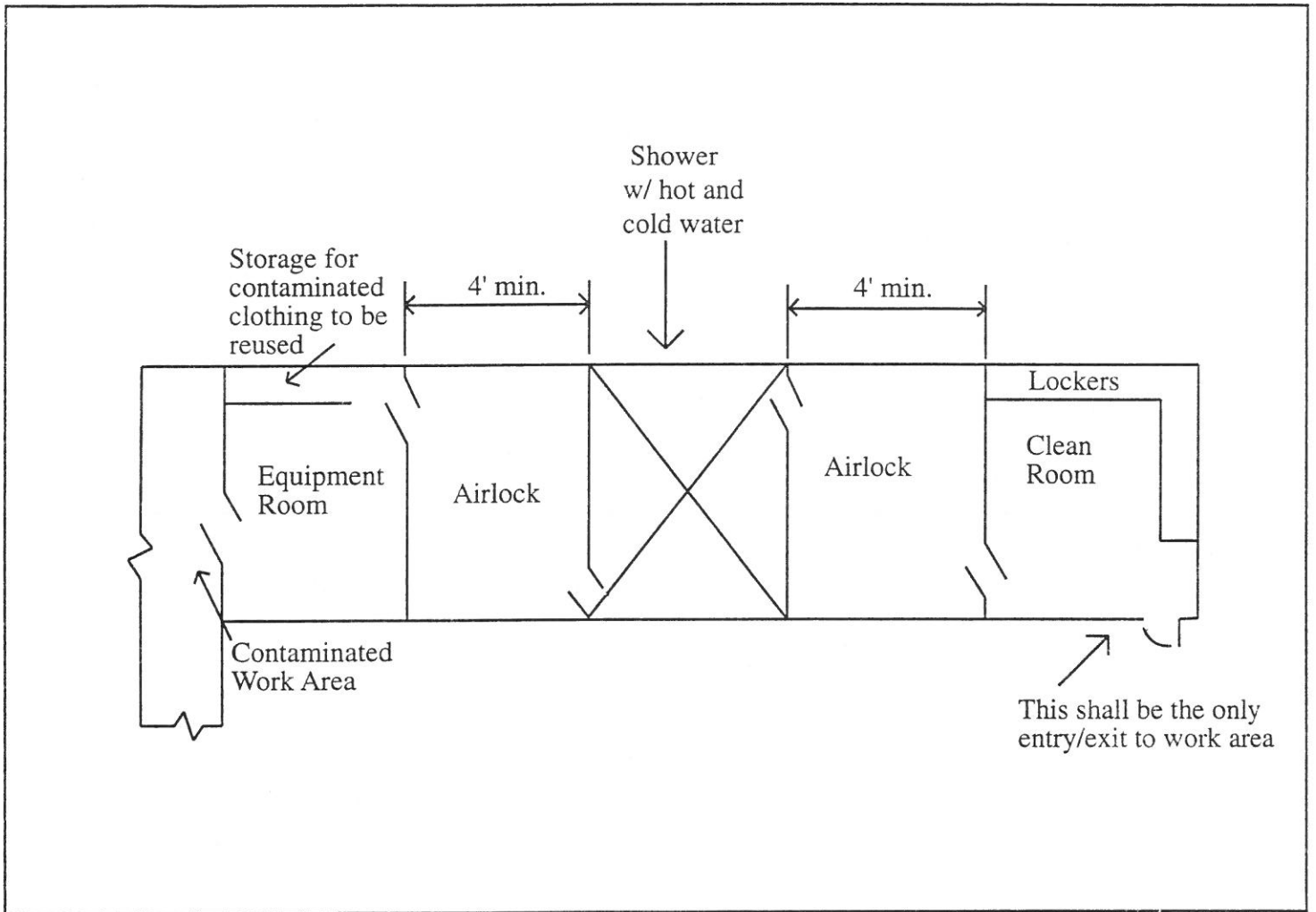
Trumbull Police Department
158 Edison Road,
Trumbull, CT
Lower Level



Remove all Spray-on fireproofing and overspray as required to facilitate the work as outlined in Drawings A-1.1 and D-1.1, in Base Bid

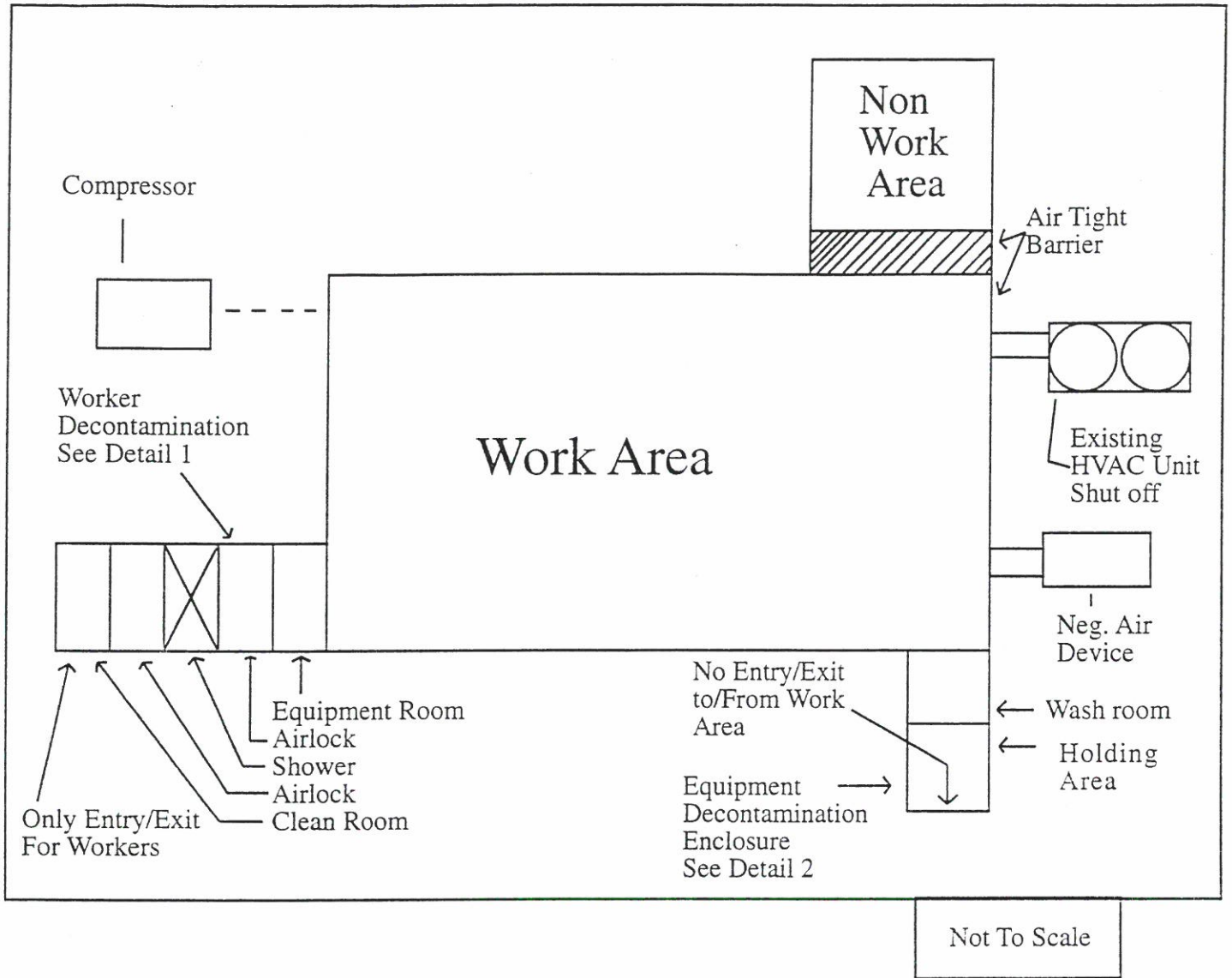


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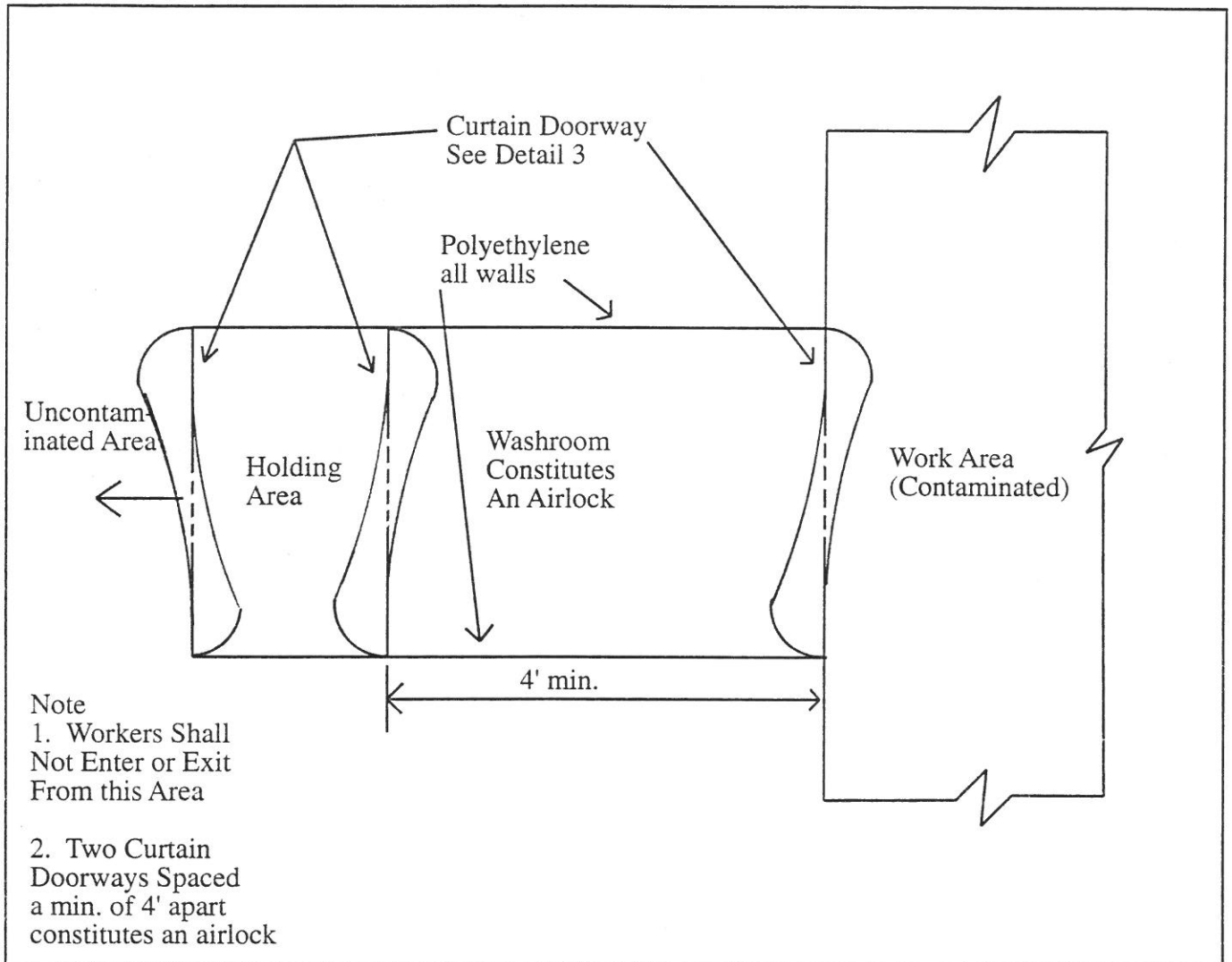


Not To Scale

Schematic of Worker Decontamination Enclosure Detail 1



Schematic Building Plan



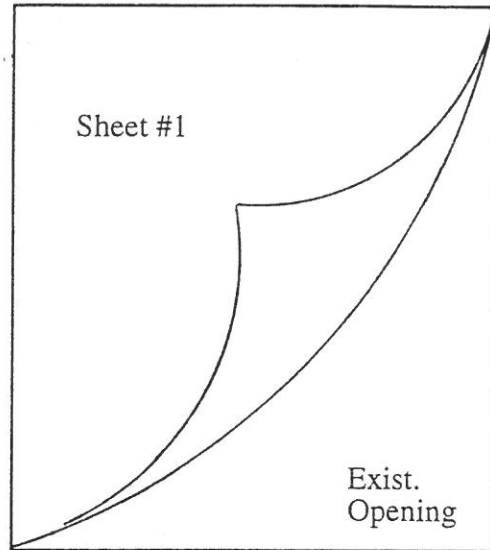
Not To Scale

Plan of Equip. Decontamination Enclosure Detail 2

END OF SECTION

1. Secure top Edge
of Sheet #1
Along Top Edge
of Opening

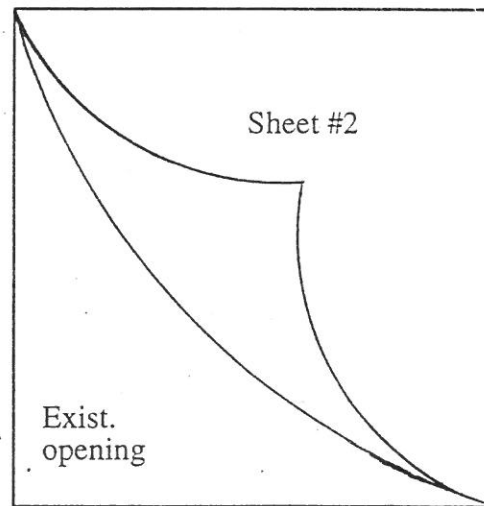
2. Secure Sheet #1
Along one vertical
side of opening



A

3. Secure Polyethylene
Sheet#2 Along
Top edge of opening

4. Secure Polyethylene
sheet #2 along opposite
side of opening as
sheet#1 was secured



B

Curtains Doorway Detail 3

APPENDIX 1

ASBESTOS INSPECTION DATA

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610 • chem-scope.com

Greg Raucci
Bismark Construction Co
100 Bridgeport Ave,
Milford CT 06460

10/25/2017

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 1 OF 7**

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Limitations of the Inspection	5
Recommendations	5-7

Attachments:

- Scope of Work Drawing, 1 page(s)
- Spray-on debris Location Drawings, 1 page(s)
- PLM Certificate of Analysis Report, 7 pages
- Chain of Custody Document, 2 page(s)
- Sample Location Drawing, 1 page(s)

Report Distribution:

Greg Raucci (Bismark Construction) – (gmraucci@bismarkconstruction.com)
Allen White (Town of Trumbull) - (awhite@trumbull-ct.gov)

File Location:

NAS AAUM-Reports\AsbInsp\DS-Prereno_June2017.doc

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 2 OF 7**

INTRODUCTION

EXECUTIVE SUMMARY: Asbestos containing materials (ACM) were not detected within the scope of this inspection. However, the presence of vermiculite requires treatment as an ACM based on DPH and EPA recommendations. In addition the material is regulated by OSHA since it has <1% asbestos. Vermiculite will need to be properly removed (abated) and disposed of prior to renovation or demolition that would disturb it. Abatement work should be done by a licensed asbestos abatement contractor using proper procedures and practices with certified and trained individuals. See recommendations.

BUILDING DESCRIPTION: The subject approximately 28,200 sq ft, two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof.

BACKGROUND: We understand that you have plans to renovate select areas (men and women's locker rooms, gym, shooting range and holding cells) in the basement, as highlighted on the drawing dated 10/11/2017, which includes the disturbance of floor, walls, and ceilings. Please see attached Scope of Inspection Drawing for details.

SCOPE OF WORK: An Asbestos Pre-Renovation Inspection as discussed and directed by Greg Raucci, Bismark Construction Co, our client.

Our work included the following:

- Collection and analysis of building materials within the scope of renovation for asbestos, as required by the regulations.
- A list with quantity, type and location of asbestos containing materials (ACM) in the scope.
- Report of the findings including ACM location drawings (if needed).

TEST PARAMETERS: This is an Asbestos Renovation Inspection which is needed for compliance with EPA NESHAP Regulations for Building Renovations and Demolition, 40 CFR PART 61, OSHA 1926.1101 and CT DPH 19a-332a-1 through 16.

For building material sampling, EPA Wet Methods were used to prevent fiber release. Building materials sampled are analyzed at our laboratory by EPA method 600/R-93/116. This is currently the approved EPA Test method, which uses Polarized Light Microscopy with Dispersion Staining. The laboratory is accredited by NIST/NVLAP and AIHA Lab Accreditation Program, LLC, and is a Connecticut Approved Environmental Laboratory for Asbestos Analysis.

This investigation and information provided in this report depends partly on background information provided by the client. This report is intended for the use of the client. The scope of services performed may not be appropriate for other users and any use of this report by third parties is at their sole risk. This report is intended to be used in its entirety. No excerpts may be taken to be representative of this report.

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
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INSPECTION REPORT SYNOPSIS

LOCATION NAME AND ADDRESS: Trumbull Police Department
158 Edison Road, Trumbull CT

INSPECTION DATE(S): 10/11/2017

QUALIFICATIONS: The Inspection was conducted by Daniel P. Sullivan:

- EPA and State of Connecticut Accredited Asbestos Inspector, Project Monitor & Project Designer
 - State of Connecticut Licensed Asbestos Inspector/Management Planner (#000019)
 - State of Connecticut Licensed Asbestos Project Monitor (#000036)
 - State of Connecticut Licensed Asbestos Project Designer (#000096)
- Dan was assisted by Kristina Dykes.

SITE OBSERVATIONS: (See attached drawing) The following observations were made at the time of our inspection:

- Most of the flooring was ceramic or concrete with a skim coat, which were in good condition.
- Most walls were cinderblock, in good condition.
- Most ceilings were textured paint on sheetrock, in good condition.

FINDINGS: No asbestos containing materials (ACM) were detected within the Scope of the Inspection.

The following is a summary table of the materials that tested as non-Asbestos Containing Material (ACM) (<1%) within the Scope of Work:

Material/Location(s)	Location	Sample #s	Findings
White textured crumbly paint (on sheetrock ceilings)	Women's Locker Rm, Women's Restroom, Womens Rm Hall, Men's Locker Rm, Men's Restroom, Gym, Cell Block Hall	194-24-(1-5)	<1 % Chrysotile Asbestos
Light gray crumbly sheetrock	Women's Locker Rm, Women's Restroom, Womens Rm Hall, Men's Locker Rm, Men's Restroom, Gym, Cell Block Hall	194-24-6 188-474-44,45,46	No Asbestos Detected
White crumbly sheetrock taping compound	Women's Locker Rm, Women's Restroom, Womens Rm Hall, Men's Locker Rm, Men's Restroom, Gym, Cell Block Hall	194-24-5 188-474-47,48,49	No Asbestos Detected

*Materials with <1% asbestos are not defined as asbestos containing materials in DPH and EPA regulations. However, OSHA regulations require proper procedures be used to prevent exposure to workers performing the related disturbance. This includes training and protection for employees who may be exposed above the OSHA PEL.

Continued

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 4 OF 7**

INSPECTION REPORT SYNOPSIS

Summary table of the materials that tested as non-Asbestos Containing Material (ACM) (<1%) within the Scope of Work (cont):

Material/Location(s)	Location	Sample #s	Findings
Gray hard grout and Gray hard crumbly mortar (from 2"x2" brown ceramic floor tile)	Women's Locker Rm, Women's Restroom, Men's Locker Rm, Men's Restroom	194-24-(7-10) 188-474-(26-31)	No Asbestos Detected
Gray hard grout and Gray hard crumbly mortar (from 4"x4" ceramic wall tile)	Women's Locker Rm, Women's Restroom, Men's Locker Rm, Men's Restroom	194-24-(11-18) 188-474-(32-35)	No Asbestos Detected
Gray/Light gray hard flooring material with brown face coat (on concrete floor)	Women's Locker Rm, Womens Rm Hall, Men's Locker Rm	194-24-(19-20)	No Asbestos Detected
2x4 Gray fibrous ceiling tile with white face coat and linear gouge pinhole design (suspended in metal t-grid)	Womens Rm Hall	194-24-21,22 188-474-(41-43)	No Asbestos Detected
Brown hard glue (under vinyl covebase)	Throughout	194-24-23 188-474-(22-25)	No Asbestos Detected
Gray fibrous unwrapped mudded fitting insulation (on 3" OD fiberglass lines, above drop ceilings)	Throughout	194-24-(24-27) 188-474-(50-55)	No Asbestos Detected
Gray fibrous debris (on top of metal cell ceilings)	Cell Blocks	194-24-28,29	No Asbestos Detected
Off-white fibrous spray-on fire-proofing (on metal I-beams and overspray)	Throughout	188-190-(1T-9T)	<1 % Chrysotile Asbestos**

**Based on past discussion with CT-DPH it is their recommendation that this material be treated as ACM because another consultant found this material to contain vermiculite.

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
158 EDISON ROAD, TRUMBULL CT
CS# 194-24, 10/11/2017, PAGE 5 OF 7**

LIMITATIONS OF THE INSPECTION

The following materials/areas were not in the scope of this inspection:

- Electrical/Lighting Components (not in scope of work and have not been locked-out/tagged-out).
- Possible Fire Door Insulation (not in scope).
- Other possible materials located inside and beneath walls (not accessible).
- Exterior materials (not in scope).

It is important to note that every effort is made to detect asbestos (ACM) in the path of the renovation by our inspectors. It is not practical or prudent to demolish the entire work area during the inspection. The owner should be aware of this in case suspect materials are uncovered during the actual renovation. If suspect materials, which were previously not accessible or not sampled during this inspection are discovered during the renovation or if the scope of the renovation changes to include disturbance of new materials not inspected, then renovation must stop and the materials must be sampled by a CT DPH licensed asbestos inspector prior to disturbance of these materials.

RECOMMENDATIONS

Materials with <1% asbestos, such as the spray-on fire-proofing, are not defined as asbestos containing materials in DPH or EPA regulations. However, OSHA regulations (29 CFR 1926.1101) require proper procedures be used to prevent exposure to workers performing the renovations. This includes training and protection for employees who may be exposed above the OSHA PEL. "(c)The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA)...." It would be prudent to remove the spray-on in regulated areas, using critical barriers, wet methods, and HEPA filtered negative air machines in the area during the spray-on removal. At a minimum anyone disturbing the spray-on should have training in accordance with OSHA 1926.1101(k)(9)(vii) including respirator training. A CT DPH-licensed asbestos contractor would be the best choice for removing the spray-on, since other contractors with the proper training and equipment would be difficult to find.

OSHA regulations 1926.1101 requires that before asbestos removal or repair work (class I, II or III work) is initiated, building owners/facility owners must notify their own employees and employers who are bidding on such work, of the quantity and location of ACM or PACM (presumed asbestos containing material) present in such areas. Also for inadvertently discovered ACM or PACM there is a 24-hour notification requirement to the owner and all employers at the site.

**ASBESTOS PRE-RENOVATION INSPECTION
TRUMBULL POLICE DEPARTMENT – BASEMENT
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RECOMMENDATIONS (cont)

Based on the attached correspondence between CT-DPH and EPA prior to the 2015 1st Floor Renovation Project at this building, both agencies have recommended that the spray-on fire-proofing be treated as ACM.

All Asbestos Containing Materials (ACM) detected in the path of the renovation must be removed prior to the disturbance of these materials.

There is minor visible spray-on debris (< 3 sq ft per room) on the drop ceilings in the scope of our inspection, so if the spray-on is to be treated as ACM then the ceiling tiles would be considered contaminated with ACM. Drop ceiling tiles may be HEPA vacuumed prior to their disposal. Metal cell ceilings also have <3 sq ft of dust and debris on top of them. Also there is a possibility that spray-on debris may be present in wall cavities.

For demolition of ceilings with < 3 sq ft of spray-on debris or cleaning of suspended ceiling tiles with < 3 sq ft of spray-on debris: Where amounts of ACM to be removed are <3 sq ft per area, final re-occupancy testing is not required; however work must be done following CT-DPH regulations for spot repair:

1. Minimum of 16 hour OSHA Class III Training.
2. Isolate area with barriers and signs.
3. HVAC shutdown in the area if possible.
4. Seal vents.
5. Use a mini-enclosure or a glove bag if possible.
6. HEPA vacuum any visible residue and cover the floor under the work with 6 mil polyethylene.
7. Limit access to the area to trained personnel with respirator and a disposable suit.
8. Wet material.
9. Use leak proof disposal containers.
10. OSHA labels.
11. Same disposal practices as for asbestos projects

Disposal of all ACM is regulated by EPA and the Connecticut DEEP; an EPA approved landfill must be used.

If spray-on surfacing and/or overspray is in the path of the installation of the new ceilings the following is recommended: Asbestos removal is regulated by federal and state agencies. Abatement work must be done by a licensed asbestos abatement contractor using proper procedures and practices, including containment, decontamination facilities, negative air units and trained and CT DPH licensed workers. Final re-occupancy testing is also required, if the building is going to be reoccupied after the asbestos removal and strongly recommended even if the building is not going to be re-occupied such as in the case of building demolition, for removal of greater than three (3) sq. ft or linear ft of ACM. A CT DPH Licensed Project Monitor is always required for final visual inspections after asbestos removal.

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RECOMMENDATIONS (cont)

Please also keep in mind that notification to the DPH is required for asbestos abatement involving greater than 10 linear feet or 25 square feet of or for any demolition. Disposal of all ACM is regulated by EPA and the Connecticut DEEP; an EPA approved landfill must be used.

See separate Lead XRF Pre-Renovation Screening report for additional details.

If you have any questions or need more information please call me. Thank you for calling on us.

Sincerely,



Dan Sullivan
President

Certificate Of Analysis

Greg Raucci - Bismark Construction Co., Inc.
100 Bridgeport Avenue
Milford CT 06460

10/18/2017

CS#: 194-24

Page 1 of 6

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT collected by Dan Sullivan on 10/11/2017

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

194-24-1 White textured crumbly paint (on sheetrock ceiling)/Womens Locker Room

Findings (Analyzed 10/17/2017)

No Asbestos Detected
82% Non- Fibrous Particles
18% Volatile on Ignition
<1% Wollastonite

194-24-2 White textured crumbly paint (on sheetrock ceiling)/Cell Block Hallway

No Asbestos Detected
89% Non- Fibrous Particles
11% Volatile on Ignition
<1% Wollastonite

194-24-3 White textured crumbly paint (on sheetrock ceiling)/Mens Rm

No Asbestos Detected
85% Non- Fibrous Particles
15% Volatile on Ignition
<1% Wollastonite

194-24-4 White textured crumbly paint (on sheetrock ceiling)/Gym

<1% Chrysotile Asbestos (point counted)
81% Non- Fibrous Particles
19% Volatile on Ignition
<1% Wollastonite

194-24-5 White textured crumbly paint with white crumbly taping compound (on sheetrock ceiling)/Mens Locker Room

No Asbestos Detected
88% Non- Fibrous Particles
10% Volatile on Ignition
2% Wollastonite

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT collected by Dan Sullivan on 10/11/2017

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

194-24-6 Light gray crumbly sheetrock with brown fibrous paper backing (from sample #1, ceiling)/Womens Locker Room

Findings (Analyzed 10/17/2017)

No Asbestos Detected
65% Non- Fibrous Particles
24% Volatile on Ignition
11% Fiberglass

194-24-7 Gray hard grout (between 2"x2" brown ceramic floor tiles)/Womens Room

No Asbestos Detected
95% Non- Fibrous Particles
5% Volatile on Ignition

194-24-8 Gray hard grout (between 2"x2" brown ceramic floor tiles)/Mens Room

No Asbestos Detected
99% Non- Fibrous Particles
1% Volatile on Ignition

194-24-9 Gray hard crumbly mortar (under 2"x2" brown ceramic floor tiles, on concrete)/Mens Room

No Asbestos Detected
70% Non- Fibrous Particles
30% Volatile on Ignition

194-24-10 Gray hard crumbly mortar (under 2"x2" brown ceramic floor tiles, on concrete)/Womens Room

No Asbestos Detected
94% Non- Fibrous Particles
6% Volatile on Ignition

194-24-11 Gray hard grout (between 4"x4" white ceramic wall tiles, on cinderblock)/Womens Room

No Asbestos Detected
95% Non- Fibrous Particles
5% Volatile on Ignition

194-24-12 Gray hard grout (between 4"x4" white ceramic wall tiles, on cinderblock)/Mens Room

No Asbestos Detected
92% Non- Fibrous Particles
8% Volatile on Ignition

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT collected by Dan Sullivan on 10/11/2017

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

194-24-13 Gray hard crumbly mortar (under 4"x4" white ceramic wall tiles, on cinderblock)/Mens Room

Findings (Analyzed 10/17/2017)

No Asbestos Detected
91% Non- Fibrous Particles
9% Volatile on Ignition

194-24-14 Gray hard crumbly mortar (under 4"x4" white ceramic wall tiles, on cinderblock)/Womens Room

No Asbestos Detected
98% Non- Fibrous Particles
2% Volatile on Ignition

194-24-15 Light gray hard grout (between 4"x4" tan/brown ceramic wall tiles, on cinderblock)/Womens Room

No Asbestos Detected
94% Non- Fibrous Particles
6% Volatile on Ignition

194-24-16 Light gray hard grout (between 4"x4" tan/brown ceramic wall tiles, on cinderblock)/Mens Room

No Asbestos Detected
94% Non- Fibrous Particles
6% Volatile on Ignition

194-24-17 Gray hard mortar (under 4"x4" tan/brown ceramic wall tiles, on cinderblock)/Mens Room

No Asbestos Detected
90% Non- Fibrous Particles
10% Volatile on Ignition

194-24-18 Gray hard mortar (under 4"x4" tan/brown ceramic wall tiles, on cinderblock)/Womens Room

No Asbestos Detected
93% Non- Fibrous Particles
7% Volatile on Ignition

194-24-19 Gray/Light gray hard flooring with brown face coat (on concrete)/Womens Locker Room Hallway

No Asbestos Detected
91% Non- Fibrous Particles
9% Volatile on Ignition

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT collected by Dan Sullivan on 10/11/2017

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

194-24-20 Gray/Light gray hard flooring with brown face coat (on cinderblock at baseboard area)/Mens Locker Room

Findings (Analyzed 10/17/2017)

No Asbestos Detected
92% Non- Fibrous Particles
8% Volatile on Ignition

194-24-21 2x4 Gray fibrous ceiling tile with white face coat and linear gouge pinhole design (suspended in metal t-grid)/Womens Locker Room Hallway

No Asbestos Detected
32% Non- Fibrous Particles
21% Volatile on Ignition
47% Mineral Wool

194-24-22 2x4 Gray fibrous ceiling tile with white face coat and linear gouge pinhole design (suspended in metal t-grid)/Womens Locker Room Hallway

No Asbestos Detected
30% Non- Fibrous Particles
26% Volatile on Ignition
44% Mineral Wool

194-24-23 Brown hard glue (under vinyl covebase, on cinderblock)/Womens Locker Room Hallway

No Asbestos Detected
50% Non- Fibrous Particles
50% Volatile on Ignition

194-24-24 Gray fibrous unwrapped mudded fitting insulation (on 3" OD fiberglass lines, above 2x4 SCT (center at valve))/Mens Room

No Asbestos Detected
43% Non- Fibrous Particles
5% Volatile on Ignition
52% Mineral Wool

194-24-25 Gray fibrous unwrapped mudded fitting insulation (on 3" OD fiberglass lines, above 2x4 SCT (center at valve))/Mens Room

No Asbestos Detected
43% Non- Fibrous Particles
4% Volatile on Ignition
53% Mineral Wool

194-24-26 Gray fibrous unwrapped mudded fitting insulation (on 3" OD fiberglass lines, above 2x4 SCT (above urinals))/Mens Room

No Asbestos Detected
43% Non- Fibrous Particles
4% Volatile on Ignition
53% Mineral Wool

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT collected by Dan Sullivan on 10/11/2017

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

194-24-27 Gray fibrous unwrapped mudded fitting insulation (on 3" OD fiberglass lines, above 2x4 SCT (above toilets))/Mens Room

194-24-28 Gray fibrous debris (on metal cell ceiling, probably from spray-on fireproofing)/Cell 2

194-24-29 Gray fibrous debris (on metal cell ceiling, probably from spray-on fireproofing)/Cell 3

Findings (Analyzed 10/17/2017)

No Asbestos Detected
43% Non- Fibrous Particles
5% Volatile on Ignition
52% Mineral Wool

No Asbestos Detected
54% Non- Fibrous Particles
17% Volatile on Ignition
29% Fiberglass

No Asbestos Detected
57% Non- Fibrous Particles
13% Volatile on Ignition
30% Fiberglass

**PARAMETERS
ASBESTOS PLM ANALYSIS
(Revised 3/22/13)**

1. *Materials which contain >1% asbestos (greater than 1%) by PLM (polarizing light microscopy) analysis are considered to be asbestos containing materials under EPA and the State of Connecticut Regulations. OSHA still regulates material with <1%. (Contact laboratory for information.) (Note: A more sensitive method is available called TEM (transmission electron microscopy). TEM may detect asbestos fibers that PLM cannot see, but the above agencies' enforcement is based on PLM analysis. Rules may differ for states other than Connecticut. It is best to check with the individual state. For example, New York State requires TEM confirmation of negative PLM results on floor tile).*
2. *If no asbestos is detected in a sample, or if the asbestos content is less than 1% by PLM, additional samples of the same material should be submitted for confirmation. Please check with the laboratory for guidance on the number of samples needed. Sample collection in Connecticut must be by a DPH Licensed Asbestos Inspector. Many other states also require licensing.*
3. *Floor Tile Mastic: Mastic under floor tile should be separately sampled by scraping some of the mastic from the floor to avoid contamination from the floor tile.*
4. *Although Chem Scope, Inc. takes great effort to insure accuracy in the estimation of asbestos in the materials analyzed, no quantitation method is without some uncertainty. Based on independent calibration studies and comparison of Chem Scope's quantitative results with NVLAP and AIHA round robin programs we estimate our uncertainty in quantitation to be relatively small. The average relative uncertainty of the estimate is calculated to be 35% for samples that contain less than 10% asbestos. This means an estimate of 10% asbestos in a sample has a probable range of 6.5% to 13.5% while an estimate of 1% has a range of 0.65% to 1.35%.*
5. *The presence of non-asbestos components, which are recognized by the PLM analyst, is reported with the estimated amounts. This is not an exhaustive analysis for the non-asbestos materials since the primary purpose is to determine if asbestos is present and, if so, how much is present of each type of asbestos.*
6. *Results reported apply only to the sample(s) analyzed.*
7. *Special treatment of samples: Chem Scope, Inc. routinely uses gravimetric sample reduction techniques such as low temperature ashing or acid dissolution on samples like floor tile, roofing materials, glue dots, or high cellulose content samples prior to PLM analysis. These methods are used to aid in the PLM analysis and to provide better quantitative data. Layered samples, if possible, are analyzed separately as individual layers. However, in accordance with the method, if any layer contains >1% asbestos (greater than 1%) it is to be considered an asbestos containing material. All results are reported to the original sample basis.*
8. *Sample results are not corrected for blanks. Analytical blanks are run daily and if contamination is suspected the samples are rerun.*
9. *Chem Scope, Inc. performs "400 point" point counting when the asbestos content is visually estimated to be less than 10%. There is no additional charge for this analysis.*

The Scope of Accreditation referenced in this report applies to bulk asbestos fiber analysis by PLM (Polarized Light Microscopy).

Accreditation does not imply endorsement by NVLAP, NIST or any Federal or State Agency.

This report pertains only to the samples tested and may not be reproduced in part.

Condition of the samples at the time of receipt was acceptable unless otherwise noted on the Certificate of Analysis.

See test parameters above and attached chain of custody form.

We would love to hear from you. Comments? Questions? Please call or email us at chem.scope@snet.net

ChemScope, Inc. is accredited by AIHA LAP, LLC LAB #100134

NVLAP Lab Code 101061-0.

Connecticut Department of Public Health (DPH) Approved Environmental Lab PH 0581

Signature 	Signature (if applicable) 	Authorized Signature or Suzanne Cristante Laboratory Director	Authorized Signature or Izabela Kremens Quality Manager	Authorized Signature  Ronald D. Arena Senior Consultant
Analyst	Inspector			

Dear Laboratory Customer or Potential Customer,

New laboratory accreditation standards require us to provide our clients information about our services to make sure that your requirements for testing are adequately defined, documented and understood. The following is for your information. Please call us if you have any questions or comments.

Type of Samples

- / / PCM cassettes are routinely run by NIOSH Method 7400.
- // Bulk materials are run by EPA Method: #600/R-93/116.

Air Samples: NIOSH 7400 Method counts all fibers. This method may be used for personal air samples and for finals. Two field blanks must be submitted for each set of samples. In the unlikely event that there is to be any deviation from the standard test, you will be consulted by phone before the work begins. Those clients who have not had NIOSH 582 or AHERA asbestos training courses (either supervisor or project monitor) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

Bulk materials: sampled are analyzed by the latest EPA Method: (#600/R-93/116) which uses polarized light microscopy (PLM). When asbestos is detected and the amount is estimated to be less than 10%, we automatically point count the samples. When there are interfering substances present, we may use ashing, acid washing or other procedures described in the method to handle the interference. Those clients who have not had AHERA asbestos training courses (either inspector, supervisor or project designer) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

All Samples must be clearly labeled with source name and identification number or sufficient information from the client to make this sample uniquely identified. (We will then add our notebook #, page # (batch) and unique number within the batch.) Samples must be in a clean, air tight package such as a zip loc bag. Appropriate completed paperwork must accompany the sample. Bulk and air samples may not be submitted in the same package.

As soon as available bench top results will be faxed to you and reports will then be mailed. We will retain air samples for at least three months and bulk samples for 6 months unless you advise us otherwise.

You are welcome to visit the laboratory at any time to discuss the work, monitor the work or verify our testing services. We appreciate your business and encourage any feedback regarding improving our services or our quality system. Please take a minute to complete the following survey and mail/fax it to ChemScope, Inc.

Customer Service Survey

To help us improve our services give your opinions to the following:

- 1- The printed laboratory report was complete and easy to understand. YES__ NO__
If no, please explain _____.
- 2- The turn around time for results met your expectations/needs. YES__ NO__
If no, please explain _____.
- 3- How likely are you to recommend ChemScope Inc. to someone?
Excellent__ Very Good__ Good__ Fair__ Poor__
- 4- How likely are you to return to ChemScope in the future if the need arises?
Excellent__ Very Good__ Good__ Fair__ Poor__
5. On a scale of 1 to 5 where 1 represents "Satisfied" and 5 represents "Dissatisfied", how would you rate your level of overall satisfaction.
1__ 2__ 3__ 4__ 5__
- 6- Please add any additional comments or suggestions that would be helpful when you use our services:

Name _____ Company _____

Address _____ Telephone/e-mail _____

Can we contact you regarding this survey? YES__ NO__

Allen White, Town of Trumbull
5688 Main Street
Trumbull, CT 06611

6/8/2015

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
158 EDISON ROAD - TRUMBULL, CT
CS# 188-190, 5/1/2015
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Attachments:

- PLM Certificate of Analysis report with chain of custody, 5 page(s)
- Bulk Sample Location Drawings, 2 page(s)
- TEM CARB 435 Level C Analysis report and chain of custody, 5 page(s)
- EMSL PLM Analysis report, 3 page(s)
- PCM Personal Air Sampling Report, 7 page(s)
- DPH and EPA correspondence regarding Spray-on Containing Vermiculite, 3 page(s)

Report Distribution:

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John Marsilio (Town of Trumbull) jmarsilio@trumbull-ct.gov

File Location:

NAS AAUM-Reports\Asblnsp\DS-Prereno_2015.doc

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
158 EDISON ROAD - TRUMBULL, CT
CS# 188-190, 5/1/2015
Page 2 of 6**

INTRODUCTION

EXECUTIVE SUMMARY: Asbestos Containing Materials (ACM) as defined by DPH and EPA were not detected within the scope of this inspection. The spray-on fire-proofing insulation contained <1% actinolite asbestos and while not regulated by DPH or EPA, OSHA regulations require proper procedures be used to prevent exposure to workers performing the related disturbance. Although not regulated by EPA or CT-DPH, both agencies recommend treating the spray-on fire-proofing as ACM because of the presence of Vermiculite in the spray-on fire-proofing insulation. Please see Recommendation section and attached correspondence for details.

BACKGROUND: We understand the following, based on our conversations and emails from Allen White and DeCarlo & Doll:

- There are plans to renovate the subject building, which involve the installation of new drop ceilings.
- Preliminary Asbestos Bulk Sampling was conducted by another CT-DPH licensed consultant and this consultant called all of the spray-on fire-proofing (which was installed in the 1990's) as Assumed ACM. The consultant collected three samples of the spray-on and the PLM analysis indicated that although no asbestos was detected the lab indicated that it contained vermiculite.
- Based on my conversation with Kristen Day (CT-DPH) on 4/20/2015, she indicated that it would be appropriate to sample this type of material as long as AHERA sampling protocols were followed in regards to number of samples.
- Based on my conversation with Ron Skomro (CT-DPH) on 4/30/2015, he indicated that according to the regulation the material could be sampled and if sampled AHERA sampling protocols should be followed. He also said as from a public health standpoint if the spray-on contains vermiculite which may be contaminated with Libby amphiboles then it should be treated as ACM. He indicated that if more PLM sampling was done and no asbestos was detected and if that was then verified by TEM then he would be satisfied that the material may be treated as non-asbestos.
- We understand the amount of spray-on fire-proofing within the scope of the renovations is > 5000 sq ft.
- After we collected all of the bulk sampling data and submitted it to the CT-DPH it was then sent to EPA for further guidance. CT-DPH and EPA correspondence regarding the spray-on is attached.

SCOPE OF INSPECTION: Asbestos bulk sampling of spray-on fire-proofing only, as directed by our client. Our work included the following:

- Collection and analysis of spray-on fire-proofing only within the scope of renovation for asbestos, as required by the regulations. This data is supplemental to an existing pre-renovation inspection done by others.
- A list with quantity, type and location of asbestos containing materials (ACM) in the scope.
- Report of the findings including ACM location drawings.

This investigation and information provided in this report depends partly on background information provided by the client. This report is intended for the use of the client. The scope of services performed may not be appropriate for other users and any use of this report by third parties is at their sole risk. This report is intended to be used in its entirety. No excerpts may be taken to be representative of this report.

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
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INTRODUCTION (cont)

BUILDING DESCRIPTION: The subject approximately large two-story municipal building was built in 1980 of steel and masonry construction with a finished basement level. Heat is supplied from HVAC units located on the roof.

TEST PARAMETERS: For sampling, EPA Wet Methods are used to prevent fiber release. Building materials sampled are analyzed at our laboratory by EPA method 600/R-93/116. This is currently the approved EPA Test method, which uses Polarized Light Microscopy with Dispersion Staining. The laboratory is accredited by NIST/NVLAP and AIHA Laboratory Accreditation program, LLC, and is a Connecticut Approved Environmental Laboratory for Asbestos Analysis.

Phase Contrast Microscopy (PCM): This procedure count asbestos and non-asbestos fibers greater than 5 microns in length. It is used for screening for OSHA compliance and useful as a general reference test. The CT Department of Public Health re-occupancy level by this test is 0.010 fibers/cc and the OSHA PEL is 0.10 f/cc. It should be noted that air sampling can only detect what is in the air at the time of sampling. Conditions can change from one day to the next or can vary seasonally. If the fiber counts exceed 0.010 f/cc the samples can be analyzed, at an additional cost, by a PLM method which does not count obvious non-asbestos fibers.

INSPECTION REPORT SYNOPSIS

LOCATION NAME AND ADDRESS: Future Health Center Building
333 White Plains Road, Trumbull, CT

INSPECTION DATE(S): 5/1/2015

QUALIFICATIONS: The Inspection was conducted by Daniel P. Sullivan:

- EPA & State of Connecticut Accredited Asbestos Inspector, Project Monitor & Project Designer
- State of Connecticut Licensed Asbestos Inspector/Management Planner (#000019)
- State of Connecticut Licensed Asbestos Project Monitor (#000036)
- State of Connecticut Licensed Asbestos Project Designer (#000096)

For information about Chem Scope, Inc., log onto <http://www.chem-scope.com>.

SITE OBSERVATIONS: (See attached drawing) The following observations were made at the time of our inspection:

- The building was occupied and operational at the time of our sampling.
- The spray-on within the scope of our inspection, was located above 2x4 suspended ceiling tiles.
- The spray-on within the scope of our sampling had minor damage and debris was visible on the suspended ceiling tiles.
- The ceiling deck was corrugated metal. There was 1-2- of overspray on each side of the sprayed beams. The sprayed I-beams ranged in size 18"-24".

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
158 EDISON ROAD - TRUMBULL, CT
CS# 188-190, 5/1/2015
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INSPECTION REPORT SYNOPSIS (cont)

PLM BULK SAMPLING AND TEM CARB 435 LEVEL C FINDINGS:

The following is a summary table of the materials that tested as non-Asbestos Containing Material (ACM) (<1%) within the Scope of Work:

Material	Location	Sample #'s	ChemScope PLM Findings	EMSL PLM Findings	TEM CARB 435 LEVEL C FINDINGS (0.01 %)
BASEMENT LEVEL					
Off-white fibrous spray-on	Telephone Equip Rm	188-190-1, 1T	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Off-white fibrous spray-on	Corridor 014	188-190-2, 2T	No Asbestos Detected	No Asbestos Detected	Non-Regulated Amphiboles 0.01
Off-white fibrous spray-on	Electrical Rm 005	188-190-3, 3T	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
FIRST FLOOR:					
Off-white fibrous spray-on	Restroom W014	188-190-4, 4T	No Asbestos Detected	No Asbestos Detected	Non-Regulated Amphiboles 0.01
Off-white fibrous spray-on	Dispatch 115	188-190-5, 5T	No Asbestos Detected	No Asbestos Detected	Actinolite Asbestos 0.01%
Off-white fibrous spray-on	Sergeants 127	188-190-6, 6T	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Off-white fibrous spray-on	Muster Rm Storage Cl	188-190-7, 7T	No Asbestos Detected	No Asbestos Detected	Non-Regulated Amphiboles 0.03
Off-white fibrous spray-on	Muster Room	188-190-8, 8T	No Asbestos Detected	No Asbestos Detected	Non-Regulated Amphiboles 0.03
Off-white fibrous spray-on	Emergency Operations Center	188-190-9, 9T	No Asbestos Detected	No Asbestos Detected	Non-Regulated Amphiboles <0.01

NOTE: Suspect ACM materials exist in the building that are not mentioned in this report because they are either not in the scope of this sampling or were inaccessible at the time of the inspection. Suspect ACM materials may include but not be limited to: all other interior building materials, possible moisture barriers inside brick walls and roofing materials.

PERSONAL AIR SAMPLE RESULTS: A personal air sample worn by ChemScope during the inspection was below the 8 hour OSHA permissible exposure limit (PEL) of 0.1 fibers/cc. See attached air sample analysis reports for details.

For informational purposes, the sample was re-analyzed using Differential Counting (discussed above in the test parameter section of the report) because the initial result was above the individual limit of detection. Differential Counting does not count obviously non-asbestos fibers and the re-analysis found that the majority of the fibers on the samples were cellulose and glass. Please see attached PLM Exam report for more information.

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
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LIMITATIONS OF THE SAMPLING

Our Bulk sampling was limited to the spray-on fire-proofing and over-spray only. We have provided a proposal to do a full NESHAP's pre-renovation inspection for the project.

The following materials and/or areas were not accessible at the time of the inspection. These materials and/or areas will need to be inspected prior to the renovation when more destructive inspections can be conducted:

- Interior finishes such including but not limited to flooring materials, sheetrock walls and ceiling materials which exist throughout the building.
- Exterior materials (not in scope of work).

It is important to note that every effort is made to detect asbestos (ACM) in the path of the renovation by our inspectors. It is not practical or prudent to demolish the entire fire-proofing system during an inspection. The owner should be aware of this in case suspect materials such as caulk, glues and paper, or other concealed suspect materials are uncovered during the actual demolition. If suspect materials that were previously not accessible or not sampled during this inspection are discovered during the renovation, or if the scope of the renovation changes to include disturbance of new materials not inspected, then renovation must stop and the materials must be sampled by a CT DPH licensed asbestos inspector prior to disturbance of these materials.

RECOMMENDATIONS

Prior to any renovation work, a more thorough Asbestos Pre-Renovation Inspection must be conducted to intended to identify asbestos containing building materials, which are in the path of the demolition. The inspection is needed for compliance with the EPA NESHAP Regulations for Building Renovations and Demolition (40 CFR PART 61), OSHA 1926.1101 and CT DPH 19a-332a-1 through 16. Additional Inspections will be needed for compliance with this regulation).

Materials with <1% asbestos, such as the spray-on fire-proofing, are not defined as asbestos containing materials in DPH or EPA regulations. However, OSHA regulations (29 CFR 1926.1101) require proper procedures be used to prevent exposure to workers performing the renovations. This includes training and protection for employees who may be exposed above the OSHA PEL. "(c)The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA)...." It would be prudent to remove the spray-on in regulated areas, using critical barriers, wet methods, and HEPA filtered negative air machines in the area during the spray-on removal. At a minimum anyone disturbing the spray-on should have training in accordance with OSHA 1926.1101(k)(9)(vii) including respirator training. A CT DPH-licensed asbestos contractor would be the best choice for removing the spray-on, since other contractors with the proper training and equipment would be difficult to find. The licensed contractor would follow the usual procedures except they wouldn't need to notify the DPH.

**ASBESTOS BULK SAMPLING
TRUMBULL POLICE DEPARTMENT
158 EDISON ROAD - TRUMBULL, CT
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RECOMMENDATIONS (cont)

OSHA regulations 1926.1101 requires that before asbestos removal or repair work (class I, II or III work) is initiated, building owners/facility owners must notify their own employees and employers who are bidding on such work, of the quantity and location of ACM or PACM (presumed asbestos containing material) present in such areas. Also for inadvertently discovered ACM or PACM there is a 24-hour notification requirement to the owner and all employers at the site.

Based on the attached correspondence between CT-DPH and EPA, both agencies have recommended that the spray-on fire-proofing be treated as ACM.

All Asbestos Containing Materials (ACM) detected in the path of the renovation must be removed prior to the disturbance of these materials.

There is visible spray-on debris on the drop ceilings so if the spray-on is to be treated as ACM then the ceiling tiles would be considered contaminated with ACM. Also there is a possibility that spray-on debris may be present in wall cavities.

Asbestos removal is regulated by federal and state agencies. Abatement work must be done by a licensed asbestos abatement contractor using proper procedures and practices, including containment, decontamination facilities, negative air units and trained and CT DPH licensed workers. Final re-occupancy testing is also required, if the building is going to be reoccupied after the asbestos removal and strongly recommended even if the building is not going to be re-occupied such as in the case of building demolition, for removal of greater than three (3) sq. ft or linear ft of ACM. A CT DPH Licensed Project Monitor is always required for final visual inspections after asbestos removal.

Please also keep in mind that notification to the DPH is required for asbestos abatement involving greater than 10 linear feet or 25 square feet of or for any demolition. Disposal of all ACM is regulated by EPA and the Connecticut DEEP; an EPA approved landfill must be used.

If you have any questions or need more information please call me. Thank you for calling on us.

Sincerely,



Dan Sullivan
President

Certificate Of Analysis

*Town of Trumbull
366 Church Hill Road
Trumbull CT 06611*

05/04/2015
CS#: 188-190
Page 1 of 3

*Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull, CT collected by Dan Sullivan
on 05/01/2015*

*Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method
600/R-93/116*

Sample Identification

*188-190-1 Off-White fibrous spray-on fire-proofing overspray
(on corrugated metal decking, located above 2x4 suspended
ceiling tiles)/Basement, Telephone Equipment Room*

*188-190-2 Off-White fibrous spray-on fire-proofing insulation
(on 18" metal I-beam, located above 2x4 suspended ceiling
tiles)/Basement, Corridor 014, Outside Cell Blocks*

*188-190-3 Off-White fibrous spray-on fire-proofing insulation
(on 18" metal I-beam, located above 2x4 suspended ceiling
tiles)/Basement, Electrical Room 005*

*188-190-4 Off-White fibrous spray-on fire-proofing overspray
(on corrugated metal deck, located above 2x4 suspended ceiling
tiles)/First Floor, Restroom, W014*

*188-190-5 Off-White fibrous spray-on fire-proofing insulation
(on 18" metal I-Beam, located above 2x4 suspended ceiling
tiles)/First Floor, Dispatch 115*

Findings (Analyzed 05/04/2015)

*No Asbestos Detected
33% Non- Fibrous Particles
17% Volatile on Ignition
21% Mica
29% Fiberglass*

*No Asbestos Detected
34% Non- Fibrous Particles
16% Volatile on Ignition
21% Mica
29% Fiberglass*

*No Asbestos Detected
34% Non- Fibrous Particles
16% Volatile on Ignition
21% Mica
29% Fiberglass*

*No Asbestos Detected
33% Non- Fibrous Particles
17% Volatile on Ignition
21% Mica
29% Fiberglass*

*No Asbestos Detected
34% Non- Fibrous Particles
16% Volatile on Ignition
21% Mica
29% Fiberglass*

Bulk sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull, CT collected by Dan Sullivan on 05/01/2015

Asbestos Identification in the samples. Examination made by Polarized Light Microscopy (PLM) per EPA Test Method 600/R-93/116

Sample Identification

188-190-6 Off-White fibrous spray-on fire-proofing insulation (on 18" metal I-Beam, located above 2x4 suspended ceiling tiles)/First Floor, Sergeants 127

Findings (Analyzed 05/04/2015)

No Asbestos Detected
33% Non- Fibrous Particles
17% Volatile on Ignition
21% Mica
29% Fiberglass

188-190-7 Off-White fibrous spray-on fire-proofing insulation (on 24" metal I-Beam, located above 2x4 suspended ceiling tiles)/First Floor, Muster Room Storage Closet

No Asbestos Detected
33% Non- Fibrous Particles
17% Volatile on Ignition
21% Mica
29% Fiberglass

188-190-8 Off-White fibrous spray-on fire-proofing insulation (on 12" metal I-Beam, located above 2x4 suspended ceiling tiles)/First Floor, Muster Room

No Asbestos Detected
34% Non- Fibrous Particles
16% Volatile on Ignition
21% Mica
29% Fiberglass

188-190-9 Off-White fibrous spray-on fire-proofing insulation (on 24" metal I-Beam, located above 2x4 suspended ceiling tiles)/First Floor, Emergency Operations Center

No Asbestos Detected
34% Non- Fibrous Particles
16% Volatile on Ignition
21% Mica
29% Fiberglass

**PARAMETERS
ASBESTOS PLM ANALYSIS
(Revised 3/22/13)**

1. *Materials which contain >1% asbestos (greater than 1%) by PLM (polarizing light microscopy) analysis are considered to be asbestos containing materials under EPA and the State of Connecticut Regulations. OSHA still regulates material with <1%. (Contact laboratory for information.) {Note: A more sensitive method is available called TEM (transmission electron microscopy). TEM may detect asbestos fibers that PLM cannot see, but the above agencies' enforcement is based on PLM analysis. Rules may differ for states other than Connecticut. It is best to check with the individual state. For example, New York State requires TEM confirmation of negative PLM results on floor tile}.*
2. *If no asbestos is detected in a sample, or if the asbestos content is less than 1% by PLM, additional samples of the same material should be submitted for confirmation. Please check with the laboratory for guidance on the number of samples needed. Sample collection in Connecticut must be by a DPH Licensed Asbestos Inspector. Many other states also require licensing.*
3. *Floor Tile Mastic: Mastic under floor tile should be separately sampled by scraping some of the mastic from the floor to avoid contamination from the floor tile.*
4. *Although Chem Scope, Inc. takes great effort to insure accuracy in the estimation of asbestos in the materials analyzed, no quantitation method is without some uncertainty. Based on independent calibration studies and comparison of Chem Scope's quantitative results with NVLAP and AIHA round robin programs we estimate our uncertainty in quantitation to be relatively small. The average relative uncertainty of the estimate is calculated to be 35% for samples that contain less than 10% asbestos. This means a estimate of 10% asbestos in a sample has a probable range of 6.5% to 13.5% while an estimate of 1% has a range of 0.65% to 1.35%.*
5. *The presence of non-asbestos components, which are recognized by the PLM analyst, is reported with the estimated amounts. This is not an exhaustive analysis for the non-asbestos materials since the primary purpose is to determine if asbestos is present and, if so, how much is present of each type of asbestos.*
6. *Results reported apply only to the sample(s) analyzed.*
7. *Special treatment of samples: Chem Scope, Inc. routinely uses gravimetric sample reduction techniques such as low temperature ashing or acid dissolution on samples like floor tile, roofing materials, glue dots, or high cellulose content samples prior to PLM analysis. These methods are used to aid in the PLM analysis and to provide better quantitative data. Layered samples, if possible, are analyzed separately as individual layers. However, in accordance with the method, if any layer contains >1% asbestos (greater than 1%) it is to be considered an asbestos containing material. All results are reported to the original sample basis.*
8. *Sample results are not corrected for blanks. Analytical blanks are run daily and if contamination is suspected the samples are rerun.*
9. *Chem Scope, Inc. performs "400 point" point counting when the asbestos content is visually estimated to be less than 10%. There is no additional charge for this analysis.*

The Scope of Accreditation referenced in this report applies to bulk asbestos fiber analysis by PLM (Polarized Light Microscopy).

Accreditation does not imply endorsement by NVLAP, NIST or any Federal or State Agency.

This report pertains only to the samples tested and may not be reproduced in part.

Condition of the samples at the time of receipt was acceptable unless otherwise noted on the Certificate of Analysis.

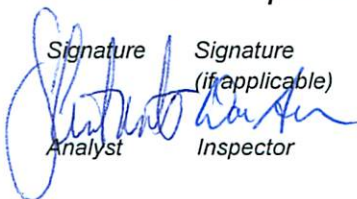
See test parameters above and attached chain of custody form.

We would love to hear from you. Comments? Questions? Please call or email us at chem.scope@snet.net

ChemScope, Inc. is accredited by AIHA LAP, LLC LAB #100134

NVLAB Lab Code 101061-0.

Connecticut Department of Public Health (DPH) Approved Environmental Lab PH 0581

Signature

Analyst

*Signature
(if applicable)
Inspector*

Authorized Signature or Authorized Signature
Suzanne Cristante
Laboratory Director

Authorized Signature
Izabela Kremens
Quality Manager


Ronald D. Arena
Senior Consultant

Dear Laboratory Customer or Potential Customer,

New laboratory accreditation standards require us to provide our clients information about our services to make sure that your requirements for testing are adequately defined, documented and understood. The following is for your information. Please call us if you have any questions or comments.

Type of Samples

// PCM cassettes are routinely run by NIOSH Method 7400.

// Bulk materials are run by EPA Method: #600/R-93/116.

Air Samples: NIOSH 7400 Method counts all fibers. This method may be used for personal air samples and for finals. Two field blanks must be submitted for each set of samples. In the unlikely event that there is to be any deviation from the standard test, you will be consulted by phone before the work begins. Those clients who have not had NIOSH 582 or AHERA asbestos training courses (either supervisor or project monitor) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

Bulk materials: sampled are analyzed by the latest EPA Method: (#600/R-93/116) which uses polarized light microscopy (PLM). When asbestos is detected and the amount is estimated to be less than 10%, we automatically point count the samples. When there are interfering substances present, we may use ashing, acid washing or other procedures described in the method to handle the interference. Those clients who have not had AHERA asbestos training courses (either inspector, supervisor or project designer) should consult with the lab director for more information. The test parameters are further explained in the analytical report.

All Samples must be clearly labeled with source name and identification number or sufficient information from the client to make this sample uniquely identified. (We will then add our notebook #, page # (batch) and unique number within the batch.) Samples must be in a clean, air tight package such as a zip loc bag. Appropriate completed paperwork must accompany the sample. Bulk and air samples may not be submitted in the same package.

As soon as available bench top results will be faxed to you and reports will then be mailed. We will retain air samples for at least three months and bulk samples for 6 months unless you advise us otherwise.

You are welcome to visit the laboratory at any time to discuss the work, monitor the work or verify our testing services. We appreciate your business and encourage any feedback regarding improving our services or our quality system. Please take a minute to complete the following survey and mail/fax it to ChemScope, Inc.

Customer Service Survey

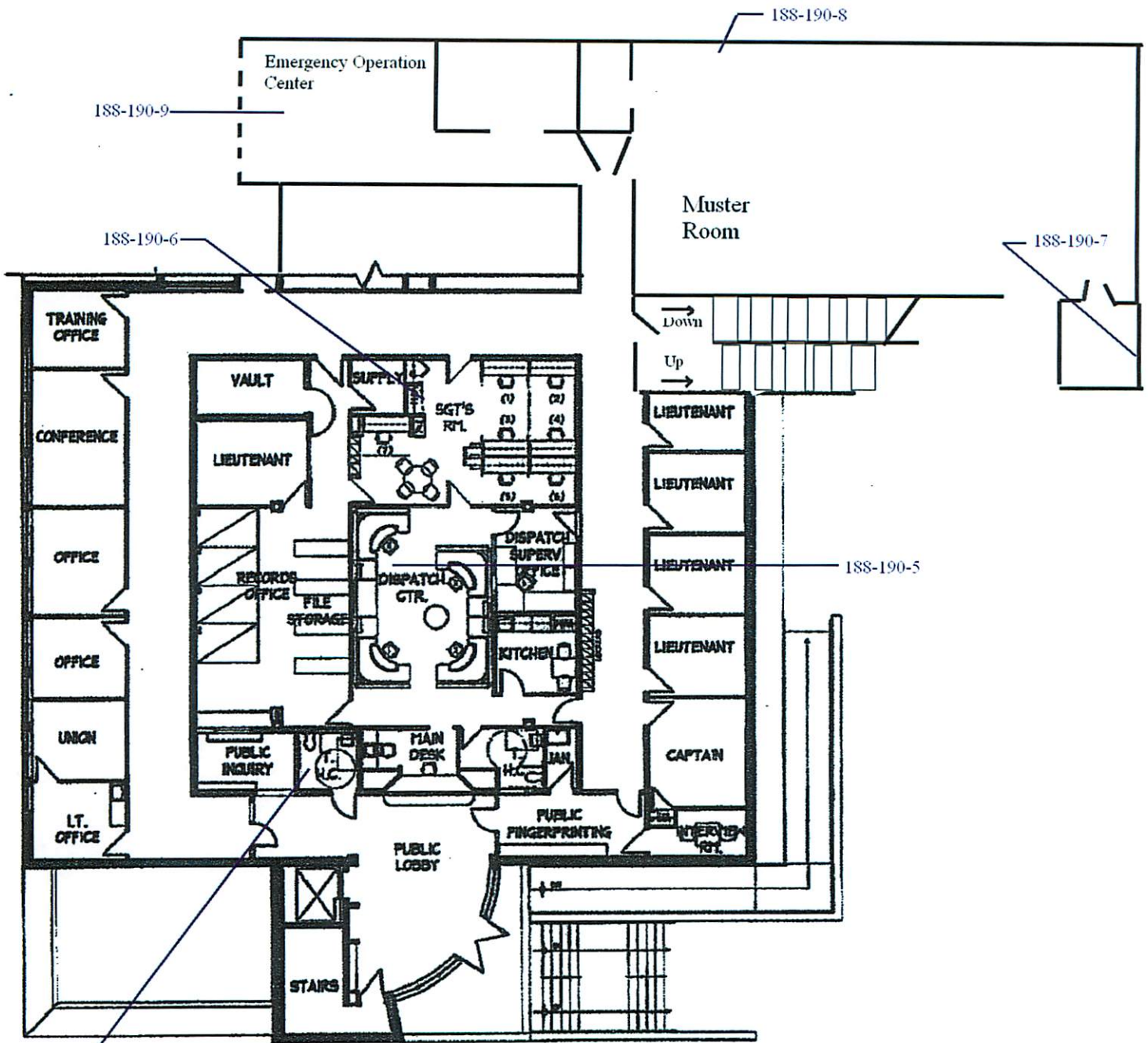
To help us improve our services give your opinions to the following:

- 1- The printed laboratory report was complete and easy to understand. YES__ NO__
If no, please explain _____.
- 2- The turn around time for results met your expectations/needs. YES__ NO__
If no, please explain _____.
- 3- How likely are you to recommend ChemScope Inc. to someone?
Excellent__ Very Good__ Good__ Fair__ Poor__
- 4- How likely are you to return to ChemScope in the future if the need arises?
Excellent__ Very Good__ Good__ Fair__ Poor__
5. On a scale of 1 to 5 where 1 represents "Satisfied" and 5 represents "Dissatisfied", how would you rate your level of overall satisfaction.
1__ 2__ 3__ 4__ 5__
- 6- Please add any additional comments or suggestions that would be helpful when you use our services:

Name _____ Company _____

Address _____ Telephone/e-mail _____

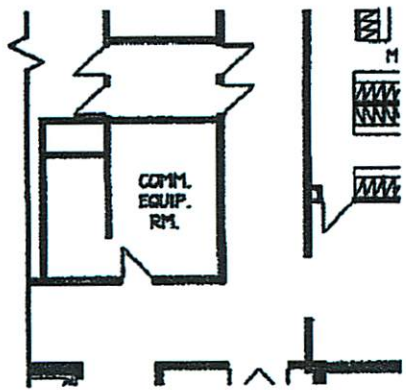
Can we contact you regarding this survey? YES__ NO__



2 PARTIAL PROPOSED MAIN FLOOR PLAN
1/8" = 1'-0"

Bulk Sample Location Drawing

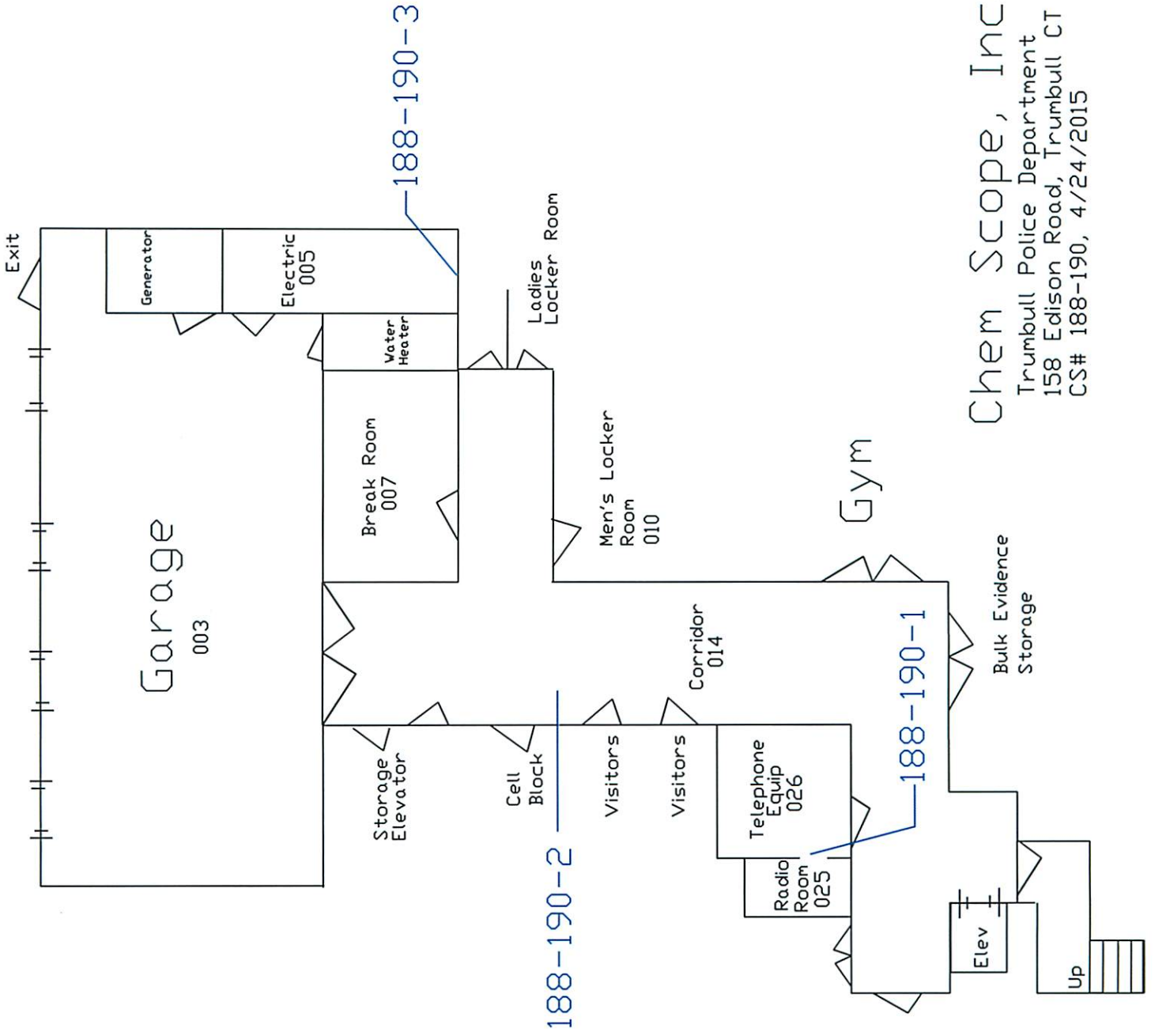
Trumbull Police Department
158 Edison Road, Trumbull CT
CS# 188-190, 4/24/2015



4 PARTIAL PROPOSED LOWER FLOOR PLAN
1/8" = 1'-0"

LEGEND	
	RADIATED AREA SERVICED BY FIRE HVAC UNITS
	RADIATED AREA
	EXISTING WALL TO REMAIN
	NEW WALL
	WALL TO BE DEMOLISHED
	EXISTING DOOR
	NEW DOOR

Bulk Sample Location Drawing



Chem Scope, Inc.
Trumbull Police Department
158 Edison Road, Trumbull CT
CS# 188-190, 4/24/2015



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (800) 220-3675 Fax: (856) 858-1292

EMSL ANALYTICAL, INC.

Email: CinnAsblab@emsl.com

May 6, 2015

Dan Sullivan
ChemScope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Re: EMSL Order ID 041512953

Dear Dan Sullivan:

Attached please find the results of your Bulk samples from the above referenced order number. These samples were received May 5, 2015 for asbestos analysis via modified EPA 600/R-93/ 116 method; utilizing analytical electron microscopy (Section 2.5.5.2) with CARB 435 Prep (Milling).

Included in this report are the six regulated asbestos types. These are Chrysotile and Amphibole Asbestos (Amosite, Actinolite, Tremolite, Crocidolite, and Anthophyllite).

Non Regulated Amphiboles, if present, are separately reported and are not included in the Regulated Asbestos concentration.

Non-Regulated Amphibole is a form of amphibole that is unique to the Libby, MT vermiculite deposit and is currently not considered a regulated asbestiform mineral according to the US EPA. This excerpt was taken from an abstract written by the USGS, G. Meeker, et. al.:

"Asbestos is a commercial term applied to six regulated minerals that occur in asbestiform habit. Five of these minerals are members of the amphibole group. Regulators and health experts use commercial nomenclature for these amphiboles. Mineralogists classify amphiboles by a system based on crystal site chemistry that often assigns different mineral names. This dual system of nomenclature is problematic for the regulatory, health and mineralogic communities because within any single geologic occurrence or locality, amphibole compositions can vary substantially. This is certainly true for the amphiboles from the Rainy Creek Complex at Libby, Montana. Non-Regulated Amphiboles include tremolite and actinolite asbestos, but also several more unusual, and unregulated varieties such as winchite and richterite asbestos. Electron probe microanalysis reveals that these phases are in complete solid solution and are intermingled at the micrometer scale. In addition to chemical variability, the Non-Regulated Amphiboles exhibit a wide range of regulated and unregulated morphologies from truly asbestiform to blocky, non-fibrous grains. Asbestiform fibers, acicular particles, particles showing curvature, and cleavage fragments are all found in the Non-Regulated Amphibole. These different chemistries and morphologies, intermingled at the micron scale, may each possess unique properties that could influence how they behave within the respiratory and gastro-intestinal systems and how they are regarded in regulatory assessments. It is well known that inhalation of asbestiform mineral dust is a causative factor for diseases such as asbestosis and mesothelioma.

However, the mechanisms of disease development following asbestos insult are presently unclear. Recent findings indicate that certain morphologies as well as chemical and surface properties may play a significant role in disease development. The ultimate understanding of these mechanisms will require close collaboration between toxicologists and mineralogists."





EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (800) 220-3675 Fax: (856) 858-1292

EMSL ANALYTICAL, INC.

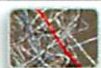
Email: CinnAslab@emsl.com

The mineral species includes winchite and richterite among others as it is a group that forms a solid solution series very similar to Tremolite & Actinolite. If Tremolite and Actinolite was identified, they would have been reported as regulated asbestos.

If you have any questions or need further information please do not hesitate to contact me.

Sincerely,

Benjamin Ellis





EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077

Phone: (800) 220-3675 Fax: (856) 858-1292

Email: CinnAsblab@emsl.com

Attn: *Dan Sullivan*
ChemScope, Inc.
15 Moulthrop Street
North Haven, CT 06473
Phone: 203-865-5605
Fax: 203-498-1610
Project: CS#188-190

Customer ID: CHEM51
Customer PO:
Received: 5/5/15 9:40 AM
EMSL Order: 041512953
Analysis Date: 5/5/2015
Report Date: 5/7/2015

TEM CARB 435 Level: C (0.01%)

Asbestos Analysis via Modified EPA 600/R-93/ 116 method Utilizing Analytical Electron Microscopy (Section 2.5.5.2) with CARB 435 Prep (Milling) in Bulk

<i>Client Sample ID</i>	<i>Location</i>	<i>Mineral Type(s)</i>	<i># of Structures Detected</i>	<i>Analytical Sensitivity %</i>	<i>Asbestos Weight %</i>	<i>Comments</i>
EMSL Sample ID						
188-190-1T 041512953-0001	Basement, Telephone Equipment Room	No Asbestos Detected		0.01	< 0.01	
188-190-2t 041512953-0002	Basement, Corridor 014	Non-Regulated Amphibole	3	0.01	0.01	
188-190-3t 041512953-0003	Basement, Electrical Room	No Asbestos Detected		0.01	< 0.01	
188-190-4T 041512953-0004	1St Flr, Restroom E014	Non-Regulated Amphibole	2	0.01	0.01	
188-190-5T 041512953-0005	1St Flr, Dispatch	Actinolite	2	0.01	< 0.01	
188-190-6T 041512953-0006	1St Flr, Sargeants 127	No Asbestos Detected		0.01	< 0.01	
188-190-7T 041512953-0007	1St Flr, Muster Room Storage Closet	Non-Regulated Amphibole	1		< 0.01 0.03	
188-190-8t 041512953-0008	1St Flr, Muster Room	Non-Regulated Amphibole	1		< 0.01 0.03	

D. Little W. Froehlich

Analyst

Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL is not responsible for sample collection activities or analytical method limitations. Interpretation and use of results are the responsibility of the client



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077
Phone: (800) 220-3675 Fax: (856) 858-1292
Email: CinnAsblab@emsl.com

Attn: *Dan Sullivan*
ChemScope, Inc.
15 Moulthrop Street
North Haven, CT 06473
Phone: 203-865-5605
Fax: 203-498-1610
Project: **CS#188-190**

Customer ID: CHEM51
Customer PO:
Received: 5/5/15 9:40 AM
EMSL Order: 041512953
Analysis Date: 5/5/2015
Report Date: 5/7/2015

TEM CARB 435 Level: C (0.01%)

Asbestos Analysis via Modified EPA 600/R-93/ 116 method Utilizing Analytical Electron Microscopy (Section 2.5.5.2) with CARB 435 Prep (Milling) in Bulk

<i>Client Sample ID</i>	<i>Location</i>	<i>Mineral Type(s)</i>	<i># of Structures Detected</i>	<i>Analytical Sensitivity %</i>	<i>Asbestos Weight %</i>	<i>Comments</i>
EMSL Sample ID						
188-190-9T 041512953-0009	1st Flr, Emergency Operations Center	Non-Regulated Amphibole	1	0.01	< 0.01	

D. Little W. Froehlich
Analyst

Approved

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL is not responsible for sample collection activities or analytical method limitations. Interpretation and use of results are the responsibility of the client



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

041512953

200 Route 130 North

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Company: Chem Scope, Inc.		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different If Bill to be Different note instructions in Comments**	
Street: 15 Moulthrop Street		<i>Third Party Billing requires written authorization from third party</i>	
City: North Haven	State/Province: CT	Zip/Postal Code: 06473	Country: United States
Report To (Name): Dan Sullivan		Telephone #: 2038655605	
Email Address: sullivan.chemscope@snet.net		Fax #: 203-498-1610	Purchase Order: 1454
Project Name/Number: CS#188-190		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: CT		CT Samples: <input type="checkbox"/> Commercial/Taxable <input checked="" type="checkbox"/> Residential/Tax Exempt	
Turnaround Time (TAT) Options* - Please Check			
<input type="checkbox"/> 3 Hour <input type="checkbox"/> 6 Hour <input checked="" type="checkbox"/> 24 Hour <input type="checkbox"/> 48 Hour <input type="checkbox"/> 72 Hour <input type="checkbox"/> 96 Hour <input checked="" type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week			
*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.			
PLM - Bulk (reporting limit)		TEM - Bulk	
<input type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NIOSH 9002 (<1%) <input type="checkbox"/> NY ELAP Method 198.1 (friable in NY) <input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY) <input type="checkbox"/> OSHA ID-191 Modified <input type="checkbox"/> Standard Addition Method		<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.6.6.1 <input type="checkbox"/> NY ELAP Method 198.4 (TEM) <input type="checkbox"/> Chatfield Protocol (semi-quantitative) <input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.5 <input type="checkbox"/> TEM Qualitative via Filtration Prep Technique <input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique Other <input checked="" type="checkbox"/> TEM CARB 435 Level C	
<input type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group		Date Sampled: 5/1/2015	
Samplers Name: Dan Sullivan		Samplers Signature: <i>Dan Sullivan</i>	
Sample #	HA #	Sample Location	Material Description
188-190-1T	1	Basement, Telephone Equipment Room	Off-white fibrous spray-on fireproofing
188-190-2T	1	Basement, Corridor 014	Off-white fibrous spray-on fireproofing
188-190-3T	1	Basement, Electrical Room 005	Off-white fibrous spray-on fireproofing
188-190-4T	1	1st Flr, Restroom W014	Off-white fibrous spray-on fireproofing
188-190-5T	1	1st Flr, Dispatch 115	Off-white fibrous spray-on fireproofing
188-190-6T	1	1st Flr, Sergeants 127	Off-white fibrous spray-on fireproofing
188-190-7T	1	1st Flr, Muster Room Storage Closet	Off-white fibrous spray-on fireproofing
188-190-8T	1	1st Flr, Muster Room	Off-white fibrous spray-on fireproofing
188-190-9T	1	1st Flr, Emergency Operations Center	Off-white fibrous spray-on fireproofing
Client Sample # (s): 188-190 - (1T-9T)		Total # of Samples: 9	
Relinquished (Client): <i>Dan Sullivan</i>		Date: 5/4/2015	Time: 5:30pm
Received (Lab): <i>B. Beatty</i>		Date: 5/5/15	Time: 9:40
Comments/Special Instructions: Bill To: Chem Scope, Inc., 15 Moulthrop Street, North Haven, CT, 06473, United States Attention: Gina Eisensmith Phone: 2038655605 Email: gina.chemscope@snet.net Purchase Order 1454			

15 MAY - 5 AM IC: 57
 CINNAMINSON, NJ
 EMSL

9

**EMSL Analytical, Inc.**

200 Route 130 North, Cinnaminson, NJ 08077
 Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> cinnaslab@EMSL.com

EMSL Order: 041512953
 CustomerID: CHEM51
 CustomerPO: 1454
 ProjectID:

Attn: **Dan Sullivan**
ChemScope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Phone: (203) 865-5605
 Fax: (203) 498-1610
 Received: 05/05/15 9:40 AM
 Analysis Date: 5/14/2015
 Collected: 5/1/2015

Project: CS#188-190

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos			Asbestos	
			%	Fibrous	%	Non-Fibrous	% Type
188-190-1T 041512953-0001	Basement, Telephone Equipment Room - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	10%	Cellulose	74%	Non-fibrous (other)	None Detected
188-190-2T 041512953-0002	Basement, Corridor 014 - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	12%	Cellulose	72%	Non-fibrous (other)	None Detected
188-190-3T 041512953-0003	Basement, Electrical Room 05 - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	10%	Cellulose	75%	Non-fibrous (other)	None Detected
188-190-4T 041512953-0004	1st Flr, Restroom E014 - Off-white Fibrous Spray-on Fireproofing	Tan/Various Non-Fibrous Homogeneous	10%	Cellulose	75%	Non-fibrous (other)	None Detected
188-190-5T 041512953-0005	1st Flr, Dispatch 115 - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	10%	Cellulose	74%	Non-fibrous (other)	None Detected
188-190-6T 041512953-0006	1st Flr, Sergeants 127 - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	15%	Cellulose	69%	Non-fibrous (other)	None Detected

Analyst(s)

Patrick Carr (9)

Benjamin Ellis, Laboratory Manager
 or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%
 Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from 05/14/2015 09:58:38



EMSL Analytical, Inc.

200 Route 130 North, Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> cinnaslab@EMSL.com

EMSL Order: 041512953
CustomerID: CHEM51
CustomerPO: 1454
ProjectID:

Attn: **Dan Sullivan**
ChemScope, Inc.
15 Moulthrop Street
North Haven, CT 06473

Phone: (203) 865-5605
Fax: (203) 498-1610
Received: 05/05/15 9:40 AM
Analysis Date: 5/14/2015
Collected: 5/1/2015

Project: CS#188-190

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
188-190-7T 041512953-0007	1st Flr, Muster Room Storage Closet - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	12% Cellulose 5% Glass	73% Non-fibrous (other) 10% Vermiculite	None Detected
188-190-8T 041512953-0008	1st Flr, Muster Room - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	15% Cellulose 5% Glass	70% Non-fibrous (other) 10% Vermiculite	None Detected
188-190-9T 041512953-0009	1st Flr, Emergency Operations Center - Off-white Fibrous Spray-on Fireproofing	Tan/Various Fibrous Homogeneous	15% Cellulose 5% Glass	70% Non-fibrous (other) 10% Vermiculite	None Detected

Analyst(s)

Patrick Carr (9)

Benjamin Ellis, Laboratory Manager
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%
Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036, PA ID# 68-00367

Initial report from 05/14/2015 09:58:38



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS - TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

041512953

200 Route 130 North

Cinnaminson, NJ 08077

PHONE: 1-800-220-3675

FAX: (856) 786-5974

Company: Chem Scope, Inc.		EMSL-Bill to: <input type="checkbox"/> Same <input checked="" type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 15 Moulthrop Street		Third Party Billing requires written authorization from third party	
City: North Haven	State/Province: CT	Zip/Postal Code: 06473	Country: United States
Report To (Name): Dan Sullivan		Telephone #: 2038655605	
Email Address: sullivan.chemscope@snet.net		Fax #: 203-498-1610	Purchase Order: 1454
Project Name/Number: CS#188-190		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: CT		CT Samples: <input type="checkbox"/> Commercial/Taxable <input checked="" type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check **DA 5/5/15**

3 Hour 6 Hour 24 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. *Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit)	TEM - Bulk
<input type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NIOSH 9002 (<1%) <input type="checkbox"/> NY ELAP Method 198.1 (friable in NY) <input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY) <input type="checkbox"/> OSHA ID-191 Modified <input type="checkbox"/> Standard Addition Method	<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1 <input type="checkbox"/> NY ELAP Method 198.4 (TEM) <input type="checkbox"/> Chatfield Protocol (semi-quantitative) <input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.5 <input type="checkbox"/> TEM Qualitative via Filtration Prep Technique <input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique Other <input checked="" type="checkbox"/> TEM CARB 435 Level C

15 MAY - 5 AM 10:57
 CINNAMINSON, NJ
 EMSL

Check For Positive Stop - Clearly Identify Homogenous Group Date Sampled: 5/1/2015

Samplers Name: Dan Sullivan Samplers Signature: *Dan Sullivan*

Sample #	HA #	Sample Location	Material Description
188-190-1T	1	Basement, Telephone Equipment Room	Off-white fibrous spray-on fireproofing
188-190-2T	1	Basement, Corridor 014	Off-white fibrous spray-on fireproofing
188-190-3T	1	Basement, Electrical Room 005	Off-white fibrous spray-on fireproofing
188-190-4T	1	1st Flr, Restroom W014	Off-white fibrous spray-on fireproofing
188-190-5T	1	1st Flr, Dispatch 115	Off-white fibrous spray-on fireproofing
188-190-6T	1	1st Flr, Sergeants 127	Off-white fibrous spray-on fireproofing
188-190-7T	1	1st Flr, Muster Room Storage Closet	Off-white fibrous spray-on fireproofing
188-190-8T	1	1st Flr, Muster Room	Off-white fibrous spray-on fireproofing
188-190-9T	1	1st Flr, Emergency Operations Center	Off-white fibrous spray-on fireproofing

Client Sample # (s): **188-190-(1T-9T)** Total # of Samples: **9**

Relinquished (Client): *Dan Sullivan* Date: **5/4/2015** Time: **5:30pm**

Received (Lab): **B Beatty** Date: **5/5/15** Time: **9:40**

Comments/Special Instructions:
 Bill To: Chem Scope, Inc., 15 Moulthrop Street, North Haven, CT, 06473, United States
 Attention: Gina EisenSmith Phone: 2038655605 Email: gina.chemscope@snet.net Purchase Order 1454

9

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Town of Trumbull
366 Church Hill Road
Trumbull CT 06611

Date: 05/04/2015
CS#: 188-190

Personal sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT, Basement and First Floor, collected by Chem Scope, Inc. on 05/01/2015:

NIOSH Method 7400 (Issue #2: 15 August 1994) is used for Phase Contrast Microscopy (PCM) air samples. A minimum of two field blanks must be submitted for each set of samples. It is Chem Scope's policy that in the unlikely event that there is to be any deviation from the standard test you will be consulted by phone before the work. Those clients who have not had NIOSH 582 or AHERA asbestos training courses (either supervisor or project monitor) should consult with the laboratory director for more information. The test parameters are further explained in the analytical report.

For samples received and not collected by Chem Scope the air sample concentrations reported are based in part upon information provided by the client.

We will retain air samples for at least one month unless you advise us otherwise.


You are welcome to visit the laboratory at any time to discuss the work, monitor the work or verify our testing services. We appreciate your business and encourage any feedback regarding improvement of our services or our quality system.

Suzanne Cristante
Laboratory Director
SC

or

Izabela Kremens
Quality Manager
IK

or


Ronald D. Arena
Senior Consultant
RDA

See test parameters on reverse side of page.
We would love to hear from you. Comments? Questions?
Please call or email us at chem.scope@snet.net

PARAMETERS OF THE NIOSH 7400 METHOD (Revised 05/23/2014)
(Issue #2: 15 August 1994)

1. *The method counts all fibers greater than 5 microns in length whether or not they are asbestos fibers.*
2. *The method is used for OSHA compliance for worker personal exposure sampling. The OSHA compliance limits are:*

PEL (Permissible Exposure Limit):

0.1 fibers/cubic centimeter (f/cc) for an 8 hour time weighted average.

EL (Excursion Limit):

1.0 fibers/cubic centimeter (f/cc) for a 30 minute sample at the peak exposure during the day.

3. *The method is used for State of Connecticut/EPA required final air testing after an asbestos abatement project. The regulations require that at least five samples be collected aggressively in each contained work area using forced air blown on the work area surfaces. The regulations require that each of the final samples have concentrations below 0.01 f/cc which is the Limit of Detection in the EPA protocol.*

4. *The intralab relative standard of deviation of the method (CV) for this laboratory is expressed below as a function of filter density in fibers/square mm:*

<u>Fibers/sq mm</u>	<u>CV</u>
<25.5	0.45
25.6-64.3	0.32
64.4-127	0.21
>127	0.12

5. *The upper 95% confidence levels (UCL):*

$$UCL = \frac{2X + 2.25 + [(2.25 + 2X)^2 - 4(1 - 2.25S_r^2)X^2]^{1/2}}{2(1 - 2.23S_r^2)}$$

The lower 95% confidence levels (LCL):

$$LCL = \frac{2X + 4 - [(4 + 2X)^2 - 4(1 - 4S_r^2)X^2]^{1/2}}{2(1 - 4S_r^2)}$$

Where $S_r = 0.45$ (based on NIOSH 7400 method) is the subjective interlaboratory relative standard deviation, which is close to the total interlaboratory S_r when approximately 100 fibers are counted.

X = total fibers counted on samples.

Note that the range between these two limits represents 90% of the total range.

6. *Fiber counts outside the 100-1300 fibers/mm² range are "greater than optimal variability" and "probably biased".*

Certificate of Analysis

Numeration of fibers on 0.8 micron cellulose-ester from 25mm cassette by Phase Contrast Microscopy, NIOSH Method 7400, Issue #2, 1994:

CS Sample #	Client ID	Type	Col'd	Date	By	Rec.	Client	Location	Description	F/MM2	F/CC	LOD	Analyst	Date Analyzed	8-Hr TWA
Trumbull Police Department, 158 Edison Road, Trumbull CT															
CS# 188-190															
188-190-1A		Excursion	DS	5/1/15	DS	5/1/15	Town of Trumbull	Basement	D. Sullivan Half Face-Spray On Sampling	16.6	0.071	0.030	ZW	5/4/15	0.032
188-190-2A		Excursion	DS	5/1/15	DS	5/1/15	Town of Trumbull	First Floor	D. Sullivan Half Face-Spray On Sampling	101.9	0.201	0.014	ZW	5/4/15	
188-190-3A		Blank	DS	5/1/15	DS	5/1/15				0.0			ZW	5/4/15	
188-190-4A		Blank	DS	5/1/15	DS	5/1/15				0.0			ZW	5/4/15	

AIHA LAP, LLC Accredited Laboratory #100134
 Connecticut Approved Environmental Lab PH 0581

The results are mathematically corrected for field blanks.

*These page numbers represent the number of pages for the Certificate of Analysis section only and additional pages are associated with this report:

1. For all reports, signature page (1 page, 2-sided) and air sample data sheets (1 page)/chain of custody (Not Applicable)
2. For finals /samples collected by Chem Scope, drawing(s). (Not Applicable)
3. Additional documentation required for schools are referenced in the school report contents page. (Not Applicable)

For personal air samples: The calculated 8-HR TWA assumes that the individual being monitored had no other exposures other than the indicated sampling time.

F/CC=Fibers / cubic centimeter
 F/mm2=Fiber/millimeter squared
 TWA=Time Weighted Average
 PC=Possible Contamination
 UC=Uncountable

Reviewed by:  Date: 6-9

ChemScope

INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Faxed
Called
Logged

AIR SAMPLING / NIOSH METHOD 7400 SAMPLE RECORD

Trumbull Police Department
Sample Source: 158 Edison Road, Trumbull, CT Job#: 188-190

Sampled By: DA Date Sampled: 5/1/15 Customer Name: Town of Trumbull

Analyst: Ziyang Wang Date Received: 5/1/15 Date Tested: 5/4/15

Sample # / Description	Pump#	Time		Flow l/m		Liters	f/flds	f/mm2	f/cc	LOD f/cc
		Start	End	Start	End					
188 - 190 - Den Sullivan 1/2 Face Bulk Sampling Spray-on Basement EXCURSION	<u>1R</u> 5669	<u>8:08</u> am	<u>8:38</u> am 30 min	<u>3.0</u>	<u>3.0</u>	<u>90</u>	<u>13/100</u>	<u>16.6</u> <u>15</u> 7M 5/4/15	<u>0.07</u>	<u>0.03</u>
188 - 190 - Den Sullivan 1/2 Face Bulk Sampling Spray-on 1st Floor Personal	<u>2R</u> 5669	<u>8:38</u> am	<u>9:43</u> am 65 min	<u>3.0</u>	<u>3.0</u>	<u>195</u>	<u>80/100</u>	<u>101.9</u>	<u>0.20</u>	<u>0.01</u> (0.014)
188 - 190 -										
188 - 190 -										
188 - 190 -										

Blank(s) Received? Y N @ 5/4

Field Blanks	<u>188-190-3 PA</u>	<u>0/100</u>	Reference Slide #: <u>A-LAB2-01</u>
Laboratory Blanks	<u>188-190-4 PA</u>	<u>0/100</u>	Acetone ID: <u>187-372-1</u>
			Triacetin ID: <u>170-233-1</u>

FOR FINALS: / Bulk sampling of spray-on surfacing insulation

Work Area/Scope of Work:

SqFt Linear Ft

Visual: Pass Fail

Time Out: 7:30 am

Time In: 10:30 am

Degrees C: 20

mmHg: 760

ChemScope INDUSTRIAL HYGIENE • ENVIRONMENTAL CHEMISTRY

15 Moulthrop Street, North Haven, CT 06473-3686 • Phone (203) 865-5605 • Fax (203) 498-1610

Town of Trumbull
366 Church Hill Road
Trumbull CT 06611

May 4, 2015
CS# 188-190

Executive Summary for Samples 188-190-1A and 188-190-2A:

Personal sample(s) from Trumbull Police Department, 158 Edison Road, Trumbull CT, collected by ChemScope, Inc. on 5/1/2015:

The samples were higher than the individual calculated LOD's (Level of Detection) by NIOSH 7400 method and was therefore examined by PLM using the differential counting method. We found the samples contained mostly cellulose and glass fibers; and did not contain suspect asbestos fibers.

The differential counting method does not count obviously non-asbestos fibers. The morphology, sign of elongation, birefringence and extinction coefficient are used to eliminate non-asbestos fibers from the PCM count using the parameters of EPA Method 600/R-93/116. Further resolution can be obtained at the customers' request by running the samples by TEM NIOSH 7402.

See analysis report(s) attached.

Suzanne Cristante or
Laboratory Director
SC

Izabela Kremens or
Quality Manager
IK


Ronald D. Arena
Senior Consultant
RDA

AIR SAMPLING / PLM EXAM (DIFFERENTIAL COUNTING METHOD)

Trumbull Police Department
Sample Source: 158 Edison Rd. Trumbull CT

Faxed _____
Called _____
Logged _____

Sample Source: 158 Edison Rd. Trumbull CT CS Job # 188-190
Sampled by DS Date Sampled 5/1/15 Customer Name Town of Trumbull
Analyst SC Date Received 5/4/15 Date Analyzed 5/4/15

Sample # Description	Pump #	Time Start	Time End	Flow L/M Start	Flow L/M End	Liters	F/flds PCM	% ASB PLM	F/flds ASB	F/mm ² ASB	LOD F/cc	Results f/cc
188-190-1P												
For-188-190-1A		808	838	3.0	3.0	90	13/100	0%	0/100	0.0	0.03	<0.03
188-190-2P												
For-188-190-2A		838	943	3.0	3.0	195	80/100	0%	0/100	0.0	0.01	<0.01
Blank(s) Received Y _____ N _____												
BLANK(S)								Reference Slide Number:	Degrees C: _____ mm Hg: _____			

PLM Exam - Call ~~5/4~~ Glass Fibers
5/4

Skomro, Ronald

To Dan Sullivan (sullivan.chemscope@snet.net) Jun 3 at 8:23 AM

Dear Mr. Sullivan:

Please note the below e-mail received from Everett Bishop of the EPA Office of Compliance regarding the vermiculite associated with spray-applied fireproofing at the Trumbull Police Department. You will note that Mr. Bishop has recommended treating the spray-applied fireproofing as containing vermiculite. As such, EPA recommends treating the material as an asbestos-containing material (i.e. removing the material in a manner consistent with the requirements for asbestos abatement, using accredited/licensed personnel – a DPH licensed contractor).

It is the policy of the DPH Asbestos Program to follow EPA guidance with regard to vermiculite. Therefore, the DPH Asbestos Program concurs with EPA's recommendation regarding this spray-applied fireproofing.

Please contact me should you wish to discuss this matter further.

Sincerely,

Ronald Skomro
Supervising Environmental Analyst
DPH Asbestos Program
(860) 509-7367

From: Bishop, Everett [mailto:Bishop.Everett@epa.gov]

Sent: Tuesday, June 02, 2015 3:14 PM

To: Skomro, Ronald

Cc: Banks, Julius; Hayes, Sharon

Subject: RE: Vermiculite Associated With Spray-Applied Fireproofing

Mr. Skomro –

Regarding the Trumbull, CT PD building, it looks like vermiculite was detected in the first floor and basement ceilings. I recommend treating all the first floor and basement ceilings as containing vermiculite. I assume the ceiling material is homogenous (that is uniform in color and texture).

As you noted, EPA recommends treating the material in a manner consistent with an asbestos-containing material (i.e. removing it in a manner consistent with asbestos abatement requirements, using accredited/licensed personnel) applying to the removal of this fireproofing (vermiculite-containing) material.

Everett Bishop

US EPA

Office of Compliance

(202) 564-7032

bishop.everett@epa.gov

From: Skomro, Ronald [mailto:Ron.Skomro@ct.gov]
Sent: Thursday, May 28, 2015 5:04 PM
To: Bishop, Everett
Subject: Vermiculite Associated With Spray-Applied Fireproofing

Hello Again Mr. Bishop:

This is another inquiry from CT seeking EPA's position/recommendations related to spray-applied fireproofing identified at the Trumbull Police Department, Trumbull, CT. I am familiar with EPA guidance relative to vermiculite insulation (assume the material to contain asbestos, and employ accredited/licensed personnel to remove the material when required in a manner consistent with the requirements for asbestos abatement.

In this case the vermiculite is found in association with the fireproofing.

The asbestos consultant for the Town of Trumbull is Dan Sullivan of ChemScope, Inc., North Haven, CT (203) 865-5605. Mr. Sullivan is attempting to ensure that his client addresses the removal of this fireproofing in a manner that is consistent with applicable regulatory requirement and protective of human health and the environment.

The initial sampling conducted in March 2015 (attached as Trumbull PD Test results) identified the presence of 20% vermiculite in the fireproofing when analyzed by EPA 600/R-93/116 Method using Polarized Light Microscopy (EMSL Analytical lab, NJ). The asbestos consultant who collected these samples was Kathleen Pane of Fuss & O'Neill EnviroScience of Manchester, CT

Subsequent analysis of samples collected on May 4, 2015 using EPA 600/R-93/116 method at a second laboratory (ChemScope, No. Haven, CT) identified 21% mica in the samples (no specific report of vermiculite – attached as Trumbull PD Spray-on Samples). The asbestos consultant who collected these samples was Dan Sullivan of ChemScope.

You will note the third attachment (EMSL report COC for order(s)). The samples collected by ChemScope were analyzed by EMSL EPA 600 using TEM CARB 435 Level: C. That analysis identified 1-3 “non-regulated amphibole” structures.

Given these results, would the removal of the spray-on fireproofing be subject to the asbestos NESHAP?

Would EPA guidance for vermiculite that recommends treating the material in a manner consistent with an asbestos-containing material apply (i.e. removing it in a manner consistent with asbestos abatement requirements, using accredited/licensed personnel) apply to the removal of this fireproofing?

Does EPA have any comment on the potential health risk associated with this material given the concentration of non-regulated asbestos structures reported?

I thank you again for your consideration and assistance. Please contact me should you wish to discuss this matter further.

Sincerely,

Ron Skomro
CT Department of Public Health
Asbestos Program
(860) 509-7377

01 10 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 PROJECT DESCRIPTION

- A. The Project consists of the phased interior renovations to the lower level of the Trumbull Police Department located at 158 Edison Road, Trumbull, CT, as shown and described on Contract Documents prepared by Jacunski Humes Architects, LLC, Berlin, CT
- B. The Work consists of sitework logistics for construction purposes and site preparation for the placement of new mechanical systems. Interior Renovations of lower level of the Police Facility includes selective demolition, abatement and legal disposal of hazardous materials, construction of temporary facilities for staff use during renovations, construction of new locker rooms (male and female), new mechanical systems for the firearms training range, renovations to existing detention cell construction, construction of new evidence file storage room, and construction of new physical training room as further described on the drawings and within these specifications.
- C. The project will be phased to accommodate the service needs of the Trumbull Police Department during interior renovations. Phasing of the work, and alternate construction, is further outlined within this section and Section 01 23 00 - Alternates.
- D. Contractor shall be responsible to limit their activities to the areas designated within the "Overall Contractor Site Logistics Plan" as contained within the drawings. The site logistics plan has been reviewed and approved by the Trumbull Police Department to assist the contractor with site activities that will be required during the course of construction. The plan also accommodates the Trumbull Police Department's daily needs for site access, parking, security, and vehicle circulation. Any revisions to the Overall Contractor Site Logistic Plan will need to be presented to the Trumbull Police Department and gain their approval prior to being implemented.

1.3 WORK UNDER OTHER CONTRACTS

- A. Separate contracts will be issued by the Town of Trumbull for certain additional work as deemed necessary for the completion of the Interior Renovations to the Trumbull Police Department. The installation of new material under these separate contracts may be required prior to the Substantial Completion of the Contract for Construction. The Contractor for Construction shall be required to coordinate his work with and allow access to the work by separate Contractors.

1.4 WORK SEQUENCE / CONSTRUCTION SCHEDULE

- A. The Work will be conducted in phases to provide the least possible interference to the activities of the Trumbull Police Department and to successfully complete all work required of the General Contractor, all subcontractors, and work required by the Owner.
- B. The General Contractor shall be responsible to provide, and adhere to, a Construction Schedule. The General Contractor's Construction Schedule and site logistics plan shall incorporate all contracted scope of work according to the Construction Phasing Plans as outlined below and with cooperation of the Trumbull Police Department, Architect, and Owner.

1.5 CONSTRUCTION PHASING

- A. The Construction sequence anticipated is as follows:
 - 1. Obtain required bonds / insurance certificates in advance of contract signing.
 - 2. Sign contract for construction with the Town of Trumbull, present all required bonds / insurance certificates. Obtain Building Permit through Building Department.
 - 3. Site preparation in anticipation of interior renovations. Installation of temporary 6' high chain link construction fencing to designate areas under the control of the General Contractor. Refer to Overall Contractor Site Logistics Plan.
 - 4. Installation and utility connections to separate temporary toilet facilities for use by both the Trumbull Police Department and construction personnel.
 - 5. General Contractor to place, manage, and supervise dumpster service during all phases of interior renovations.

**PHASE I – INTERIOR RENOVATIONS TO LOCKER ROOMS,
FIREARMS TRAINING RANGE, DETENTION CELLS**

1. PD to vacate existing UPS Room, Locker Room, Physical Training Room, and Firearms Training Range for the purposes of Phase I interior renovations.
2. General Contractor to provide new construction for two (2) temporary changing rooms for female personnel where indicated on the drawings. Temporary Changing Rooms to include new wall construction to underside of structure above, new wood doors and hollow metal frames (KD), door hardware, coat hooks, bench, wood locker bases, and relocation / installation of existing metal lockers. Secure all existing metal lockers to new wood bases and wall surfaces as required to provide a suitable installation for the duration of interior renovations.
3. PD to vacate all existing metal lockers. General Contractor to remove and legally dispose of all existing metal lockers currently located within corridors. General Contractor to prepare new wood locker bases at existing corridors as detailed for relocation of existing metal lockers as indicated on the drawings. Secure all existing metal lockers to new wood bases and wall surfaces as required to provide a suitable installation for the duration of interior renovations.
4. General Contractor to furnish and install temporary protection to existing corridor floor surfaces for the duration of the interior renovations. General Contractor to remove and dispose of temporary protection at the conclusion of interior renovations and restore the existing corridor flooring to a condition that existed prior to interior renovations.
5. Upon construction of new changing rooms (2), relocation of existing metal lockers to the corridor, and installation / activation of new temporary toilet facility for use by Trumbull Police Department, the PD will vacate and turn over the existing Male and Female Locker Room for contractor's use.
6. General Contractor to perform interior renovations as outlined herein and on the drawings for the locker rooms and firearms training range. **Construction Sequencing shall be limited to a one-hundred and fifty (150) calendar day turn-over for use locker rooms and firearms training range for exclusive use by the General Contractor.** The Trumbull Police Department to refrain from using the existing locker rooms, physical training room, and indoor firearms training range for no more than one-hundred and fifty (150) consecutive calendar days.
7. Trumbull Police Department will coordinate the turn-over of the detention cells for interior renovations according to a detailed construction sequencing as prepared by the General Contractor and reviewed / approved by the PD. **Construction Sequencing shall be limited to a twenty-one (21) calendar day turn-over for use detention cell area for exclusive use by the General**

Contractor. The Trumbull Police Department to refrain from using the Sally Port / detention cells / prisoner processing areas for no more than twenty-one (21) consecutive calendar days within Phase I.

8. Architect / Engineers to perform punch list of areas of new construction when directed by the General Contractor, but no later than one-hundred and fifty (150) calendar days from the start of Phase I. Punch list to include all areas of new construction for the Locker Rooms, detention cells, and indoor firearms training range.
9. Architect to issue Certificate of Substantial Completion for Phase I areas only.
10. Trumbull Police Department to occupy all areas of Phase I upon issuance of Certificate of Substantial Completion.
11. General Contractor to demolish and dispose of all temporary construction including, but not limited to, two (2) temporary changing rooms, metal lockers and wood bases within the corridors.
12. Removal of temporary toilet facility for use by the Trumbull Police Department including removal of temporary utility connections.
13. General Contractor to complete all punch list work within fourteen (14) calendar days from issuance.

PHASE II – INTERIOR RENOVATIONS TO PHYSICAL TRAINING ROOM

1. PD to furnish and install new high density shelving within the UPS Room and relocate all evidence from Evidence Storage Room. General Contractor to allow the Owner twenty-one (21) calendar days to perform the tasks as outlined above.
2. PD to turn over existing Evidence Storage Room for renovation into a new Physical Training Room
3. General Contractor to provide selective demolition and new construction for Physical Training Room as outlined on the drawings.
4. **Construction Sequencing shall be limited to a thirty (30) calendar days for exclusive use by the General Contractor.**
5. Architect / Engineers to perform punch list of areas of new construction when directed by the General Contractor, but no later than thirty (30) calendar days from the start of Phase I. Punch list to include all areas of new construction for the Locker Rooms, detention cells, and indoor firearms training range.
6. Architect to issue Certificate of Substantial Completion for Phase II areas only.
7. Trumbull Police Department to occupy all areas of Phase II upon issuance of Certificate of Substantial Completion.

8. General Contractor to complete all punch list work within seven (7) calendar days from issuance.
- C. The General Contractor shall proceed with the following items at their option with approval of a submitted Construction Schedule and prior approval of the Owner:
1. Remaining sitework and related site activities including the restoration of all site areas to “pre-renovation” condition.
 2. Loam and seeding of all grass areas disturbed during construction.
 3. Submission of O&M manuals, as-built documents, warranties, and lien waivers.
 4. Final sitework and establishment of lawn areas.
 5. All work not specifically designated above and having the prior approval of the Trumbull Police Department.
- D. **The General Contractor shall obtain a Certificate of Occupancy by the Authority Having Jurisdiction at the completion of EACH PHASE of construction.**
- E. **The General Contractor shall obtain from the Architect a Certificate of Substantial Completion (AIA Form G704) at the completion of EACH PHASE of work and the formation of a punch list by the Architect. The Owner shall not occupy the areas of new construction until a Certificate of Substantial Completion is awarded for the PHASE as indicated above and within the contract documents.**

1.6 CONSTRUCTION TIME

- A. The Contractor shall furnish all materials, labor, and equipment to complete PHASE I **within one-hundred and fifty (150) calendar days** of Owner’s Notice to Proceed and according to the Construction Phasing Plan listed herein.
- B. **PHASE I: The Contractor shall achieve Substantial Completion (as defined in AIA Document G704) within one-hundred and fifty (150) calendar days of Owner’s Notice to Proceed from the Awarding Authority.**
- C. All punchlist work for PHASE I shall be completed within fourteen (14) calendar days after the date of Substantial Completion as indicated above.
- D. **PHASE II: The Contractor shall achieve Substantial Completion (as defined in AIA Document G704) thirty (30) calendar days of Owner’s Notice to Proceed from the Awarding Authority.**

- E. All punchlist work for PHASE II shall be completed within seven (7) calendar days after the date of Substantial Completion as indicated above.
- F. The term "Substantial Completion" or "substantially complete" as used in the contract documents shall be deemed to refer to Substantial Completion of all contracted scope of work.
- G. The term "Contract Time" as used in the contract documents shall mean the time period from the date of commencement until the Substantial Completion. Such period may be extended in accordance with the provisions of the Contract Documents.
- H. If the General Contractor fails to achieve Substantial Completion according to the General Contractor's schedule and the Construction Time listed above, the General Contractor shall pay to the Owner liquidated damages as outlined in Section 01010 – 1.7 – Liquidated Damages.

1.7 LIQUIDATED DAMAGES

- A. The General Contractor understands that upon completion of the Project the Owner will obtain numerous benefits from use and operation of a new locker room, detention cells, indoor firearms training range, and physical training room. Delay in Substantial Completion will cause delay in the Owner's ability to use new locker room and toilet / shower facilities in the building and delays in completion may also require the Owner to incur additional costs for (1) compensation to the Architect, the Owner's Project Manager, and other consultants or contractors of the Owner for extended or additional services in connection with the Project, (2) storage of FF&E items purchased for placement into areas of new construction, (3) delayed use of existing facilities associated with areas of sitework being occupied by the General Contractor.
- B. **If General Contractor fails to achieve Substantial Completion FOR EACH PHASE according to the General Contractor's schedule and the Construction Time indicated above, the General Contractor shall pay to the Owner the amount of \$1,000 per calendar day as liquidated damages to cover the losses, expenses, damages and liabilities of the Owner arising out of such breach of contract by the General Contractor as herein set forth.**
- C. The parties have agreed upon the daily amounts specified above not as a penalty but as liquidated damages, fixed and agreed upon herein because of the impracticability of fixing and ascertaining the actual damages the Owner would, in such circumstances, sustain. Such amounts may be retained from time to time by the Owner from payments then or thereafter due the General Contractor or, to the extent not so retained, shall be paid

promptly by the Contractor or its surety to the Owner. The rights and remedies of the Owner provided herein are in addition to any other rights or remedies provided under the Contract Documents or by operation of law. None of the following shall constitute a waiver of the Contractor's or its surety's obligations to pay damages to the Owner:

1. Acceptance of the Work or any portion thereof or payment to the Contractor or its surety therefore;
2. Completion of the Work or any portion thereof or use or occupancy thereof by the Owner or separate contractors; or
3. The Owner's requiring or permitting the Contractor or its surety to complete the Work or any part thereof.

1.8 CONTRACTOR USE OF PREMISES

- A. General: Limit use of the premises to construction activities in areas indicated.
1. Confine operations to areas within Contract limit lines indicated on the Contract Documents. Specific attention is directed to the "Overall Contractor Site Logistic Plan". Portions of the site beyond areas in which construction operations are indicated are not to be disturbed without prior authorization from the Owner and shall remain under the authority and control of the Owner.
 2. Confine the parking of workers, and construction vehicles, and the storage of construction materials to a designated staging area as indicated on the drawings and with approval by the Owner.
 3. While the premise is Owner occupied, keep entrances serving the premises clear and available to the Owner, Public, and Owner's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

1.9 OWNER OCCUPANCY

- A. Completion Requirements: Timely completion of the project is critical. Aggressive construction scheduling and careful monitoring of critical path milestones cannot be overemphasized.
- B. New Construction / Interior Renovations: The General Contractor shall develop and be responsible to comply with a comprehensive construction schedule. The Owner is to relocate to new construction upon Substantial Completion as determined by the Architect, and Owner.
1. Make all building and energy systems operational before Owner occupancy including, but not necessarily limited to the following:

- a. Emergency lighting systems.
 - b. Fire rated enclosures.
 - c. Handicapped accessibility.
 - d. Hardware requirements.
 - e. All other work necessary directed by the local Authorities Having Jurisdiction.
2. All costs associated with performance of the Work at premium rates will be borne by the General Contractor and required subcontractors.
- C. Partial Owner Occupancy: The Owner reserves the right to place and install equipment in completed areas of the building, prior to Substantial Completion, provided that such placing does not interfere with completion of the Work. Such placing of equipment shall not constitute acceptance of the total Work.
1. A Certificate of Substantial Completion will be executed for each specific phase of the Work to be occupied prior to Owner occupancy.
 2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
 3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.

1.10 INTENT

- A. These Specifications with the accompanying Drawings are intended to describe and illustrate all material, labor, and equipment necessary to complete the **Interior Renovations to the Trumbull Police Department, 158 Edison Road, Trumbull, CT.**
- B. For convenience of reference, these Specifications are separated into titled Divisions and Sections. Such separations shall not, however, operate to make the Architect an arbiter to establish limits to Contracts between the General Contractor and Subcontractors. The Divisions of the Specifications do not necessarily define the limits of the Contractor's subcontracts; the work of any one subcontract may include items specified in several Divisions or Sections. The General Contractor may sublet work as they see fit, but it is their responsibility to see that all work shown on the Drawings and/or specified is completed in accordance with the Contract.

- C. Furnish all materials and accomplish all work in strict accordance with the grades or standards of materials, standards of workmanship, and manufacturer's specifications listed or mentioned in these documents.
- D. The listing or mention of materials shall be sufficient indication that all such materials shall be furnished by the General Contractor, in accordance with the grades or standards indicated, free from defects impairing strength, durability or appearance and in sufficient quantity for the proper and complete execution of the work, unless specifically stated otherwise.
- E. The listing or mention of any method of installation, erection, fabrication or workmanship shall not operate to make the Architect an agent, but shall be for the sole purpose of setting a standard of quality for the finished work. The General Contractor is free to use any alternate method, provided only that, prior to the start of the work, such alternate method is approved in writing by the Architect, as resulting in quality equal to that intended by these documents. Unless an alternate method is approved, all work shall be in strict accordance with all methods of installation, erection, fabrication and workmanship listed or mentioned herein.

1.11 SOCIAL SECURITY TAXES

- A. The General Contractor and each Subcontractor shall pay the taxes measured by the wages of all their employees as required by the Federal Social Security Act and all amendments thereto, and accept the exclusive liability for said taxes. The General Contractor shall also indemnify and hold the Owner, and its respective officers, agents and servants and the Architect harmless on account of any tax measured by the wages aforesaid of employees of the General Contractor and his subcontractors, assessed against the Owner under authority of said law.

1.12 UNEMPLOYMENT INSURANCE

- A. The General 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 General Contractor shall also indemnify and hold harmless the Owner on account of any contribution measured by the wages of aforesaid employees of the General Contractor and his Subcontractors, assessed against the Owner under authority of law.

1.13 OCCUPATIONAL SAFETY AND HEALTH ACT

- A. The General Contractor and each Subcontractor 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.

- B. The General Contractor and each Subcontractor 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 General Contractor and each Subcontractor shall indemnify the Owner 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 General Contractor, his Subcontractors or material personnel.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Not applicable).

END OF SECTION 01 10 00

01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for Alternates.
- B. Definition: An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.
- C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.
- D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
- E. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.
 - 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 mentioned as part of the Alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. **ADD Alternate No. 1:** Provide all labor, equipment, materials, and whatever else necessary to furnish and install new detention cell “comby” penal fixtures (TOTAL OF 8) and associated plumbing and isolation ball valves at each detention cell as indicated on the drawings and specified herein.
1. Sections of the Specifications affected by this Alternate include, but are not limited to:
 - a. Section 07 92 00 – Joint Sealers
 - b. Division 22 – PLUMBING
 - c. Division 26 – ELECTRICAL
 2. ADD Alternate No. 1 includes all labor, equipment, materials, and whatever else necessary for the remove and legal disposal of all existing penal fixtures, plumbing lines, fittings, and valves to make way for all new construction as indicated herein.
- B. **ADD Alternate No. 2:** Provide all labor, equipment, materials, and whatever else necessary to furnish renovate existing Evidence Storage Room into new Physical Training Room 107 as indicated on the drawings and specified herein.
1. Sections of the Specifications affected by this Alternate include, but are not limited to:
 - a. Section 02 41 13 – Selective Demolition
 - b. Section 06 10 04 – Rough Carpentry
 - c. Section 09 21 00 – Gypsum Board Assemblies
 - d. Section 09 51 13 – Acoustic Ceilings
 - e. Section 09 90 00 – Painting
 - f. Section 08 11 13 – Steel Doors and Frames
 - g. Section 09 65 00 – Resilient Flooring and Base
 - h. Section 10 22 13 -- Wire Mesh Partitions
 - i. Division 23 – HVAC
 - j. Division 26 - Electrical

END OF SECTION 01 23 00

01 29 00 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. This Section specifies administrative and procedural requirements governing the General Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the General Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
- C. The Contractor's Construction Schedule and Submittal Schedule are included in Section 01 33 00 "Submittals".

1.3 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the General Contractor's Construction Schedule.
- B. Each prime Contractor shall coordinate preparation of its Schedule of Values for its part of the Work with preparation of the General Contractors' Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's construction schedule
 - b. Application for Payment form
 - c. List of subcontractors
 - d. Schedule of allowances (if applicable)
 - e. Schedule of alternates (if applicable)
 - f. List of products
 - g. List of principal suppliers and fabricators
 - h. Schedule of submittals
 - 2. Submit the Schedule of Values to the Architect and Owner's Project Manager at the earliest feasible date, but in no case later than 7

- days before the date scheduled for submittal of the initial Application for Payment.
3. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- C. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Designer.
 - c. Project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - a. Generic name.
 - b. Related Specification Section.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that have affected value.
 - g. Dollar value.
 - h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. **Break principal subcontract amounts down into several line items so that individual line items shall not exceed \$25,000 in value.**
 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
 5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials for each subsequent stage of completion, and for total installed value of that part of the Work.
 6. Unit Cost Allowances: Show line item value of unit cost allowances as a product of unit cost times measured quantity as estimated from the best indication in the Contract Documents.
 7. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including

its total cost and proportionate share of general overhead and profit margin.

- a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in- place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
8. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction work covered by each Application or Payment is the period indicated in the Agreement.
- C. Payment Application Times: The date for each progress payment is the 1st day of each month. The period of construction Work covered by each Application for Payment is the month prior to the date for each progress payment and starting the day of the preceding period.
 1. A Draft Application for Payment shall be submitted to the Owner and Architect, on the date of the last scheduled Job Meeting of the month proceeding the payment application time.
 2. Final Application for Payment shall be prepared in triplicate (3 copies) and incorporate the revision comments as requested by the Owner or Architect.
- D. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.
- E. Suppliers, Trade and Subcontractors will be required to submit copies of their Certified Payroll forms to the Owner for the current Application Period. The General Contractor and Trade Contractors shall be responsible for transferring all Certified Payroll forms to the Owner. Owner has the right to withhold payments if required Certified Payroll forms are not being provided in a timely manner.
- F. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on

behalf of the Owner. Incomplete applications will be returned without action.

2. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
 3. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- G. Transmittal: Submit three (3) executed final copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.
1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary, if not final).
 5. Schedule of principal products.
 6. Schedule of unit prices.
 7. Submittal Schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits
 11. Copies of authorizations and licenses from governing authorities for performance of the Work.
 12. Initial progress report.
 13. Report of pre-construction meeting.
 14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds (if required).
 16. Data needed to acquire Owner's insurance.
 17. Initial settlement survey and damage report, if required.
- I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment. This application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

- J. Administrative actions and submittals that shall proceed or coincide with this application include:
1. Occupancy permits and similar approvals.
 2. Warranties (guarantees) and maintenance agreements.
 3. Test/adjust/balance records.
 4. Maintenance instructions.
 5. Meter readings.
 6. Start-up performance reports.
 7. Change-over information related to Owner's occupancy, use, operation and maintenance.
 8. Final cleaning.
 9. Application for reduction of retainage, and consent of surety.
 10. Advice on shifting insurance coverages.
 11. Final progress photographs.
 12. List of incomplete Work, recognized as exceptions to Designer's Certificate of Substantial Completion.
- KH. Final Payment Application: Administrative actions and submittals, which must precede or coincide with submittal of the final payment Application for Payment, include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.
 3. Assurance that unsettled claims will be settled.
 4. Assurance that Work not complete and accepted will be completed without undue delay.
 5. Transmittal of required Project construction records to Owner.
 6. Certified property survey.
 7. Proof that taxes, fees and similar obligations have been paid.
 8. Removal of temporary facilities and services.
 9. Removal of surplus materials, rubbish and similar elements.
 10. Change of door locks to Owner's access.

PART 2 – PRODUCTS (Not Applicable to this Section.)

PART 3 – EXECUTION (Not Applicable to this Section.)

END OF SECTION 01 29 00

SECTION 01 31 00 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination.
 - 2. Progress Meetings.
 - 3. Administrative and supervisory personnel.
 - 4. General installation provisions.
 - 5. Cleaning and protection.
- B. Requirements for the General Contractor's Construction Schedule are included in Section 01 10 00, "Summary of Work".
- C. Requirements for the Scheduling and Coordination of Tests and Inspections are included in Section 01 40 00, "Quality Requirements".

1.3 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation. No claim for extra compensation or extension of Contract time will be allowed for conditions resulting from a lack of said coordination and cooperation.
 - 1. Where installation of one part of the work, is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.

- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project Close-out activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 PRE-CONSTRUCTION CONFERENCE

- A. The General Contractor, Owner and Architect will schedule a pre-construction conference and organizational meeting at the Project site no later than 15 days after execution of the Agreement and prior to commencement of construction activities. Attend the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner, Architect and their consultants, the General Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
 - 1. Notify and arrange for attendance by all parties except the Architect, and Owner.
- C. Agenda: Items of significance that could affect progress will be discussed, including such topics as:
 - 1. Tentative construction schedule.
 - 2. Critical Work sequencing.
 - 3. Designation of responsible personnel.
 - 4. Procedures for processing field decisions and Change orders.
 - 5. Procedures for processing Applications for Payment.
 - 6. Distribution of Contract Documents.
 - 7. Submittal of Shop Drawings, Product Data and Samples.
 - 8. Preparation of record documents.

9. Use of the premises.
10. Office, Work and storage areas.
11. Equipment deliveries and priorities.
12. Safety procedures.
13. First aid.
14. Security.
15. Housekeeping.
16. Working hours.

1.5 SUBMITTALS

- A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 1. Show the interrelationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section 01 33 00, "Submittal Procedures."
 4. Refer to Divisions 22, 23, 26, and 28 for specific coordination drawing requirements for plumbing, mechanical, and electrical installations.
- B. Staff Names: Within fifteen (15) days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

1.6 COORDINATION MEETINGS

- A. Conduct Project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to regular progress job meetings.
- B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.
- C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.7 PROGRESS JOB MEETINGS

- A. The General Contractor will conduct progress job meetings at the Project site at regularly scheduled intervals. Coordinate dates of meetings with preparation of the payment request.

- B. Attendees: Notify each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities, to attend these meetings. Persons familiar with the Project and authorized to conclude matters relating to progress shall be represented.
- C. Agenda: Review and correction or approval of minutes of the previous progress meeting. Review of other items of significance that could affect progress. Topics for discussion as appropriate to the current status of the Project.
1. General Contractor's Construction Schedule: Prepare a written report including progress since the last meeting. Determine where each activity is in relation to the General Contractor's Construction Schedule, whether on time or ahead 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.
 2. Review of present and future needs of each entity present, including such items as:
 - a. Interface requirements.
 - b. Time.
 - c. Sequences.
 - d. Deliveries.
 - e. Off-site fabrication problems.
 - f. Access.
 - g. Site utilization.
 - h. Temporary facilities and services.
 - i. Hours of Work.
 - j. Hazards and risks.
 - k. Housekeeping.
 - l. Quality and Work standards.
 - m. Change Order Proposals.
 - n. Documentation of information for payment requests.
- D. Reporting: The Architect will prepare and distribute copies of minutes of the meeting to Owner and General Contractor. General Contractor shall distribute copies to others that should be informed of decisions.
1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.
 2. General Contractor shall provide at each scheduled Job Meeting a detailed, 2-week look-ahead schedule outlining in detail all planned construction activities to occur, or planned for, from the date of each Job Meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.
 - 14. Heavy traffic.
 - 15. Soiling, staining and corrosion.
 - 16. Bacteria.
 - 17. Rodent and insect infestation.
 - 18. Combustion.
 - 19. Electrical current.
 - 20. High speed operation,
 - 21. Improper lubrication.
 - 22. Unusual wear or other misuse.
 - 23. Contact between incompatible materials.
 - 24. Destructive testing.
 - 25. Misalignment.
 - 26. Excessive weathering.
 - 27. Unprotected storage.
 - 28. Improper shipping or handling.
 - 29. Theft.
 - 30. Vandalism.

END OF SECTION 01 31 00

01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 DEFINITIONS

The following definitions apply to this section of the specifications:

- A. Owner: The Owner is defined as the Owner, Owner's Representative, Project Manager, or Program Manager.
- B. Provisional Project Construction Schedule: The schedule of construction activities, as prepared by the Owner, which gives all project stakeholders an estimated amount of time for the construction phase of the Project.
- C. Project Construction Schedule: The detailed CPM Construction Schedule prepared by the General Contractor for the duration of the Construction Phase of the Project.
- D. Interim Project Construction Schedule: The detailed 90-day "look-ahead" CPM Project Construction Schedule prepared by the Contractor as a prelude to the Project Construction Schedule. The Interim Project Construction Schedule is based on the milestones indicated in the Provisional Project Construction Schedule. This Schedule is required for the Contractor to receive payment for work performed during the first 60 days of the Project. The purpose of this schedule is to give the Contractor adequate time to plan and schedule all of the work for the Project, while they are mobilizing and beginning to perform work.
- E. Master Project Schedule: A schedule prepared by the Owner to track all activities of the entire Project.
- F. Updated Project Construction Schedule: The Project Construction Schedule prepared each month by the Contractor in support of their request for payment.
- G. Revised Project Construction Schedule: The Project Construction Schedule that has been changed by the General Contractor, during the course of construction, and approved by the Owner. The Revised Project

Construction Schedule may include changes in logic, changes in the durations of the activities, changes in the sequencing of the work, and fragments.

- H. Recovery Project Construction Schedule: The Project Construction Schedule prepared by the General Contractor to support their efforts to recover lost time during the Project.
- I. CPM (Critical Path Method): Critical Path Method (CPM) is a system for planning, scheduling, controlling, and monitoring progress on a Project. The CPM system uses networks of activities interrelating time and dollars to monitor progress on Projects. CPM uses network analysis to identify those tasks, which are on the critical path, where any delay in the completion of these tasks will lengthen the project timescale, unless action is taken. The system provides a means of evaluating delays and impacts caused by changes and delays attributed to Owners and Contractors.
- J. Critical Path: The longest continuous sequence of activities through the network schedule that establishes the minimum overall project duration and contains no float.
- K. Activity: An activity is defined as any portion or element of work, action, and/or reaction that is precisely described, readily identifiable and is a function of a logical sequential process.
 - 1. Critical Activity – Activities on the Critical Path. They must start and finish on the planned start and finish dates, otherwise there will be a delay in the completion of the Project.
 - 2. Predecessor Activity – an activity that must be completed before a given activity can be started.
 - 3. Successor Activity – an activity that succeeds another activity.
- L. Float: Any activity not on the critical path will have a certain amount of leeway or float time associated with it. Float time is defined as the amount of time between the earliest start date and the latest start date or between the earliest finish date and the latest finish date of a chain of activities in Project Construction Schedule. Float Time is the amount of time that an activity can slip past its duration without delaying the rest of the project.
- M. Fragnet: The subdivision of a project network diagram into segments, usually representing some form of subproject (change).
- N. Milestone: A clearly identifiable point in a project or set of activities that commonly denotes a reporting requirement or completion of a key component of a project.

- O. Phasing: The process of segregating activities into a series of sequential phases.
- P. Delay: An interruption or hindrance to planned progress.

1.3 GENERAL REQUIREMENTS

- A. The work under this contract will be planned, scheduled, executed and reported using the Critical Path Method, hereinafter referred to as CPM.
- B. The primary objectives for developing and maintaining a Project Construction Schedule are to insure the adequate planning, scheduling and execution of the construction activities so they may be performed in an orderly and expeditious manner, within the Contract Time and the Milestone Dates stipulated by the Contract; to provide optimum coordination between Contractors; to establish the basis for measuring and monitoring individual Contractor progress and overall project progress; to detect problems for the purpose of taking corrective action to maintain the Master Project Schedule; and to provide a mechanism or tool for determining and monitoring such corrective actions.
- C. The Provisional Project Construction Schedule prepared for this project, is made available by the Owner as an aid to the Contractor. It is intended that Contractor's actual Project Construction Schedule include the milestone dates indicated in the Provisional Project Construction Schedule. However, the services provided by the owner, the existence of schedules, networks, vector charts or any other charts or services prepared or performed by the Owner shall in no way relieve the Contractor of the responsibility of complying with all of the requirements of the Contract Documents, including but not limited to the responsibility of completing the Work within the Contract Time and the responsibility of planning, scheduling and coordinating the work. The Contractor is required to comply with all control procedures specified herein and with any reasonable changes that may be necessary, in the opinion of the Owner, during the contract duration.
- D. All Milestone dates or specific dates listed in these specifications, or elsewhere in the Contract Documents represent only the major items of construction/erection work or interface dates. The Milestone dates indicated are considered essential to the satisfactory performance of this contract and to the coordination of all work on the project. The Milestone dates listed are not intended to be a complete listing of all work under this Contract or of all interfaces with other project Contractors. The Milestone dates listed represent the latest allowable completion dates. Earlier completion dates may be established as agreed by the Contractor and the Owner.

- E. If the General Contractor should desire or intend to complete the work earlier than any required Milestone or Completion date, the Owner shall not be liable to the General Contractor for any costs or other damages should the General Contractor be unable to complete the Work before such Milestone or Completion date. The duties, obligations and warranties of the Owner to the General Contractor shall be consistent with and applicable only to the completion of the Work on the Milestone and Completion dates required in the Owner-Contractor Agreement unless the Owner and General Contractor otherwise agree in writing.
- F. The General Contractor shall maintain, as part of its organization, a staff of sufficient size, knowledgeable in the use and application of Scheduling Application and whose responsibility will be to prepare input information for the Project Construction Schedule, monitor progress, provide input for updating and revise logic diagrams when necessary.
- G. The General Contractor is required to adhere to the Milestone Dates as set forth in the General and Supplemental Conditions, Provisional Project Construction Schedule, or as determined elsewhere in the contract documents.
- H. Float time is not for the exclusive use or benefit of either the General Contractor or the Owner. The Contractors work shall proceed according to early start dates, and the Owner shall have the right to reserve and apportion float time according to the needs of the project. The General Contractor acknowledges and agrees that actual delays, affecting paths of activities containing float time, will not have any affect upon contract completion times, providing that the actual delay does not exceed the float time associated with those activities.
- I. Extensions of time for performance as described in the Contract Documents will be granted only to the extent that time adjustment for the activity or activities affected by any condition or event which entitles the General Contractor to a time extension exceed the total float or slack along the path of activities affected at the time of Notice to Proceed of a Change Order or the commencement of any delay or condition for which an adjustment is warranted under the Contract Documents, pursuant to paragraph 1.07 Requested Time Adjustment Schedule.

1.4 POST AWARD ACTIVITIES

- A. The General Contractor shall perform the following activities after receipt of the Notice to Proceed:
 - 1. Immediately after Notice to Proceed, the General Contractor shall begin the preparation of his Interim Project Construction Schedule and the Project Construction Schedule. The General Contractor shall assemble, with the assistance of his Subcontractors and

Suppliers, information regarding the project that includes but is not limited to:

- a. A detailed Interim Project Construction Schedule or Project Construction Schedule that represents the General Contractor's best judgment of how he shall prosecute and complete the work in compliance with the Contract Milestone Dates and any Specific Dates stipulated in the Contract. The level of detail required in the Contractor's schedule should generally be a function of the complexity of the work
- b. The identity and duration of all activities to be included in this Interim Project Construction Schedule and the Project Construction Schedule. Activities shall meet the following criteria:
 1. Activity descriptions shall be clear and concise. The beginning and end to each activity shall be readily verifiable.
 2. Responsibility for each activity shall be identified with a single performing organization.
 3. The level of detail of the Network shall be such that no activity shall have a duration longer than fourteen (14) calendar days, except for procurement and General Conditions Activities or except at the discretion of the Owner. Include written two week look ahead for Architect's review.
 4. Identify phasing and location of activities as required.
- c. The identity of long lead items and delivery dates of all major pieces of equipment or materials.
- d. The identity of any potential problems or constraints related to the implementation of the Interim Project Construction Schedule and/or the Project Construction Schedule.

The Owner will be available, during normal working hours, to consult with the General Contractor if questions arise while the contractor assembles the information required for the Interim Project Construction Schedule and/or the Project Construction Schedule.

- B. The General Contractor shall, within fourteen (14) calendar days following receipt of the Notice to Proceed, submit to the Owner an Interim Project Construction Schedule, in Critical Path Method format (or CPM), for his construction/erection scope of work for the first 90-days of the Project, compatible in Primavera P3 format. The Owner will review the General Contractor's Interim Project Construction Schedule to determine if it meets the specific requirements of the Provisional Project Schedule. The General Contractor shall, within sixty (60) calendar days following the receipt of the Notice-to-Proceed, submit to the Owner the Project Construction Schedule in the same format indicated above. The Owner will review the General Contractor's Project Construction Schedule to determine if it meets the specific requirements of the Provisional Project

Schedule. The form of submittal for the Interim Project Construction Schedule and the Project Construction Schedule including logic diagrams is as follows:

1. The General Contractor shall submit to the Owner a computer disk in Primavera P3 or compatible format and two (2) full size printed copies of his proposed contract activities. The Interim Project Construction Schedule and the Project Construction Schedule shall consist of a network diagram with activity descriptions and durations and supporting data that will explain the General Contractor's planning of the work.
 2. The network diagram shall show:
 - a. The order and interdependencies of the General Contractors activities and the major points of interface or interrelation with the activities of others, including Specific Dates for completion.
 - b. Conformance with and identification of the specified mandatory Milestone dates specified in the Contract Documents.
 - c. The description and quantity of work by activity.
 - d. For all equipment and materials fabricated or supplied for this Project, the network shall show a sequence of activities including:
 1. Procurement
 2. Engineering and Preparation of Submittals
 3. Approval of Submittals
 4. Fabrication/Manufacturing
 5. Delivery
 6. Erection/installation
 - e. Delivery of Owner-furnished material and equipment.
 - f. Critical Path (or Paths).
 - g. Training of Owner personnel on Equipment
 - h. Testing of equipment and materials.
 - i. A complete detailed sequence of operations of the work within the time limits specified in the contract.
- C. The Interim Project Construction Schedule and the Project Construction Schedule shall indicate an early completion date for the project that is no later than the project's required completion date. All activity duration's shall be given in calendar days. The Interim Project Construction Schedule and the Project Construction Schedule shall also indicate each of the following:
1. Interfaces with the work of outside Contractors, e.g., utilities, power, and with any separate Contractor.
 2. Detailed description of the activity along with the coding and phasing, if applicable.
 3. Estimated duration time for each activity.

4. Early start date for each activity.
 5. Late start date for each activity.
 6. Early finish date for each activity.
 7. Late finish date for each activity.
 8. Float available for each path of activities containing float.
 9. Identification of all critical path activities in the mathematical analysis.
 10. The critical path for the project, with said path of activities being clearly and easily recognizable on the time-scaled network diagram.
 11. The relationship between all non-critical activities and activities on the critical path shall be clearly shown on the network diagram.
 12. The responsibility code for the Contractor or Subcontractor performing each activity or portion thereof.
 13. For each activity, the identification of all predecessor and successor activities.
 14. For each activity, the number of man-hours required to complete each activity.
- D. The General Contractor shall submit, with the Interim Project Construction Schedule and the Project Construction Schedule, a narrative report indicating anticipated allocation of the following resources and work shifts to be utilized on the project.
1. Labor resources
 2. Equipment resources
 3. Whether work will be performed on a single, double or triple shift, and whether it is to be done on a 4, 5, 6 or 7-day work week basis.
 4. Construction logic and a summary of the sequence of the work.
 5. An explanation of the coding and/or phasing used.
- E. It is to be expressly understood and agreed by the General Contractor that the Interim Project Construction Schedule and the Project Construction Schedule is an estimate to be revised from time-to-time as progress proceeds, and that the Owner does not guarantee that General Contractor can start work activities on the "early start" or "late start" dates or complete work activities on the "early finish" or "late finish" date shown in the Interim Project Construction Schedule and the Project Construction Schedule, or as same may be updated or revised; nor does the Owner guarantee that General Contractor can proceed at all times in the sequence established by said schedule. If the Contractor's Interim Project Construction Schedule and the Project Construction Schedule indicates that the Owner or a separate Contractor is to perform an activity by a specific date, or within a certain duration, the Owner or any separate Contractor under contract with Owner shall not be bound to that date or duration unless the Owner expressly and specifically agrees in writing to same, the Owner's overall review and approval or acceptance of the

Interim Project Construction Schedule and the Project Construction Schedule does not constitute an agreement to specific dates, durations or sequences for activities of the Owner or any separate Contractor.

- F. The Owner will review the General Contractor's Interim Construction Project Schedule and the Construction Project Schedule, including logic diagrams and computer-generated mathematical analysis, for compatibility with the Contract Documents. If required, a meeting will be held between the Owner and General Contractor to resolve any conflicts between the Contractor's Interim Project Construction Schedule and/or the Project Construction Schedule and the Contract Documents. The General Contractor shall revise his schedule as required by the Owner to support the Contract Documents and shall submit his revised schedule to the Owner within fourteen (14) days.
- G. Within fourteen (14) calendar days following acceptance of the Interim Project Construction Schedule or the Project Construction Schedule, the General Contractor will provide two (2) full size printed copies and electronic copy of the General Contractor's Interim Project Construction Schedule or the Project Construction Schedule and a computer listing of all network activities, and an electronic file copy on a disk (CD) to the Owner. The Owner shall review the Interim Project Construction Schedule or the Project Construction Schedule, and after the Owner agrees that it conforms to the Contract Documents, the General Contractor's Interim Project Construction Schedule or the Project Construction Schedule will be used to monitor progress of the work and support requests for payment.
- H. The General Contractor will develop and maintain the Master Project Schedule, of which the Contractor's Interim Project Construction Schedule or the Project Construction Schedule will be made a part. This Master Project Schedule will be the controlling schedule document utilized for managing overall project progress.
- I. Within ninety (90) calendar days following the receipt of the Notice to Proceed, the General Contractor shall participate in a meeting with the Owner to review, evaluate and approve the Project Construction Schedule.
- J. If the General Contractor thereafter desires to make changes in its method of operating and scheduling, he shall follow the procedures set out in paragraph 1.05, Network Revisions, of this section.
- K. Approval by the Owner of the General Contractor's Interim Project Construction Schedule or the Project Construction Schedule is advisory only and shall not relieve the Contractor of the responsibility for accomplishing the Work within each and every Contract-required

Milestone and Completion date. Omissions and errors in the approved Interim Project Construction Schedule or the Project Construction Schedule shall not excuse performance that is not in compliance with the contract.

Approval by the Owner in no way makes them an insurer of the Interim Project Construction Schedule's or the Project Construction Schedule's success nor shall it make the Owner liable for time or cost overruns from its shortcomings. The Owner hereby disclaims any obligation or liability by reason of Owner approval of or acquiescence to the Interim Project Construction Schedule or the Project Construction Schedule.

- L. The General Contractor shall include in the Project Construction Schedule all procurement related activities that lead to the delivery of materials to the site in a timely manner. The schedule of off-site activities shall include, but is not limited to, the following:
 - 1. Dates for submittals, ordering, manufacturing, or fabricating, and delivery of equipment and materials. Long lead items requiring more than one month between ordering and delivery to site shall be clearly noted.
 - 2. All significant activities to be performed by the Contractor during the fabrication and erection/installation in a Contractor's plant or on a job site, including materials/ equipment purchasing.
 - 3. The General Contractor's drawings and submittals to be prepared and submitted to the Owner and Architect
- M. The General Contractor shall be solely responsible for expediting the delivery of all material they intend to furnish, so that the construction progress shall be maintained according to the current schedule for the Work as approved by the Owner.
- N. The General Contractor shall advise the Owner, in writing, whenever they anticipate that the delivery date of any material and/or equipment furnished by the General Contractor for installation will be later than the delivery date shown on the schedule, subject to schedule updates.
- O. Submittals, equipment orders and similar items are to be treated as schedule activities, and shall be given appropriate activity numbers.
- P. The General Contractor, in developing his procurement schedule, will confirm and verify that the off-site activities do not control the Critical path of on-site activities.

1.5 COMPUTER COST AND SCHEDULE REPORTS

- A. Every month the General Contractor will provide a Preliminary Computer Generated Update Report for the Owner and Architect to use to

determine the percent complete and remaining duration of all activities. The data approved in this report shall be used, by the General Contractor, to update the Project Construction Schedule on a Monthly Basis. This report shall be submitted along with the submission of the application for payments. The General Contractor's Project Manager and/or Superintendent, and the Owner shall meet at the job site for the purpose of reviewing the General Contractor's report of actual progress, and obtaining from the General Contractor (following his meeting with all concerned Subcontractors and suppliers) up-to- date and accurate progress data. Applications for payments will not be processed without the Updated Project Construction Schedule.

- B. Report Content:
1. The Preliminary and Final Monthly Update Reports shall include the following minimum information for each activity sorted by activity number, by remaining float (from the least to the most), and by late start date, in chronological order:
 - a. Activity number
 - b. Activity codes
 - c. Activity description
 - d. Estimated duration in days
 - e. Early and late start dates (or Actual if in Progress or Completed)
 - f. Early and late finish dates (or Actual if in Progress or Completed)
 - g. Percentage of activity completed as of the previous report (Proposed Current % of Activity Completed)
 - h. Remaining duration as of Previous Report
 - i. Proposed current remaining duration
- C. All updated Preliminary and Final Monthly Reports will be distributed to the Owner and Architect as follows:
1- Paper Copy
1- Electronic Copy (PDF format)
- D. The General Contractor shall also submit a narrative report with the Preliminary and Final Monthly Reports which shall Include, but not be limited to, a description of problem areas, current and anticipated delaying factors and their impact, an explanation of corrective action taken, any newly planned activities, and any proposed logic revisions for a Recovery Schedule. The narrative report shall also include:
1. A description of the actual work accomplished during the reporting period
 2. A list of major equipment delivered and/or installed during the reporting period.

3. A list of major equipment remaining to be delivered to the Project Site including the current availability and anticipated jobsite delivery date
 4. Changes or additions to Contractor's supervisory personnel since the preceding progress report
- E. In addition to the above, the General Contractor may be required to submit from time to time the following reports:
1. Critical Items Report: The General Contractor shall submit periodically to the Owner a Critical Items Report identifying items by cause and impact that are, or will, seriously affect the General Contractor's progress or ability to perform work in accordance with the current General Contractor Construction Schedule.

Such reports will not be required more than once every sixty (60) days and shall be furnished in sufficient detail to define the cause and potential impact of any actual or anticipated changes in material or equipment deliveries (Contractor or owner-furnished manpower, availability, weather conditions, or other items critical to maintaining the schedule.

1.6 NETWORK REVISIONS

- A. Should the General Contractor, after approval of the Initial Project Construction Schedule, desire to change his plan of construction, he shall submit his requested revisions to the Owner and Architect along with a written statement of the revisions including a description of the logic for rescheduling the work, methods of maintaining adherence to intermediate milestones and Specific Dates and the reasons for the revisions. The General Contractor shall revise his Project Construction Schedule to include the effect of changes, acts of God, or other conditions or events that have affected the network. If the requested changes are acceptable to the Owner and Architect, the Contractor will incorporate them into the Project Construction Schedule, in the next reporting period.
- B. When the Owner orders changes by Change Order which have the potential to impact the Milestone Dates as set forth in the General and Supplemental Conditions, Provisional Project Construction Schedule, or as determined elsewhere in the contract documents, the General Contractor shall prepare a Network (fragnet) and provide it to the Owner and Architect for concurrence or revision as the Owner deems necessary. After the network has been mutually agreed upon, the General Contractor will incorporate it into the Project Construction Schedule. Change Order logic will affect only those activities and performance dates directly concerned. Adjustments in scheduled intermediate Completion Dates or for the Contract as a whole, will be considered only to the extent that there is insufficient remaining float to absorb these changes.

- C. Any change to the approved Project Construction Schedule must be approved in writing by the Owner.
- D. Neither the updating or revision of the Project Construction Schedule nor the submission, updating, change or revision of any report or schedule submitted to the Owner by the General Contractor under this Section nor the Owner's review or concurrence of any such report or schedule shall have the effect of amending or modifying, in any way, the Contract Time, any Contract Completion Date, or Contract Milestone Dates or of modifying or limiting in any way the Contractors obligations under this Contract.

1.7 RECOVERY SCHEDULE

- A. If the General Contractor's schedule, to the extent that any of the mandatory specific or milestone dates or completion dates, fall behind by 14 days or more, or in the opinion of the Owner are in jeopardy, the General Contractor shall be required to, at no extra cost to the Owner, prepare and submit to the Owner a supplementary Recovery Schedule, in a form and detail appropriate to the need, to explain and display how he intends to reschedule those activities to regain compliance with the Project Construction Schedule during the Immediate subsequent pay period.
- B. The General Contractor and Owner shall do the following after determination of the requirement of a Recovery Schedule:
 - 1. Within three (3) calendar days, the General Contractor shall meet with the Owner to present and review a draft version of the Recovery Schedule. The Recovery Schedule shall represent the Contractor's best judgment as to how he shall reorganize his work so that he may return to the completion dates indicated in the Project Construction Schedule within the immediate subsequent pay period. The Recovery Schedule shall be prepared to a similar level of detail as the Project Construction Schedule and shall have a maximum duration of one (1) month that shall coincide with the pay period.
 - 2. Within five (5) calendar days, the General Contractor shall participate in a conference with the Owner to review and evaluate and approve the final Recovery Schedule. Any revisions required as a result of this review shall be resubmitted by the Contractor for approval within two (2) calendar days of the conference. The approved Recovery Schedule shall then be the Schedule which the Contractor shall use in planning, organizing, directing, coordinating, performing and executing the Work (including all activities of subcontractors, equipment vendors and suppliers) for its one (1)

month duration, to regain compliance with the Project Construction Schedule.

- C. Five (5) calendar days prior to the expiration of the Recovery Schedule, the Owner and the General Contractor will meet at the job site for the normal monthly update and to determine the effectiveness of the Recovery Schedule and to determine whether the Contractor has regained compliance with the Project Construction Schedule. At the direction of the Owner, one of the following will happen:
1. If, in the opinion of the Owner, the General Contractor is still behind schedule, the General Contractor will prepare another Recovery Schedule, at the Contractors expense, pursuant with 1.06 (A&B) of this Section, to take effect during the immediate subsequent pay period.
 2. If, in the opinion of the Owner, the General Contractor has sufficiently regained compliance with the Project Construction Schedule, the use of the Project Construction Schedule will be resumed.

1.8 REQUESTED TIME ADJUSTMENT SCHEDULE

- A. The Updated Project Construction Schedule submitted by General Contractor shall not show a completion date later than the Contract Time, subject to any time extensions approved by Owner; provided, however, that if the General Contractor believes he is entitled to an extension of the Contract Time under the Contract Documents, the General Contractor shall submit to the Owner, with each progress payment update, a separate schedule analysis (entitled "Requested Time Adjustment Schedule"), indicating suggested adjustments in the Contract Time which should, in the opinion of General Contractor, be made in accordance with the contract Documents by time extension, due to changes, delays or conditions occurring during the past month or previously, or which are expected or contemplated by General Contractor (whether such conditions are excusable under the Contract or are alleged to be due to Contractor or Owner fault), this separate schedule, if submitted, shall be time-scaled utilizing a computer generated and computer drawn network analysis schedule, unless otherwise approved by the Owner and shall be accompanied or preceded by a formal time extension request as required by the Contract and a detailed narrative justifying the time extension requested.

The network analysis should include all of the related activities that have led the General Contractor to believe that they have been delayed. The Requested Time Adjustment Schedule should indicate where the delay began and ended, and where activities could not start because of the delay. If a delay occurred, but the schedule indicates that the predecessor activity could not have begun due to some other delay, then

this would not be a cause for requesting a time extension for that particular instance. If a delay occurred, and some of the successor work was able to start, then this would be considered a partial delay, which may or may not be a cause for a time extension.

- B. The time extension request shall include schedule forecasts that predict the actual Project Completion Date, and any separable portions thereof specified by the Owner plus a forecast of the actual achievement of any milestones listed in the Contract Agreement.
- C. To the extent any time extension requests are pending at the time of any update in the Construction Schedule, the "Requested Time Adjustment Schedule" shall also be updated each month, to reflect any adjustments made by Contractor in the logic, sequence or duration of any activities in the Construction Schedule, or any time extensions previously granted by Owner, and to reflect actual or expected progress, in order that the "Requested Time Adjustment Schedule" shall clearly and accurately reflect the General Contractor's actual intention and proposed time adjustments as of the latest update.
- D. The Owner shall have no obligation to consider any time extension request unless the requirements of the Contract Documents, and specifically, but not limited to these requirements, are complied with; and the Owner shall not be responsible or liable to General Contractor for any constructive acceleration due to failure of the Owner to grant time extensions under the Contract Documents should the General Contractor fail to substantially comply with the submission requirements and the justification requirements of this Contract for time extension requests. The General Contractor's failure to perform in accordance with the Project Construction Schedule shall not be excused, nor be chargeable to the Owner, because the General Contractor has submitted time extension requests or the "Requested Time Adjustment Schedule."

1.9 COORDINATION

- A. The General Contractor shall coordinate his work with that of other Contractors and shall cooperate fully with the Owner in maintaining orderly progress toward completion of the work as scheduled. The Owner's decisions regarding priority between the General Contractors work and the work of other Contractors at the site shall be final and shall not be cause for extra compensation or extension of time, except where extension of time is granted because of a delay for which the General Contractor is otherwise entitled to an extension of time under the Contract Documents.
- B. The milestone dates referred to in the Contract Documents for delivery of Owner furnished equipment and materials and interface activities of

other General Contractors on the site are based on dates set forth in separate contracts with the Owner and represent the best information available at the time.

- C. The failure of the Owner-furnished equipment and materials to arrive as scheduled, or the failure of other Construction Contractors to meet their schedule, shall not be justification for an extension of time, except where such failure causes, in the opinion of the Owner, an unreasonable delay in the General Contractors work, in which case the provisions of the General Conditions regarding extensions of time and extra work shall apply.
- D. The General Contractor shall keep himself, and his Subcontractors, advised at all times during the course of the work regarding the delivery status of the Owner-furnished equipment and materials and of the progress of construction work being performed under separate contracts.
- E. The Owner will, upon written request by the General Contractor, furnish information that may be available to the Owner.

1.10 CONTRACTOR COVENANTS AND GUARANTEES

- A. The General Contractor covenants and guarantees that the General Contractor will not:
 - 1. Misrepresent to the Owner its planning scheduling or execution of the work.
 - 2. Utilize schedules materially different from those made available by the General Contractor to the Owner or any Subcontractor or separate the Contractors for the direct execution and coordination of the Work, or which are not feasible or realistic.
 - 3. Prepare schedules, updates, revisions or reports for the work which do not accurately reflect the actual intent or reasonable and actual expectations of Contractor and its Subcontractor as to:
 - a. The sequences of activities,
 - b. The duration of activities,
 - c. The responsibility of activities,
 - d. Resources availability,
 - e. Labor availability or efficiency,
 - f. Foreseeable weather conditions,
 - g. The percentage complete of any activity,
 - h. Completion of any item of work or activity,
 - i. Project milestone completion,
 - j. Delays, slippage's, or problems encountered or expected,
 - k. Subcontractor requests for time extensions or delay claims of subcontractors,
 - l. If applicable, the float time available.

- B. The General Contractor's failure to substantially comply with the foregoing covenant and guarantee shall be a substantial and material breach of contract which will permit the Owner to terminate the Contract for default, or withhold payments under the Contract Documents, and shall entitle the Owner to the damages afforded for misrepresentation or fraud by these Contract Documents or applicable law.
- C. Should the General Contractor fail to substantially comply with the provisions of the Contract Documents relating to planning and scheduling the work by the Project Construction Schedule, and the Owner shall have the right, at their option, to retain the services of scheduling consultants or experts (including attorneys if necessary, in their opinion) to prepare a schedule in accordance with the Contract Documents and to review and analyze same, in order to allow the Owner to evaluate the program of the Work by the Contractor, to determine whether the General Contractor is substantially complying with the Contract Documents, and to direct such action on the part of the Contractor, as permitted by the Contract Documents, as required to ensure, under the Owner's schedule prepared hereunder, that the General Contractor will comply with such schedule. All costs incurred by the Owner in preparing the schedule hereunder shall be charged to the General Contractor's account. If the General Contractor fails to substantially comply with the scheduling and execution of the work requirements of the Contract Documents, the Contractor hereby agrees, in such instance, to comply with such schedules, as the Owner develops, or directs, and activity sequences and duration's as the Owner may reasonably require, without additional cost to the Owner (subject only to cost adjustments for such changes in the work as the Owner may direct), to ensure completion within the Contract Time.

1.11 DEFAULT

- A. Failure of the General Contractor to substantially comply with the requirements of this Section shall constitute reason that the General Contractor is failing to prosecute work with such diligence as will ensure its completion within the Contract times and shall be considered grounds for termination by the Owner.

END OF SECTION 01 32 00

01 33 00 - SUBMITTALS PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
 - 1. Schedule of Values
 - 2. Shop Drawings
 - 3. Product Data
 - 4. Samples
- B. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- C. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - 1. Applications for payment.
 - 2. Performance and payment bonds.
 - 3. Insurance certificates.
 - 4. List of Subcontractors.
- D. Inspection and test reports are included in Section 01 40 00 "QUALITY REQUIREMENTS".
- E. Information pertaining to Operation and Maintenance Data is included in Section 01 78 32 "OPERATION AND MAINTENANCE DATA".
- F. Refer to Section 01 29 00 "PAYMENT PROCEDURES" for Schedule of Values requirements for preparation, format, and submittal procedures.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Within 15 days of the Contract award, submit to the Architect a comprehensive Submittals listing each item to be submitted and the date proposed to be submitted. Coordinate with the Architect in the preparation and processing of submittals with performance of

construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 - b. Coordinate transmittal of all submittals requiring color selection so that comprehensive selection can be processed.
 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
 - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the General Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on all submittals:
 - a. Name of item being submitted.
 - b. Number and title of appropriate Specification Section.
 - c. Drawing number and detail references, as appropriate.
 - d. Name of manufacturer.
 - e. Name, address and telephone number of supplier.
 - f. Bid Package number and name.
 - g. Project Name.
 - h. Date.
 - i. Name, address and telephone number of Contractor.
 - j. Name, address and telephone number of Subcontractor.
 - k. Name, address and telephone number of Architect.

- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
- D. Number of copies:
1. If hard copies are provided: Submit six (6) copies to Architect of all shop drawings and product data. Submit two (2) each of all samples.
 2. If electronic copies are provided: Submit one (1) electronic copy in PDF format to the Architect. **General Contractor will be required to limit file sizing to 6MB, maximum, or utilize a file sharing technology at the expense of the General Contractor.**
 3. The General Contractor shall be required to furnish hard copies only for all material requiring a selection for color, texture, or finish.

1.4 DEFINITIONS

- A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for “substitutions.” The following are not considered substitutions:
1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 2. Revisions to Contract Documents requested by the Owner or Architect.
 3. Specified options of products and construction methods included in Contract Documents.
 4. The Contractor’s determination of and compliance with governing regulations and orders issued by governing authorities.

1.5 SCHEDULE OF VALUES

- A. Refer to Section 01 29 00 “Payment Procedures” for Schedule of Values requirements for preparation, format, and submittal procedures.

1.6 SHOP DRAWINGS

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

- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. Dimensions.
 2. Identification of products and materials included.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
 6. Sheet Size: Except for templates, patterns and similar full size Drawings, submit Shop Drawings on sheets at least 8 ½" x 11", but no larger than 24" x 36".
 7. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.7 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Submittals: Submit copies of each required submittal; submit additional copies where required for maintenance manuals.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 4. Distribution: Furnish copies of final submittal to Architect for distribution to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities.
 - a. Do not proceed with installation until an approved copy of Product Data applicable is in the installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.8 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
 - 1. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match the Architect's sample. Include the following:
 - a. Generic description of the sample.
 - b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 - 2. Submit samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 - 3. Preliminary submittals: Where samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - a. Preliminary submittals will be reviewed with the Architect indicating selection or other action.
 - b. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - 4. Submittals: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, samples will not be returned, unless so requested in advance.
 - 5. Maintain sets of returned samples, at the Project site, for quality comparisons throughout the course of construction.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.9 SUBSTITUTION REQUESTS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
 2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers, complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
 3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, the Architect will notify the General Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.

1.10 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility.

- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, to indicate the action taken:
 - 1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. Final-But-Restricted Release: When submittals are marked "Approved as Corrected," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - 3. Returned for Resubmittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - 4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.
 - 1. Extensive revisions to Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of Contract Documents.
 - 3. The request is timely, fully documented and properly submitted.

4. The request is directly related to an “or equal” clause or similar language in the Contract Documents.
 5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 7. A substantial advantage is offered the owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
- B. The Contractor’s submittal and Architect’s acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01 33 00

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the General Contractor. They do not include Contract enforcement activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES

- A. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

1. Costs of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests, performed on original construction, do not indicate compliance with Contract Documents.
- B. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 3. Providing facilities for storage and curing of test samples.
 4. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 5. Security and protection of samples and test equipment at the Project site.
- C. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the General Contractor, except where they are specifically indicated as the General Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.
1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the owner's responsibility.
 2. The General Contractor agrees to engage and pay for the quality control services specified as the General Contractor's responsibility, including retesting, from the independent agency engaged by the Owner.
- D. Duties of the Testing Agency and Special Inspector: The independent testing Agency and the Special Inspector, engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections, shall cooperate with the Architect and Contractor in performance of their duties, and shall provide qualified personnel to perform required inspections and tests.
1. The Agency or the Special Inspector shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Neither the Agency nor the Special Inspector is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

3. Neither the Agency nor the Special Inspector shall not perform any duties of the General Contractor.
- E. Coordination: The General Contractor and each Agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition, the General Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 1. The General Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes.
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01 40 00

01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies applicability of industry standards to products specified, administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Submittals and administrative procedures for handling requests for substitutions made after award of the Contract are included under Section 01 33 00, "SUBMITTAL PROCEDURES."

1.3 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.
- C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.
- D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

- F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. Provide: The term provide means to furnish and install, complete and ready for the intended use.
- I. Installer: An Installer is the Contractor or another entity engaged by the General Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
 2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
 3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
- J. Project site is the space available to the General Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or

elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

- L. "Architect" shall refer to the lead design professional of record for the project.
- M. "Architect" may also refer to the Landscape Architect of record for the project for certain portions of the work directly related to sitework generally five feet outside of the building.
- N. "Bituminous Concrete Pavement" is synonymous with "Hot Mix Asphalt Paving" for the purposes of these Specifications.
- O. "Bituminous Concrete Pavement" terminology: Refer to ASTM D 8 for definitions of terms.
- P. "Concrete" shall mean the manufacture of ready-mix concrete in compliance with ASTM C 94 / 94 M and CT DOT requirements for production facilities and equipment and shall be certified according to NRMCA's "Certification of Ready Mix Concrete Production Facilities."
- Q. "Construction Area" refers to the area within the "Contract Limit Line" as shown on the drawings including any area outside such limit that is damaged or otherwise disturbed by construction-related activities. This may include, but not be limited to, construction access routes, off-site storage or stockpile areas, utility work or other off-site improvements that may not be shown in the contract drawings.
- R. "Contractor" shall mean the General Contractor responsible for all work of this contract including the work of his subcontractors.
- S. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as the date of the Contract Documents
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

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

1.4 SITE REFERENCES

- A. Reference herein to any technical society, organization, group or body is made in accordance with the following abbreviations. Unless otherwise noted or specified, all work in this Specification shall conform to the latest edition, as applicable.
 1. ACI: American Concrete Institute.
 2. ADA: United States Department of Justice, Americans with Disabilities Act, Standards for Accessible Design. [currently "2010 ADA Standards for Accessible Design," DOJ, Sept. 15, 2010]
 3. AI: Asphalt Institute publications as referenced.
 4. ANSI: Refers to standard specifications, as amended, issued by the American National Standards Institute.
 5. AWS: American Welding Society.
 6. AWWA: American Water Works Association.
 7. ASTM: Refers to standard specifications and testing methods issued by the American Society of Testing and Materials Reference as amended.
 8. Building Code: State of Connecticut Building Code.
 9. CRSI: Concrete Reinforcing Steel Institute.
 10. CTDEEP: Refers to the State of Connecticut Department of Energy and Environmental Protection and its various Divisions.
 11. CTDEEP Guidelines: Refers to the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control and all supplements and revisions.
 12. CTDEEP Manual: Refers to the 2004 Connecticut Stormwater Quality Manual and all supplements and revisions.
 13. CTDOT Form 816: Refers to the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816, 2004, and all supplements and revisions, with the exception of provisions for measurements and payments.
 14. NRMCA: National Read Mix Concrete Association.
 15. OSHA: Occupational Safety and Health Administration
 16. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."

1176. U.S.D.A.: United States Department of Agriculture.

1.5 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. These Specifications with the accompanying Drawings are intended to describe and illustrate all material, labor, and equipment necessary to complete the **Interior Renovations to the Trumbull Police Department**.
- B. Specification Format: These Specifications are organized into Divisions and Sections based on the MASTERSPEC numbering system, 2014 edition.
- C. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
 - 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
 - a. The words “shall be” are implied wherever 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 better quality or greater quantity of work shall be the determining basis for all decisions and/or adjustments.** Any work done by the General Contractor without consulting the Architect, when the same requires a decision, shall be done at the Contractor’s risk.
- F. Omissions or Errors: If any omissions or errors are noted or instructions at variance with the obvious intent of the documents, it is the responsibility of

the Contractor to call them to the Architect's attention before signing the Contract.

1.6 SUBMITTALS

- A. Comply with requirements contained in Section 01 30 00, "Submittals and Product Substitutions".

1.7 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
- B. Compatibility of Options: When the General Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Responsibility to furnish material: Listing or mention of materials is sufficient indication to make it the General Contractor's responsibility to furnish said materials in accordance with the grades or standards indicated, free from defects impairing strength, durability or appearance, and in sufficient quantity for the proper and complete execution of the work, unless specifically stated otherwise.
- D. Responsibility for or methods: The listing or mention of any method of installation, erection, fabrication or workmanship shall not operate to make the contractor an agent, but shall be for the sole purpose of setting a standard of quality for the finished work. General Contractor is free to use any alternate method, provided only that, prior to the start of the work, such alternate method is approved in writing by the Architect, as **resulting in quality equal to that intended by these documents**. Unless an alternate method is approved, all work shall be in strict accordance with all methods of installation, erection, fabrication and workmanship listed or mentioned herein.

1.8 INDUSTRY STANDARDS

- A. Compliance: Furnish all materials and accomplish all work in accordance with the grades or standards of materials, standards of workmanship, and manufacturer's literature, as referenced in these documents.
- B. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- C. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.
- D. Conflicting Requirements: Where compliance with two or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Architect for a decision before proceeding.
 - 1. 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 the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- E. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.
- F. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.9 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the Architect's and manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the 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 the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.
8. Packages, materials and equipment showing evidence of damage may be rejected by the Architect.
9. Store rigid insulation board away from the building.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated, or equal to that described.
 2. Semi proprietary Specification Requirements: Where three or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
 - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
7. Visual Selection: Where specified product requirements include the phrase " as selected from manufacturer's standard colors, patterns, textures" or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 42 00

SECTION 01 50 00 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.
- B. Temporary utilities required include but are not limited to:
 - 1. Water service and distribution
 - 2. Temporary electric power and light
 - 3. Telephone service
- C. Temporary construction and support facilities required include but are not limited to:
 - 1. Temporary heat (as required for construction)
 - 2. Field offices and storage sheds
 - 4. Temporary toilet facilities **for both Owner's use and Contractor's use during renovations**, including drinking water and temporary electrical connections.
 - 5. Dewatering facilities and drains
 - 6. Temporary enclosures
 - 7. Temporary Project identification signs and bulletin boards
 - 8. Waste disposal services
 - 9. Construction aids and miscellaneous services and facilities
- D. Security and protection facilities required include but are not limited to:
 - 1. Temporary fire protection
 - 2. Barricades, warning signs, lights
 - 3. Enclosure fence for the site
 - 4. Environmental protection

1.3 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-ALO Series standards for "Safety Requirements for Construction and Demolition", 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.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility within fifteen (15) days of the date established for commencement of the Work. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- 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.

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. Lumber and Plywood: Comply with requirements in Division - 6 Section "Rough Carpentry."
1. For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.

- C. Gypsum Wallboard: Provide gypsum wallboard complying with requirements of ASTM C 36 on interior walls of temporary partitions.
- D. Paint: Comply with requirements of Division - 9 Section "Finish Painting."
 - 1. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
 - 2. For interior temporary partitions, provide two coats interior latex flat wall paint.
- E. 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.
- F. Water: **Owner** to provide temporary water for the purposes of construction activity. Water service will be available for Contractor's use upon approval of the Owner.
- G. Temporary Construction Fencing: Provide where indicated on the drawings 11-gage, galvanized 2-inch chain link fabric fencing, 6-feet high, with galvanized steel pipe posts, 1 ½ inch I.D. for line posts and 2 ½ inch I.D. for corner posts. Temporary construction fencing to include furnishing and installing privacy screening in the form of slats or fabric to conceal all construction activities from adjacent spaces.
 - 1. General Contractor to provide periodic maintenance of fencing and screening to keep all installations in proper form throughout the duration of the renovations.
 - 2. General Contractor to remove all temporary fencing at the completion of the contract phases and restore all surfaces to original condition.

2.2 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 ¾ inch heavy-duty, abrasion-resistant, flexible rubber hose 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 Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

- D. 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.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air- conditioned units on foundations adequate for normal loading.
- H. Temporary Toilet Units for Contractor’s Use: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- I. First Aid Supplies: Comply with governing regulations.
- J. Fire Extinguishers: Provide hand-carried, portable UL-rated, class “All 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.
- K. **The General Contractor shall provide all management personnel with cell phone service.** All major trades shall also be so equipped. Provide a list of names and numbers for all personnel to the Owner and Architect. Emergency contact information to be provided for use for after-hours emergencies. Emergency contacts to be supplied for access 24/7/365.

PART 3 - EXECUTION

3.1 INSTALLATION

- 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, 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: Where required, engage the appropriate local utility company to install temporary service or connect to existing 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 and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
- B. Water Service: **Owner** to provide water service for the purposes of construction activity.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power connections and distribution system of sufficient size, capacity, and power characteristics during construction period. Include transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear. The **Owner** shall be responsible for all costs associated with electric service consumption for construction-related activities.
 - 1. Power Distribution System: Utilize existing power panels / outlets for use in temporary construction. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable.
 - 2. Furnish light bulbs and extensions cords as may be essential to the execution of the respective trades, and for extensions of lines to power tools and remote areas which cannot be reached with extension cords.
- D. Temporary Lighting: Whenever permanent lighting has been removed, provide temporary lighting with local switching.

1. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.
- E. Temporary Telephones: General Contractor to provide all telephones required for Trade Contractor's use during the extent of construction and pay all costs for use. Telephones required by separate contractors shall be paid for by that contractor.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities where indicated on the drawings.
 1. Confine apparatus, storage materials, equipment, supplies and operations to the areas bounded by the Contract and on-site limits as shown on the drawings.
 2. Maintain temporary construction and 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 sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. **The General Contractor shall furnish and pay for all necessary temporary heat to prevent injury to work or to material through dampness or cold.** At all times when there is concrete or other masonry not thoroughly set, he shall maintain a temperature of at least 40 degrees F in areas where such work is located. For two (2) days previous to placement or application of any interior work, resilient tile, paint or similar finish, a temperature of at least 60 degrees F shall be maintained in those portions of building in which this work occurs.
- D. If temporary heat is required for protection of work or to hasten drying out process of construction before permanent heating apparatus is available for use, the Trade Contractor shall provide suitable approved heating, apparatus, adequate proper fuel and maintain fires as required at his expense.
- E. All temporary heating apparatus shall be installed and operated in such a manner that finished work will not be damaged thereby. Until the permanent heating system is available, the Trade Contractor is responsible for maintenance of heating equipment.

- F. **The Electrical Contractor shall provide temporary connections to all equipment requiring electrical power in order to provide temporary heat.** The Electrical Contractor shall remove such temporary connections and equipment when the need for same is concluded.
- G. With the cooperation of all trades and separate Contractors involved, the General Contractor may utilize the permanent heating and ventilating system when completely installed and operational, providing the following conditions are met by the General Contractor at no additional cost to the Owner:
1. The Contractor shall minimize interruption of heat and hot water to areas of the building being utilized by the Owner and shall take adequate precaution to prevent any damage from occurring due to lack of heat.
 2. The Contractor shall take all necessary precautions to prevent waste of heat due to excessive ventilation of careless operation of openings in the building.
 3. The system shall be protected from freezing. Any frost damage shall be repaired at the Trade Contractor's cost.
 4. Arrangements shall be made to monitor the system operation at night and over weekends and holidays by the General Contractor.
 5. All safety controls shall be installed and operating.
 6. All equipment shall be serviced and brought back to "as new" condition to the Architect's satisfaction before acceptance by the Owner.
 7. All equipment warranties and guarantees shall be extended so that their full term is available to the Owner from the date of acceptance.
 8. All permanent HVAC systems utilized for heat shall be cleaned throughout the system, including but not limited to the ductwork, cores, and coils of equipment, etc. Replacement of filters alone does not constitute a thorough cleaning.
 9. **All costs for power consumption and/or fuel shall be the responsibility of the Owner.**
 10. The General Contractor acknowledges that use of permanent systems is for the sole benefit of the General Contractor and that all other requirements contained within the contract documents shall not be violated or compromised. This includes, but is not limited to, warranties and service agreements.
 11. The use of permanent systems shall be discontinued immediately, if in the sole opinion of the General Contractor, the above requirements are not being properly adhered to.
- H. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel.

- I. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces on the site.

- J. Temporary Toilets: Maintain clean, sanitary conditions for both Owner's use and Contractor's use during renovations. **SEPARATE facilities shall be provided for each user group.**
 1. **Owner's Temporary Toilets: Self-contained mobile restroom trailer unit consisting of one (1) toilet and one (1) sink with access. Provide temporary power and water connections are required. Extend unit waste piping to the exterior.**
 - a. **VIP Toilets, VIP Solar Series, 2-station model, 9'6" high, 8' wide, 65 gallon waste capacity, 40 gallon fresh water capacity as supplied through United Site Services, 44 Tabor Drive, Branford, CT, or equal.**
 2. **Install Owner's temporary toilet within the existing garage bay where indicated on the drawings.**
 3. **General Contractor to include within their base bid amount a 6-month rental period including all regular maintenance, cleaning, supplies, and delivery charges.**
 4. **Temporary Toilets for Contractor's Use shall be separate, self-contained units, located on the exterior of the building where indicated on the drawings.**

- K. Drinking Water Facilities: The General Contractor's will be held responsible for providing clean drinking water for their personnel during the duration of their on-site construction period. Provide sanitary conditions of water storage containers and provide adequate and sanitary drinking cups.

- L. Protection:
 1. Protect the building at all times from damages from rain water, spring water, ground water, backing up of drains and sewers and all other water. Provide all pumps, equipment and enclosures to insure this protection.
 2. Remove all snow and ice as may be required for proper protection and prosecution of the work.
 3. Provide all shoring, bracing and sheeting as required for safety and for proper execution of work.
 4. 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.

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, to the satisfaction of the Architect at no additional cost to the Owner.
- M. Temporary Lifts and Hoists: Provide facilities for hoisting materials, rubbish, and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- N. 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. **The General Contractor shall furnish and maintain dumpster service on-site for the removal of all waste material and debris. It is the responsibility of each trade contractor utilized for the completion of this project to remove all associated waste material and debris from the job site on a daily basis and place into appropriate waste receptacle as directed by the General Contractor.**

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. 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.
 2. Store combustible materials in containers in fire-safe locations.
 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. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
 5. No gasoline may be stored in or close to the building at any time.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- F. Environmental Protection: Provide protection, operate temporary facilities and, conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 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 day 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. Termination and Removal: Unless the Architect requests that it be maintained longer, the contractor responsible for its installation shall 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. The Owner reserves the right to take possession of Project identification signs.
 2. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace existing and new street paving, curbs and sidewalks and grassed areas at the temporary entrances, as required by the governing authority.
 3. 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 air filters and clean inside of ductwork and housings (new construction areas only).
 - b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01 50 00

01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, “General Conditions of the Contract for Construction”, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout by each Trade Contractor, including but not limited to:
 - 1. Final inspection procedures
 - 2. Record document submittal
 - 3. Submittal of warranties
 - 4. Final cleaning
- B. Closeout requirements for specific construction activities are included in the appropriate sections of the specifications.
- C. Closeout requirements pertaining to final engineering are included in Section 01 73 00 “EXECUTION”.
- D. Refer to Section 01 78 23 “OPERATION AND MAINTENANCE DATA” for requirements for preparation, format, and submittal procedures for O&M Manuals and As-Built documentation.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection by the Architect for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance change-over requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 4. Obtain and submit releases to the Architect enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
 5. Submit record drawings, maintenance manuals and similar final record information to the Architect.
 6. Deliver tools, spare parts, extra stock, and similar items.
 7. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 8. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
- B. Final Inspection Procedures: Submit a request for final inspection, to the Architect. Following the Architect's final inspection, the Architect will either prepare the Certificate of Substantial Completion, or advise the General Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Architect will repeat final inspection when requested by the General Contractor and assured that the Work has been substantially completed.
 2. Results of the completed final inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request to the Architect with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement to the Architect, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's Final Inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Trade Contractor(s).
 4. Submit consent of surety to final payment.
 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Reinspection Procedure: The Architect will re-inspect the work upon receipt of notice from the General Contractor that the Work, including Final

Inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Owner and Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the General Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, re-inspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Submit to the Architect.
- C. Maintenance Manuals: See Section 01 78 23 "OPERATION AND MAINTENANCE DATA" for O&M requirements.

1.6 WARRANTEE SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties

to the Architect within fifteen (15) days of completion of that designated portion of the Work.

- B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
- C. Form of Submittal: At Final Completion compile two (2) copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Schedule: Provide warranties on products and installations as indicated and specified in each Specification Section relating to each product.
- E. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section 01 50 00 "TEMPORARY FACILITIES".
- B. Final Cleaning at completion of EACH PHASE: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 - 1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original

- reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
- d. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.
- E. If the General Contractor fails to demonstrate a commitment to accomplish the required final cleaning at the completion of EACH PHASE in an orderly, timely fashion, the Owner reserves the right to employ a professional cleaning service, and to deduct any costs thereof from the General Contractor's contract amount.

3.2 WARRANTY PROCEDURES

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the owner has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

END OF SECTION 01 77 00

SECTION 01 78 39 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation manuals for systems, subsystems, and equipment.
 - 3. Product maintenance manuals.
 - 4. Systems and equipment maintenance manuals.
- B. Related Sections:
 - 1. Section 01 33 00 "SUBMITTAL PROCEDURES" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Manual Content: Operations and maintenance manual content is specified in individual specification sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Where applicable, clarify and update reviewed manual content to correspond to modifications and field conditions.

- B. Format: Submit operations and maintenance manuals in the following format:
 - 1. Two (2) Paper Copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
 - 2. One (1) Electronic copy: DVD, or thumb drive.
- C. Initial Manual Submittal: Submit draft copy of each manual at least four (4) weeks before commencing demonstration and training. Architect and Owner's Commissioning Agent will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least two (2) weeks before commencing demonstration and training.
 - 1. Correct or modify each manual to comply with Architect's and Owner's Commissioning Agent's comments. Submit copies of each corrected manual within ten (10) working days of receipt of Architect's and Owner's Commissioning Agent's comments and prior to commencing demonstration and training.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no

designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- 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: 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 and contact information for Contractor.
 6. Name and contact information for Construction Manager.
 7. Name and contact information for Architect.
 8. Name and contact information for Commissioning Agent.
 9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 10. 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.
- E. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-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, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. 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. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 4. 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.

2.3 OPERATION MANUALS

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.

10. License requirements including inspection and renewal dates.
- B. Descriptions: Include the following:
 1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
 1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUALS

- 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 and drawing or schedule designation or identifier where applicable.
- 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.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment 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 and drawing or schedule designation or identifier where applicable.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.

4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
 - E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
 - F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

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. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- C. 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.
- D. 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.
- E. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 39

01 79 00 - DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Section 01 31 00 "PROJECT MANAGEMENT " for requirements for Pre-Instruction Conferences
 - 2. Individual Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

- A. Instruction Program: Submit two (2) copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. At completion of training, submit TWO (2) hard copies and ONE (1) electronic copy of complete training manual(s) for Owner's use.
 - 2. Format for electronic media to be DVD based with proper labeling permanently affixed to disks.
- B. Qualification Data: For facilitator.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section 01 40 00 "Quality Requirements," experienced in operation and maintenance procedures, and training.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
 - 1. Fire alarm systems
 - 2. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
 - 3. HV AC instrumentation and controls.
 - 4. Lighting equipment and controls.
 - 5. Plumbing systems and equipment.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Provide manufacturer's instructors or instructors certified by manufacturer as being experienced in operation and maintenance procedures for each system, subsystem, or piece of equipment to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least fourteen (14) days' advance notice.
 - 2. Schedule training to conform to personnel availability at Site and to conclude prior to startup of system.

END OF SECTION 01 79 00

SECTION 02 07 00 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 DESCRIPTION OF REQUIREMENTS

- A. Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition. "Cutting and patching" shall also include the removal and subsequent reinstallation of existing construction required to be removed in order to execute the work specified and/or indicated on the drawings, i.e., ceilings, electrical/mechanical equipment, etc.
- B. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
- C. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".
- D. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.
- E. Unless otherwise specified, requirements of this section apply to mechanical and electrical work. Refer to Division 22, 23 and Division 26 sections for additional requirements and limitations on cutting and patching of plumbing, mechanical and electrical work.

1.3 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or load-deflection ratio.

- B. Before cutting and patching the following categories, or similar categories, of work, obtain the Architect's approval to proceed with cutting and patching as described in the procedural proposal for cutting and patching.
1. Structural steel.
 2. Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.
 3. Structural concrete plank floor structure.
 4. Foundation construction.
 5. Bearing and retaining walls.
 6. Structural decking.
 7. Piping, duct-work, vessels and equipment.
- C. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.
- D. Before cutting and patching the following elements, or similar elements, of work, and similar work elements where directed, obtain the Owner's approval to proceed with cutting and patching as proposed in the proposal for cutting and patching.
1. Shoring, bracing and sheeting.
 2. Primary operational systems and equipment.
 3. Water, moisture, vapor, air, smoke barriers, membranes and flashings.
 4. Noise and vibration control elements and systems.
 5. Control, communication, conveying, and electrical wiring systems.
- E. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in its occupied spaces, in a manner that would, in the Architect's and Owner's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Architect and Owner to be cut and patched in a visually unsatisfactory manner.
- F. If possible, retain the original installer or fabricator, or another recognized experienced and specialized firm to cut and patch the following categories, and similar categories, of exposed work.
1. Processed concrete finishes.
 2. Ornamental metal.
 3. HVAC enclosures, cabinets or covers.

1.4 SUBMITTALS

- A. Procedural Proposal for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal:
1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to existing work, including structural, operational, and visual changes as well as other significant elements.
 2. List products to be used and firms that will perform work.
 3. Give dates when work is expected to be performed.
 4. List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be out-of-service temporarily. Indicate how long utility service will be disrupted.
- B. Where cutting and patching of structural work involves the addition of reinforcement, submit details and engineering calculations to show how that reinforcement is integrated with original structure to satisfy requirements.
- C. Where cutting and patching of exposed finishes is to be involved, submit a drawing clearly describing in detail the location and extent of the work for the Owner's and the Architect's approval.
- D. Approval by the Owner and the Architect to proceed with cutting and patching work does not waive the Architect's right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Except as otherwise indicated, or as directed by the Architect, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics than existing construction.

PART 3 EXECUTION

3.1 INSPECTION

- A. Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.
- B. Before the start of cutting work, meet at the work site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.2 PREPARATION

- A. Temporary Support: To prevent failure, provide temporary support of work to be cut.
- B. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruptions of free passage to adjoining areas.
- D. Take precautions not to cut existing pipe, conduit, or duct serving the building but scheduled to be relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching work. Except as otherwise indicated or as approved by Architect, proceed with cutting and patching at the earliest feasible time and complete work without delay.
- B. Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer, comply with original installer's recommendations.
- C. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or

finished side into concealed surfaces. Temporarily cover openings when not in use.

- D. By-pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut-off conduit and pipe in walls or partitions to be removed. After by-pass and cutting, cap valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.
- E. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
- F. Where feasible, inspect and test patched areas to demonstrate integrity of work.
- G. Restore exposed finishes of patched areas and where necessary extend finished restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
- H. Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings and replace with new materials.
- I. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coat.
- J. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.4 CLEANING

- A. Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 02 07 00

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section requires the selective removal and subsequent off-site disposal of the following:
1. Portions of existing building and sitework indicated on drawings and as required to accommodate new construction and interior renovations.
 2. Associated concrete slab on grade, concrete foundations walls, and masonry construction to accommodate new installations as indicated on the drawings.
 3. Interior construction and associated interior excavation as indicated on the drawings in support of new construction and plumbing installations.
 4. Removal and legal disposal of existing metal lockers within corridors. Removal and legal disposal of relocated metal lockers at the completion of Phase I construction.
 5. Removal and legal disposal of all items of selective demolition by this contractor that involves demolition of existing equipment, existing installations, or existing construction elements to accommodate new construction and as indicated on the drawings.
- B. Each trade (P / HVAC and Electrical) is responsible to drop, remove to dumpsters, and make safe all items of demolition pertaining to, or associated with, their trade as noted on the drawings. General Contractor is to be responsible for legal disposal of all items of demolition.**
- 1. Coordinate all items of demolition with Hazardous Materials Abatement.**
- C. Related Work Specified Elsewhere, including but not limited to:
1. Division 22 - Plumbing
 2. Division 23 - HVAC
 3. Division 26 - Electrical

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections:
1. Proposed schedule of operations coordination for shutoff, capping, and discontinuation of utility services as required.
 2. Provide a detailed sequence of demolition and removal work.
 3. Permits and notices authorizing demolition from applicable regulatory agencies.
 4. Certificates of severance of utility companies.
 5. Permit for transport and disposal of demolition debris.
 6. All other items required by any agency or regulation having jurisdiction over the demolition work.

1.4 JOB CONDITIONS

- A. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.
- B. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. **Owner has right of first refusal for all salvaged items removed from the existing building and not required for the completed renovation.** Owner to designate on-site location for storage of salvaged items for their use. Owner to transport salvaged items for their retention to an off-site location as required. Transport salvaged items from site as they are removed.
1. Storage or sale of removed items on site will not be permitted.
- C. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.
1. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.
 2. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
 3. Protect floors with suitable coverings when necessary.
 4. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
 5. Remove protections at completion of work.
- D. Damages: Promptly repair damages caused to adjacent surfaces by demolition work.

- E. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

- F. Utility Services: Maintain existing utilities indicated to remain in service and protect them against damage during demolition operations.
 - 1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
 - 2. Contractor shall coordinate shut off of all existing utilities serving structure(s) to be demolished. Disconnecting and sealing existing utilities before starting demolition operations is part of this work.

- G. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
 - 1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

1.5 QUALITY ASSURANCE

- A. Qualifications of Workers: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section

- B. Comply with the requirements of the following
 - 1. Local and State Building Codes and Health Departments
 - 2. U.S. EPA and Connecticut Department of Environmental Protection
 - 3. Utility companies having jurisdiction and that may have utilities within the area of the Work.
 - 4. All other applicable local, state, and federal regulations

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PREPARATION

- A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.
 - 1. Cease operations and notify Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
 - 2. Cover and protect furniture, equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.
 - 3. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.

3.2 DEMOLITION

- A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.
 - 1. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.
 - 2. For interior concrete floor slabs, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.
- B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Architect in written, accurate detail. Pending receipt of directive from Owner's Architect, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.
- C. Building Demolition: Demolish building elements completely and remove from site. Use such methods as required to complete work within limitations of governing regulations.
 - 1. Proceed with demolition in systematic manner, from top of structure to ground. Complete demolition work above each floor or tier before disturbing supporting members on lower levels.
 - 2. Demolish concrete and masonry in small sections.
 - 3. Remove structural framing members and lower to ground by hoists, derricks, or other suitable methods.
 - 4. Break up all concrete slabs-on-grade.
 - 5. Locate demolition equipment throughout structure and remove materials so as to not impose excessive loads to supporting walls, floors, or framing.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove from building site debris, rubbish, and other materials resulting from demolition operations.
 - 1. Burning of removed or demolition materials will not be permitted on project site.

- B. Removal: Transport materials removed from demolished structures and legally dispose of at an off site location. Burying demolition debris on site will not be permitted.

3.4 CLEANUP AND REPAIR

- A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.
 - 1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION 02 41 19

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. Section includes furnishing and installing cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
 - 1. Slabs-on-grade (interior)
 - 2. Equipment pads and bases (exterior)

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data: For each type of product indicated, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, dry-shake finish materials and others if requested by the Architect.
- C. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Field water is not to be added.
 - 2. Admixtures are not to be added in the field.
- D. Submit a written description of cold weather and hot weather protection procedures for review and approval a minimum of 15 days prior to start of Work.
- E. Submit a written description of curing procedures for review and approval a minimum of 15 days prior to start of Work. Description to include curing methods and duration of curing.
- F. Shop drawings shall be reviewed and "checked" by the Fabricator prior to being submitted to the Architect. Unchecked shop drawings shall be rejected and returned to the Contractor.

- G. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, and supports for concrete reinforcement. Include special reinforcement required for openings through concrete structures.
 - 1. All reinforcement in slabs-on-grade shall be shown on 1/8" scale drawings with the bottom and top reinforcement shown on separate drawings. All supplement reinforcement required, including but not limited to slab edge reinforcing, corner bars, re-entry bars, slab openings, and girder bars are to be clearly indicated on the 1/8" scale shop drawings.
- H. No reinforcing shall be cut, fabricated, shipped to the job site, or placed before shop drawings have been approved by the Architect of Record. Only shop drawings bearing the appropriate Architect's stamp marked "Furnished As Submitted" or "Furnished As Corrected" or "Furnished As Corrected and Resubmit For Record" shall be used in the field.
- I. Laboratory test reports for concrete materials and mix design tests.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the following Codes, Specifications, and Standards, except where more stringent requirements are shown or specified.
 - 1. American Concrete Institute (ACI) 301, "Specification for Structural Concrete for Buildings."
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
 - 4. ACI 117, "Specification for Tolerances for Concrete Construction and Materials."
- B. Concrete Testing Service: Engage a testing agency acceptable to Architect to design concrete mixes to perform material evaluation tests associated with the mix design.
- C. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- D. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- E. Testing Agency Qualifications: Owner will engage an independent agency

qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician- Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- F. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Forms for Exposed to View Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
- B. Forms for Unexposed to View Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: New 45-degree wood, metal, PVC, plastic or rubber strips, 3/4 by 3/4 inch, nailed 6 inches on center, and installed in inside corners of forms.
- D. Form-Release Agent: Commercially formulated form-release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, adjustable length, removable or snap-off metal form ties designed to resist lateral pressure of fresh concrete on forms and to

prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I/II.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.
 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal, unless otherwise noted.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding 0.15 percent by mass of cement material. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

2.5 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class B minimum. Include manufacturer's recommended adhesive or pressure-sensitive tape.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Stego Industries, LLC; Stego Wrap, 15 mil Class A or approved equal.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: Comply with ASTM C 171, polyethylene film or white burlap-polyethylene sheet or waterproof paper.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating. Moisture loss not more than 0.55 kg/sq. m when applied at 200 sq. ft./gal. Subject to compliance with current US EPA regulations for volatile organic compounds (VOC) emissions and floor finish adhesives.

2.7 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency acceptable to the Architect of Record for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Submit written reports including all statistical data to the Architect of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been approved by the Architect.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing or high-range water-reducing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high

temperatures, low humidity, or other adverse placement conditions.

- E. Use accelerating admixture in concrete slabs, as required, for placement and workability.
- F. Add air-entraining admixture where specified at manufacturer's prescribed rate to result in concrete at point of placement and having total air content with a tolerance of plus or minus 1-1/2 percent of the value indicated.
- G. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.8 CONCRETE MIXTURES

- A. Design mixes to provide concrete with the following properties:
 - 1. Concrete for exterior equipment pads to be normal weight concrete with a 4,500 psi, 28-day minimum compressive strength; water-cement ratio 0.45 maximum (water content shall include surface water in aggregates); minimum cement content of 6 sacks per cubic yard, maximum 3/4 inch aggregate, four plus or minus 1 inch slump; 6 percent air content by volume.
 - 2. Concrete for interior slabs-on-grades, to be normal weight concrete with a 4,000 psi, 28-day minimum compressive strength, minimum cement content of 6 sacks per cubic yard, water-cement ratio 0.45 maximum (water content shall include surface water in aggregates), maximum 3/4-inch aggregate, four plus or minus 1 inch slump. Provide six percent air content by volume at all exterior slabs. No additional air entrainment is to be provided at interior slabs.
- B. If mixes are to be pumped, allowable slump can be increased to six plus or minus 1 inch. Submit separate mix designs, including all backup data, for each pump mix for approval by the Architect.
- C. Adjustments to Concrete Mixes: Field water is not to be added. Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by the Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Architect before using in Work.
- D. Do not air entrain concrete at interior slabs and suspended slabs. Do not allow entrapped air content to exceed 3 percent.

2.9 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard

Practice."

2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder, embedded items, anchor bolts and other related materials with placement of forms and reinforcing steel.
- B. Thoroughly clean forms, metal deck and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, welding ferrules and/or other debris just before placing concrete.

3.2 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch, tolerances for concrete surfaces exposed to view.
 - 2. Class C, 1/2 inch, tolerances for other concrete surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.

2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of exposed concrete, and where indicated on Contract Documents to produce uniform smooth lines and tight edge joints.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items. Accurately place and securely support items built into forms.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- M. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed.

3.3 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643, ACI 302.2, ASTM F-710, and the manufacturer's written instructions.
 1. Place vapor retarder sheeting in position with longest dimension parallel with direction of pour.
 2. Lap joints 6 inches (minimum) and seal with manufacturer's recommended mastic or pressure-sensitive tape.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for details and methods of reinforcement placement and supports and as specified.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover as indicated for in ACI 318. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least two full panels. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.
 - 2. Provide formed keyways at least 1-1/2 inches deep by one-third the wall thickness in width in construction joints in walls, and between walls and footings.
 - 3. Locate horizontal joints in walls as indicated on the Drawings or as approved by the Architect.
 - 4. Unless otherwise shown on the Drawings, walls shall have vertical construction joints located no more than 60 ft. apart. No vertical construction joint shall be within 4'-0" of any column pier, corner, or footing joint. Exposed foundation walls shall have control joints spaced at 20'-0" (maximum) on center between construction joints, unless otherwise noted.
 - 5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction (Control) Joints in Slabs-on-Grade: Provide contraction joints in

slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8-inch wide by one-quarter of slab depth.

1. Contraction joints shall be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate.
2. If joint pattern is not shown, provide joints not exceeding 15 ft. in each direction and located to conform to bay spacing whenever possible (at column centerlines, half bays, third bays).

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install smooth dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

A. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.

B. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Notify other trades to permit installation of their work.

C. Do not add water to concrete during delivery, at Project site, or during placement.

D. A representative of the Moisture Vapor Reducing Admixture (MVRA) must be present at the jobsite for each day of placement of treated concrete. The Contractor must not proceed without the MVRA representative being present for the placement process. Please provide ten (10) days' notice of the placement of all batches of treated concrete.

E. Deposit concrete continuously in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

- F. Deposit concrete in forms in horizontal layers no deeper than 48 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic, to avoid cold joints.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints and segregation.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set and lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- G. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- H. Cold Weather Placement: Cold weather is defined as a period when for more than three consecutive days the average daily temperature is less than 40 deg. F and the air temperature is not greater than 50 deg. F for more than one-half of any 24-hour period. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Comply with ACI 306.1 and as indicated:
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. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agent or chemical.
4. Slabs-on-Grade (Slab Depth Less Than 10 Inches):
 - a. Concrete operations for slabs indicated above are to take place within a heated enclosure where the air temperature is maintained between 50 deg. F and 85 deg. F for a minimum of 24 hours prior to concrete placement and 72 hours after concrete placement. Ground surface is to be free of frost or frozen materials for slabs-on-grade.
5. Formed Footings and Walls: The protection means listed below are guidelines only. It is the Contractor's responsibility to provide any and all additional measures necessary to maintain the concrete between 50 deg. F and 85 deg. F for the time period indicated below and comply with ACI 306.1.
 - a. Elements with a minimum dimension up to 16 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours. If the air temperature is expected to go below 0 deg. F, then a heated enclosure is required.
 - b. Elements with a minimum dimension above 16 inches to 22 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours. If the air temperature is expected to go below -29 deg. F, then a heated enclosure is required.
 - c. Elements with a minimum dimension above 22 inches to 34 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours.
 - d. Elements with a minimum dimension above 34 inches are to be protected by the formwork (3/4-inch plywood minimum) and mineral wool blankets (minimum R value of 8.0) for formed and unformed surfaces for 72 hours.
6. The Subcontractor and the Inspection Agency are each to maintain independent records of the following information during cold weather:
 - a. For each section of concrete placed, record the date, time, outside air temperature, enclosure temperature, temperature of concrete during placement, weather conditions, and methods used to protect the concrete.
 - b. For each section of concrete placed, record the maximum and minimum temperature in each 24-hour period for 72 hours after the concrete is placed. Temperature readings are to be taken at the concrete surface or at three-inch-deep probes into the concrete. A minimum of one thermometer shall be provided at each spread footing or pier placed and a minimum of three thermometers provided for each 60-ft. section of wall or wall footing placed. For walls greater than 10 ft. in height, provide two thermometers at the

top of the wall (surface-mounted or probes) and one thermometer within 2 ft. of the base of the wall (probe at formed surface) per each 60-ft. length of wall. Temperature readings are to represent the severe conditions. Corners and edges of concrete are the most vulnerable to freezing and are to be considered the severe condition.

- I. Hot Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot weather conditions exist. Hot weather is any combination of high ambient temperature, high concrete temperature, low relative humidity, wind speed, or solar radiation that will impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration.
 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg. F at time of placement. 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 steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.
 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to the Architect.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a formed finish on formed concrete surfaces not exposed to view or concealed by other construction. Tie holes and defective areas are to be repaired and patched, and fins and other projections exceeding 1/4-inch in height rubbed down or chipped off.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove and smooth fins and other projections completely.
 1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 1. Smooth-Rubbed Finish: Provide smooth-rubbed finish on schedule concrete surfaces that have received smooth-formed finish treatment. Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color

and texture. Do not apply cement grout other than that created by the rubbing process.

- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Finish slab to elevation indicated on Contract Documents.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
 - 1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor toppings or to receive mortar setting beds for bonded cementitious floor finishes.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
 - 2. Finish slab-on-grade surfaces to the following minimum tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; specified minimum local values of flatness, F(F) 15; and of levelness, F(L) 12.
 - b. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; specified minimum local values of flatness, F(F) 21; and of levelness, F(L) 15; at surfaces to receive thin-set flooring.
 - 3. Coordinate required finish surface tolerances with actual architectural floor

finishes. Grind smooth any surface defects that would telegraph through applied floor covering system.

- E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated, unless otherwise indicated on the Drawings.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep continuously cured for not less than seven days.
- C. Evaporation Retarder: Apply evaporation retarder to unformed 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 manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure if forms are loosened. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- F. Contractor to coordinate and verify that all curing methods and materials are compatible with architectural finishes. Submit appropriate data for review.
 - a. Moisture cure or use moisture-retaining covers to cure all concrete surfaces exposed to view (including slabs) and concrete to receive a concrete topping. Do not use moisture-retaining covers to cure concrete exposed to view if concrete surface will be marred.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces not exposed to view and concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project. Concrete slabs receiving moisture sensitive flooring or roofing materials shall not be moisture

cured.

- G. Cure all grout in accordance with the manufacturer's requirements.

3.10 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.11 CONCRETE SURFACE REPAIRS

- A. Patching Defective Concrete: Repair and patch defective areas immediately after removing forms when approved by Architect/Architect. Remove and replace concrete that cannot be repaired and patched to Architect's/Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Remove and replace concrete having defective surfaces if defects cannot be repaired to the satisfaction of the Architect.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, holes left by tie rods and bolts, and voids more than 1/4 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect/Architect. If defects cannot be repaired to the satisfaction of the Architect, remove and replace the concrete.

- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment when acceptable to the Architect/Architect. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping when acceptable to the Architect. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar when acceptable to the Architect. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's/Architect's approval for method and procedure, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's/Architect's approval.

3.12 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

- B. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete, plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. The Contractor shall notify the Owner's inspection agency 24 hours prior to placing concrete to inspect secured reinforcing. No concrete shall be placed until reinforcing has been inspected by the Owner's testing and inspection agency.
 - 3. When concrete is pumped, test cylinders shall be made from concrete taken at discharge end of the pumping train.
 - 4. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample at point of placement, but not less than one test for each day's pour of each concrete mixture. First truck to be tested of each placement. If first truck does not meet project requirements, test each additional truckload until two passing results are obtained.
 - 6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
 - 7. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure one set of four standard cylinder specimens for each composite sample, unless otherwise directed.
 - b. Provide one set of field cured cylinders for each concrete type for any days that are less than or expected to be less than 40 deg. F within 24 hours after concrete placement. Field-cured cylinders to be cured under the same conditions and temperatures as the cast-in-place concrete.
 - 8. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at 7 days and two specimens at 28 days, and one specimen retained in reserve for later testing if required.
 - a. Test field-cured specimens as indicated for laboratory-cured

specimens.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
10. Strength of each concrete mixture will be considered satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
11. Test results shall be reported in writing to Structural Architect, 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 and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

C. Inspection of Adhesive Anchoring:

1. Testing agency shall randomly review anchoring procedures to verify conformance with manufacturer's installation requirements. Witness approximately 25 percent of total. The percentage of adhesive anchoring witnessed may be modified by the Structural Architect of Record, depending upon initial results.

D. Sampling and Testing of Non-Shrink Grout:

1. Owner's testing agency is to cast one set of six (6) 2" x 2" cubes of grout for each 10 cu. ft. of grout or fraction thereof for each day's grouting. Test two cubes at seven days, two cubes at 28 days, with two cubes retained in reserve for later testing if required. If test results for any strength test are below the required strength, the grout is rejected and is to be replaced at no cost to the Owner.

2. Sampling, curing, and testing to be in conformance with ASTM C 1107. Molds utilized shall be made of brass or steel.
3. Testing agency is to note the location of all grouted plates represented by each set of grout cylinders.
4. The contractor shall notify the Owner's testing agency laboratory 24 hours before grout placement and shall cooperate in the making of cylinders by the testing laboratory.

END OF SECTION 03 30 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Concrete unit masonry (cmu) for masonry infill of existing masonry wall construction as indicated on the drawings
 - 2. Mortar
 - 3. Ties and anchors related to masonry construction

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following installed compressive strengths (f'm):
 - 1. For concrete unit masonry: As follows:
 - a. f'm = 1900 psi.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each different masonry unit, accessory, and other manufactured product indicated.

1.5 QUALITY ASSURANCE

- A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures," except as otherwise indicated.
 - 1. Revise ACI 530.1/ASCE 6 to exclude Sections 1.4 and 1.7; Parts 2.1.2, 3.1.2, and 4.1.2; and Articles 1.5.1.2, 1.5.1.3, 2.1.1.1, 2.1.1.2, and 2.3.3.9 and to modify Article 2.1.1.4 by deleting requirement for installing vent pipes and conduits built into masonry.

- B. Comply with ACI 530/ASCE5 "Building Code Requirements for Masonry Structures, Section 9.5 Lateral Support for bracing requirements of partitions.
- C. Fire Performance Characteristics: Where indicated, provide materials and construction identical to those of assemblies whose fire resistance has been determined per ASTM E 119 by a testing and inspecting organization, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.
- D. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.
- E. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality from one manufacturer for each cementitious component and from one source and producer for each aggregate.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver masonry materials to project in undamaged condition.
- B. Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.
- C. Store cementitious materials off the ground, under cover and in dry location.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Store masonry accessories including metal items to prevent corrosion and accumulation of dirt and oil.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.

2.2 CONCRETE MASONRY UNITS

- A. General: Comply with requirements indicated below applicable to each form of concrete masonry unit required.
 - 1. Size: Provide concrete masonry units complying with requirements indicated below for size that are manufactured to specified face dimensions within tolerances specified in the applicable referenced ASTM specification for concrete masonry units.
 - a. Concrete Masonry Units: Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on drawings.
- B. Hollow and Solid Load-Bearing Concrete Masonry Units: ASTM C 90-90, C145, and Grade N and as follows:
 - 1. Unit Compressive Strength: Provide units with minimum average net area compressive strength indicated below:
 - a. 1900 psi.
 - 2. Weight Classification: Lightweight.
 - 3. Aggregates: Lightweight, expanded shale, clay or slate produced by the rotary kiln method complying with ASTM C-331, and shall be graded (#4-0 Gradation) to assume constant texture. The blending of screenings or any other deleterious substance which will impair the fire rating or insulation values is prohibited.
 - 4. Units made with pumice or burn-off aggregates will not be accepted.

2.3 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II.
- B. Masonry Cement: ASTM C 91.

2.4 REINFORCING STEEL

- A. General: Provide reinforcing steel complying with requirements of referenced unit masonry standard and this article.
- B. Steel Reinforcing Bars: Material and grade as follows:
 - 1. Grade 60.
- C. Deformed Reinforcing Wire: ASTM A 496.

2.5 JOINT REINFORCEMENT

- A. General: Provide joint reinforcement complying with requirements of referenced unit masonry standard and this article, formed from the following:

1. Galvanized carbon steel wire, ASTM-AI53, Class B-2, hot-dipped,,1.5 oz. galvanized coating.
- B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units, and complying with requirements indicated below:
 1. Wire Diameter for Side Rods: 0.1875 inch.
 2. Wire Diameter for Cross Rods: 0.1483 inch (9 gage).
 3. For single-wythe masonry provide type as follows with single pair of side rods:
 - a. Truss design with continuous diagonal cross rods spaced not more than 16 inches o.c.
 - b. Subject to compliance with requirements, provide one of the following:
 - 1) "Truss Type, Extra Heavy Duty", by Dur-O-Wal, Inc.
 - 2) "Truss Tie-Wall, Heavy Class", by National Wire Products, Inc.
 - 3) "Standard Truss", Keywall.

2.6 TIES AND ANCHORS, GENERAL

- A. General: Provide ties and anchors specified in subsequent articles that comply with requirements for metal and size of referenced unit masonry standard and of this article.
- B. Galvanized Carbon Steel Wire: ASTM A 82, ASTM-AI53, Class B-2, hot dipped, 1.5 oz. galvanized coating.
- C. Galvanized Steel Sheet: As follows:
 - a. Galvanized Steel Sheet: ASTM A 366 (commercial quality) cold-rolled carbon steel sheet, hot-dip galvanized after fabrication to comply with ASTM A 525, Class B2 (for unit lengths over 15 inches) and Class B3 (for unit lengths under 15 inches), for all sheet metal ties and anchors.

2.8 MORTAR MIXES

- A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification for job-mixed mortar and ASTM C 1142 for ready-mixed mortar, of types indicated below:

1. For interior loadbearing walls; for interior nonloadbearing partitions, and for other applications where another type is not indicated, use type indicated below:
 - a. Type S.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions affecting performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.
- C. Notify Architect and do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in Project.
- B. Thickness: Build masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.
- C. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting where possible.

3.3 CONSTRUCTION TOLERANCES

- A. Comply with construction tolerances of referenced unit masonry standard.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.
- B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

- C. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
 - 1. Running bond with vertical joint in each course centered on units in courses above and below.
- D. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- E. Stopping and Resuming Work: In each course, rake back 1/4-unit length for one-half running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly (if required), and remove loose masonry units and mortar prior to laying fresh masonry.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay solid masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- B. Lay hollow concrete masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- C. Cut joints flush for masonry walls to be concealed or to be covered by other materials.
- D. Tool joints for masonry walls to be exposed in compliance with referenced masonry standard.
- E. Tool joints in block veneer as directed by the Architect.

3.6 HORIZONTAL JOINT REINFORCEMENT

- A. General: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch on exterior side of walls, M inch elsewhere. Lap reinforcing a minimum of 6 inches.

3.7 INSTALLATION OF REINFORCED UNIT MASONRY

- A. General: Install reinforced unit masonry to comply with requirements of referenced unit masonry standard.

END OF SECTION 04 20 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes the following metal fabrications and described and further described on the drawings:
 - 1. Loose steel lintels to support existing masonry construction where indicated on the drawings.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 FERROUS METALS

- A. Metal Surfaces, General: For surfaces exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, roughness, or, for steel sheet, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled sheet.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade as follows:
 - 1. Cold-Rolled Structural Steel Sheet: ASTM A 611, grade as follows:
 - a. Grade A, unless otherwise indicated or required by

2.2 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.

2.3 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Shear and punch metals cleanly and accurately. Remove burrs.
- D. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Remove sharp or rough areas on exposed traffic surfaces.

2.5 LOOSE STEEL LINTELS

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit if required.
- C. Size loose lintels as indicated on Contract Documents.
- D. **Galvanize all loose lintels located in exterior wall locations.**

2.6 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designing finishes.
- B. Finish metal fabrications after assembly.

2.5 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:
 - 1. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch (0.76 mm) thick or thicker.
 - 2. Galvanize miscellaneous metals in the following locations:
 - 1. ALL exterior locations.
 - 2. Other locations as indicated on the Contract Documents.

PART 3 - EXECUTION

3.1 ADJUSTING AND CLEANING

- A. Touchup Painting: Clean and touchup paint of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal.
- B. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 05 50 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and/or installing the following:
1. Installation of temporary dust protection between areas under renovation and areas occupied by the Owner.
 2. Installation of door hardware, setting of all door frames and installation of all doors within frames.
 3. Installation of toilet and bath accessories as specified.
 4. Installation of all required access panels as specified in Section 08305 and Division 15 and 16.
 5. Installation of wood blocking to fully support equipment and/or accessories identified within the specifications.
 6. Modifications to existing roofing and roofing equipment curbs to accommodate new mechanical units and provide new insulated metal roofing cap as indicated on the drawings.
 7. Rough carpentry work not specified elsewhere and generally intended for support of other work.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 08 71 00 "DOOR HARDWARE" for hardware furnished for installation under this Section.
 2. Section 09 21 00 "GYPSUM BOARD ASSEMBLIES" for gypsum sheathing, batt insulation, and metal stud wall construction.
 3. Section 10 28 00 "TOILET AND BATH ACCESSORIES" for toilet and bath accessories for installation under this Section.

1.3 REFERENCE STANDARDS

- A. American Wood Council (AWC): ANSI NDS-2015 "National Design Specification for Wood Construction"
- B. Southern Pine Inspection Bureau (SPIB): SPIB "Grading Rules" (latest edition).

- C. Western Wood Products Association (WWPA): WWPA "Grading Rules for Western Lumber" (latest edition)
- D. National Lumber Grades Authority (NLGA): NLGA - "Standard Grading Rules" (latest edition)
- E. American Plywood Association (APA): APA C-20 "Plywood Specification and Grade Guide"

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Manufacturers information pertaining to dimensional and board lumber including design strengths, species, and moisture content.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Storage: Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack material above ground level on uniformly spaced supports to prevent deformation.
- B. All wood must be covered and completely weather protected and stored at least twelve (12") inches above grade.

PART 2 – PRODUCTS

- A. STEEL SHEET METAL for insulated roof curb cap shall be 24 gauge, with 22 gauge continuous cleats Zinc-Coated Steel Sheet commercial quality carbon steel with minimum of 0.20% copper content complying with ASTM A 526; hot-dip galvanized to comply with ASTM A 525.
 - 1. Finish shall be full-strength Kynar 500 with 20-year warranty.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of miscellaneous carpentry and in sizes that would require an excessive number or poor arrangement of joints.
- B. Cut and fit miscellaneous carpentry accurately. Install members plumb and true to line and level.
- C. Coat cut edges of preservative-treated wood to comply with AWPA M4.

- D. Securely fasten miscellaneous carpentry as indicated and according to applicable codes and recognized standards.
- E. Countersink nail heads on exposed carpentry work and fill holes.
- F. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

3.2 BLOCKING

- A. Install all blocking required to support all items of finish and to cut off all concealed draft openings, both vertical and horizontal, between ceiling and floor areas. Firestop concealed spaces with wood blocking not less than two (2") inches thick unless blocked by other framing members. Provide blocking to support edges of all soffits, flashing, etc. Provide two (2")-inch solid blocking as required for securing edges of gypsum board. Provide continuous blocking for gypsum board ceiling at all edges. Also, provide blocking behind all wall or ceiling mounted accessories such as grab bars, cabinets, fans, light fixtures, plumbing lines, electrical panelboards, bathroom accessories, etc. Note that grab bars must be capable of supporting three hundred (300 LB) pounds after installation.

3.3 DOOR HARDWARE INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 - 1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.4 TOILET ACCESSORIES INSTALLATION

- A. Install each toilet accessories in compliance with the manufacturer's instructions and recommendations

3.11 TEMPORARY ENCLOSURES

- A. Provide temporary enclosures, doors and dust barriers as required to protect building from weather and construction damage and to ensure building security. Upon completion, remove all temporary work and repair any damage to permanent finishes and installations. Verify requirements with Architect and Owner.
 - 1. **Temporary Enclosures shall be provided at EACH PHASE of construction to separate areas on interior renovation from areas occupied by the Owner. Temporary Enclosures shall insure that dust and construction activities are isolated from adjacent areas of occupancy.**
 - 2. Failure to properly isolate areas of construction dust from adjacent areas will require the General Contractor to perform final cleaning of all surfaces affected by interior renovation activities.

END OF SECTION 06 10 00

SECTION 07 84 00 - FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes firestopping for the following:
 - 1. Joints along the top of fire-resistance-rated wall construction and the underside of structure above.
 - 2. Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 3. Sealant joints in fire-resistance-rated construction.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 07 92 00 "JOINT SEALERS" for non-fire-rated joint sealers.
 - 2. Division 23 Sections specifying ducts and piping penetrations.
 - 3. Division 26 and 27 Sections specifying cable and conduit penetrations.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and the passage of smoke and other gases.
 - 1. All firestopping systems shall be reviewed and approved for use by the local fire authority prior to submission to Architect.
- B. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
- C. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable

floor areas. T-rated assemblies are required where the following conditions exist:

1. Where firestop systems protect penetrations located outside of wall cavities.
 2. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
 3. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
 4. Where firestop systems protect penetrating items larger than a 4-inch-diameter nominal pipe or 16 sq. in. in overall cross-sectional area.
- D. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E 119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.
- E. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.
1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 2. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- F. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified.
1. Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCS) and are nontoxic to building occupants.
- C. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.

1.5 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under the "System Performance Requirements" article:
 - 1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL or Warnock Hersey.
 - 2. Through-penetration firestop systems are identical to those tested per ASTM E 814 under conditions where positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
 - a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
 - b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory," or by Warnock Hersey.
 - 3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E 119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water, as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
 - a. Fire-Resistance Ratings of Joint Sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
 - b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspection agency.
- B. Installer Qualifications: Engage an experienced Installer who has completed firestopping that is similar in material, design, and extent to that indicated for Project and that has performed successfully.
- C. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
- D. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."

- E. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multi-component materials.
- B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilation: Ventilate firestopping per firestopping manufacturers, instructions by natural means or, where this is inadequate, forced air circulation.

1.8 SEQUENCING AND SCHEDULING

- A. Do not cover up those firestopping installations that will become concealed behind other construction until the owner's Representative and authorities having jurisdiction, if required, have examined each installation.

PART 2 - PRODUCTS

2.1 FIRESTOPPING, GENERAL

- A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.
- B. Accessories: Provide components for each firestopping system that are needed to install fill materials and to comply with "System Performance Requirements" article in Part 1. Use only components specified by the

firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:

1. Permanent forming/damming/backing materials including the following:
 - a. Ceramic fiber.
 - b. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
 - c. Joint fillers for joint sealants.
 2. Temporary forming materials.
 3. Substrate primers.
 4. Collars.
 5. Steel sleeves.
- C. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

2.2 FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOP SYSTEMS

- A. Ceramic-Fiber Forming/Backing/Damming Material: Formulation of continuous filament ceramic fibers and inorganic binders.
- B. Products: Subject to compliance with requirements, provide one of the following:
1. Ceramic-Fiber Forming/Backing/Damming Material:
 - a. Ultra Block, Backer Rod Mfg. & Supply Co.
 2. Silicone Sealants:
 - a. Dow Corning Firestop Sealant SL 2002, Dow Corning Corp.
 - b. Pensil 100 Firestop Sealant, General Electric Co.
 - c. Nelson CLK Firestop Sealant, Hevi-Duty/Nelson.

2.3 FIRE-RESISTIVE ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated that complies with ASTM 920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.
- B. Sealant Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by Architect from manufacturer's full range of standard colors for products of type indicated.
- C. Products: Subject to compliance with requirements, provide one of the following:
 1. Single Component, Neutral Silicone Sealant:
 - a. 864/Pecora Corp.
 - b. Dow Corning 795, Dow Corning Corp.
 - c. Silproof, General Electric Company
 2. Multicomponent, Nonsag, Urethane Sealant:
 - a. Dynatrol II, Pecora Corp.
 - b. Sonolastic NP 2, Sonneborn Building Products Div., ChemRex Inc.
 - c. Dymeric Plus, Tremco Inc.

2.4 MIXING

- A. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.
 2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing

- optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form release agents from concrete.
- B. Priming: Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration on to exposed surfaces.
- C. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.

3.3 INSTALLING THROUGH-PENETRATION FIRESTOPS

- A. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- B. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 INSTALLING FIRE-RESISTIVE JOINT SEALANTS

- A. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.
- B. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant

movement capability. Install sealants at the same time joint fillers are installed.

- C. Tool nonsag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

3.5 FIELD QUALITY CONTROL

- A. The Owner's Representative will examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.
- B. The Owner's Representative will report observations promptly and in writing to Contractor and Architect.
- C. Do not proceed to enclose firestopping with other construction until installations are approved.
- D. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.6 CLEANING

- A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.
- B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they 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 firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION 07 84 00

SECTION 07 92 00 - JOINT SEALERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SCOPE OF WORK

- A. This Section includes joint sealants for the following locations:
1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below:
 - a. Perimeter joints of exterior openings, metal frames / louvers.
 - b. Other joints as indicated on the drawings.
 2. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
 - a. Perimeter joints of hollow metal frames and gypsum board construction.
 - b. Perimeter joints of toilet fixtures.
 - c. Perimeter joints within detention plumbing fixtures and detention door frames with security sealants.
 - d. All exposed joints between drywall and other dissimilar materials.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 07 84 00 "FIRESTOPPING" for fire-resistance-rated joint sealants.
 2. Section 08 80 00 "GLASS AND GLAZING" for sealants used in glazing.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.
- B. Provide joint sealants for interior applications that have been produced and installed to establish and maintain airtight continuous seals that are water resistant and cause no staining or deterioration of joint substrates.

1.4 SUBMITTALS

- A. Product data from manufacturers for each joint sealant product required.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.
- B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Notify Architect and do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 - 2. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4.4 deg C).
 - 3. When joint substrates are wet.
- B. Joint Width Conditions: Notify Architect and do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Notify Architect and do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.8 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
 - 1. Provide selections made by Architect from manufacturer's full range of standard colors for products of types indicated.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with those requirements referencing ASTM 920 classifications for Type, Grade, Class, and Uses.
- B. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Multi-Part, Non Sag Urethane Sealants:
 - a. "Dynatrol II", Pecora Corp.
 - b. "Sonolastic NP2", Sonneborn Building Products Division
 - c. "Dymeric Plus", Tremco.
 - 2. Multi-Part, Self Levelling Urethane Sealant:
 - a. "Sikaflex - 20 SL", Sika Corp.
 - b. "Sonolastic SL2", Sonneborn Building Products Division.

2.3 LATEX JOINT SEALANTS

- A. General: Provide manufacturer's standard one-part, nonsag, mildew-resistant, paintable latex sealant of formulation indicated that is recommended for exposed applications on interior and protected exterior locations and that accommodates indicated percentage change in joint width existing at time of installation without failing either adhesively or cohesively.
- B. Acrylic-Emulsion Sealant: Provide product complying with ASTM C 834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.

- C. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acrylic-Emulsion Sealant:
 - a. "AC-20", Pecora Corp.
 - b. "Sonolac," Sonneborn Building Products Div., ChemRex, Inc.
 - c. "Tremco Acrylic Latex 834, " Tremco, Inc.

2.4 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. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Open-cell polyurethane foam.
 - 2. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
 - 3. Proprietary, reticulated, closed-cell polymeric foam, nonoutgassing, with a density of 2.5 pcf and tensile strength of 35 psi per ASTM D 1623, and with water absorption less than 0.02 gms/cc per ASTM C 1083.
 - 4. Any material indicated above.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as 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.

2.5 SECURITY SEALANTS

- A. General: Provide manufacturer's standard rigid, two-part, high solids, high modulus epoxy resin compound that is recommended for high security areas of prisons and other security areas and that provides high abrasion resistance and "pick-proof" properties.
- B. Epoxy Resin Sealant: Provide product complying with ASTM C 881, Type I.
- C. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Epoxy Resin Sealant:

- a. "DynaPoxy EP-1200", Pecora Corp., or equal.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with 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. Notify Architect and do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer 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 concrete, masonry, unglazed surfaces of ceramic tile, and similar 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 from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 3. Remove laitance and form release agents from concrete.

4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other 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.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. 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 printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- C. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth,

uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved 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 or from damage resulting from construction operations or other causes so that they 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 that and installations with repaired areas are indistinguishable from original work.

3.6 GUARANTEE AND CERTIFICATION

- A. This Contractor shall guarantee **in writing** that all sealant work will be free from defects of materials and workmanship for a period of five (5) years. The following types of failure will be adjusted:
 1. Leakage, cracking, crumbling, melting, shrinking or running of caulking, or staining of adjacent work by caulking.
- B. This Contractor shall repair and replace work which becomes defective during guarantee term without cost to the Owner.

3.7 SCHEDULE

- A. Exterior Joints:
 1. Exterior openings, metal frames and aluminum doors / frames / louver perimeters: Multi-Part, Non-Sag Urethane Sealant
 2. All exposed joints between dissimilar materials: MultiPart, Non-Sag Urethane Sealant
- B. Interior Joints

1. Perimeter joints of hollow metal frames and gypsum board construction: Acrylic-Emulsion Sealant
2. Perimeter joints of toilet fixtures: Acrylic-emulsion Mildew-Resistant Sealant
3. Detention plumbing fixtures, detention door frames: Epoxy Resin Sealant.
4. All exposed joints between drywall or other dissimilar materials: Urethane Sealant or Acrylic-Emulsion Sealant if in contact with epoxy paint.

END OF SECTION 07 92 00

OPENINGS SCHEDULE

OPENING NUMBER		DOOR										FRAME						FIRE RATING	FIRE CODE							ACCESSIBILITY REQUIREMENTS					HARDWARE SET NO.	OPENING NOTES	BULLETIN - REVISION NUMBER
		ACTIVE LEAF	DOUBLE DOOR LEAF	SINGLE DOOR LEAF	ACTIVE LEAF (PRH & PP Hardware)	IN - ACTIVE LEAF	HEIGHT	THICKNESS	HANDING	DEGREE OF SWING REQUIRED	DOOR MATERIAL	FRAME MATERIAL	HEAD DETAIL	JAMB DETAIL	SILL / THRESHOLD DETAIL	SOUND DOOR AND GASKETING	U. L. RATING (IN MINUTES)		GASKETS AND SMOKE SEALS	PANIC RELEASE HARDWARE	POSITIVE LATCHING	AUTOMATIC CLOSING	ELECT. MAG. DOOR RELEASE	PUSH / PULL (Interior Openings)	"U" HANDLE / LEVER HANDLE	MOP, KICK, & ARMOR PLATES	TACTILE WARNING	ACCESSIBLE THRESHOLD	ELECTRICAL / SECURITY				
102A	A-1.1	●	3'-0"		7'-0"	1-3/4"	RH				HM-1	HMF-1	H-2	J-2	FFS		45	SP		●	●	●	●	●	●	●	●	●	001	AC, EU.06.4PU, E1,			
102B	A-1.1	●	3'-0"		7'-0"	1-3/4"	RH				HM-1	HMF-1	H-1	J-1	M.TH		45	SP		●	●	●	●	●	●	●	●	002					
105A	A-1.1	●	3'-0"		7'-0"	1-3/4"	LH				HM-1	HMF-1	H-1	J-1	FFS		45	SP		●	●	●	●	●	●	●	●	001	AC, EU.06.4PU, E1,				
105B	A-1.1	●	3'-0"		7'-0"	1-3/4"	LH				HM-1	HMF-1	H-1	J-1	M.TH					●	●	●	●	●	●	●	002						
108A	A-1.1	●	3'-0"		7'-0"	1-3/4"	LHR	90			HM-1	HMF-1	H-1	J-1	RRS					●	●	●	●	●	●	●	003	ALT.2, AC, EU.06.4PU, E1, CL06.1, SW1					

DRAWING NO: A-1.1 NEW WORK OVERALL LOWER LEVEL PLANS

OPENING NOTES

OPENING NUMBER	OPENING NOTES
102A	AC, EU.06.4PU, E1,
102B	
105A	AC, EU.06.4PU, E1,
105B	
108A	ALT.2, AC, EU.06.4PU, E1, CL06.1, SW1

SCHEDULE GENERAL NOTES

CONSTRUCTION MANAGER / GENERAL CONTRACTOR:

CONSTRUCTION MANAGER / GENERAL CONTRACTOR / HARDWARE SUPPLIER:

Shall coordinate an inspection, with all manufacturer's representatives to confirm that all hardware has been installed and adjusted properly;
See "Specification Section - 08 71 00 - 3.2 - INSTALLATION"

HARDWARE SUPPLIER:

Must employ an experienced Architectural Hardware Consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

CONFLICTS between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.

HARDWARE SUPPLIER must schedule a pre - installation meeting to instruct installers on proper installation and adjustment of the Locks, Exit Devices, and Closers. A manufacturer's representative of each major hardware category shall be present to complete the instructions, and then certify to the Architect that the door hardware installer has been trained in the proper installation procedures and is certified to install the finish hardware.

DOOR HARDWARE INSTALLATION: All door hardware shall be installed according to manufactures' instructions.

This includes following the template required to complete the intended operation of the door hardware, and all fastener holes required shall be drilled and tapped to the correct size as

SECTION 08 11 13 - STANDARD STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes the following products:
 - 1. Doors: standard steel doors for interior locations.
 - 2. Frames: Pressed steel frames for doors.
 - 3. Assemblies: Provide standard steel door and frame assemblies as required for the following:
 - a. Labeled and fire rated.

1.3 RELATED SECTIONS

- A. Painting primed doors and frames is specified in Section 09 90 00, "PAINTING."
- B. Door hardware is specified in Section 08 71 00 "DOOR HARDWARE".
- C. Glass and Glazing is by Section 08 80 00 "GLASS AND GLAZING".

1.4 REFERENCES

- A. NFPA 80: Standard for Fire Doors and Other Opening Protectives
- B. NFPA 101: Life Safety Code
- C. NFPA 252: Standard Methods of Fire Tests of Door Assemblies
- D. NFPA 257: Standard on Fire Tests for Window and Glass Block Assemblies
- E. UL 10C: Standard for Positive Pressure Fire Tests of Door Assemblies
- F. ICC/ANSI A117.1: Accessible and Usable Buildings and Facilities
- G. ANSI A 250.4: Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings

- H. ANSI A250.10: Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
- I. ANSI/DHI A115.1G: Installation Guide for Doors and Hardware
- J. ASTM A 653: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- K. ASTM A 1008: Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- L. NAAMM HMMA 840-99: Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames
- M. C518 - 04 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, finishes, detail of molding, conduit and prep for power signal and control systems.
- C. Shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.
 - 2. Indicate coordination of glazing frames and stops with glass and glazing requirements.
- D. Label Construction Certification: For door assemblies required to be fire-rated and exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

1.6 QUALITY ASSURANCE

- A. Provide doors and frames from a single source manufacturer.
- B. Distributor's qualifications: Five (5) years' experience in similar projects.
- C. Installer's qualifications: Five (5) years' experience in similar projects.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames upon delivery for quantity and damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store and protect materials in accordance with NAAMM HMMA 840. Store doors and frames at building site under cover. Place units on minimum 4-inches high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4-inches spaces between stacked doors to promote air circulation.
- D. Identify products with a label indicating:
 - 1. Manufacturer's name
 - 2. Architect's opening number
 - 3. Product description and dimensions

1.8 WARRANTY

- A. Provide written manufacturer's warranty for one (1) year from substantial completion of the project on both material and workmanship.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide standard steel doors and frames by one of the following:
 - 1. Standard Steel Doors and Frames:
 - a. De la Fontaine Industries
 - b. Amweld Building Products, Inc.
 - c. Ceco Corp.
 - d. Republic Builders Products.
 - e. Steelcraft Manufacturing Co.

2.2 MATERIALS

- A. Steel requirements
 - 1. Interior doors and frames: Comply with ASTM A653, Designation A40.
- B. Door cores
 - 1. Interior openings: Impregnated Honeycomb, with 1" cell diameter.

2.3 FABRICATION

- A. Frames
 - 1. Frame assembly: face welded, dressed smooth with seamless face.
 - 2. Gauges
 - a. Interior openings up to 48" width: 16-gauge
 - b. Interior openings over 48" width: 14-gauge
 - 3. Side light, transom and borrowed light
 - a. Install screws on non-secure side.
 - b. Glazing bead: 18-gauge 5/8"x 5/8", screw applied with countersunk holes, butted corners.
 - c. Glazing by Section 08 80 00
- B. Anchors
 - 1. Suitable for wall conditions.
 - 2. Located close to hinge reinforcements and at the same height on strike jamb.
 - a. Quantity: 2 per jamb up to 60" of door opening height, one additional anchor for each additional 30" of door height (or fraction thereof).
 - b. An additional floor anchor at the bottom of each jamb.
- C. Doors
 - 1. Interior openings: Full flush lock seam on edge, 18-gauge
 - 2. Door performance: Comply with ANSI A250.4
 - b. Level B (moderate duty) for interior doors
 - 3. End channels: 16-gauge, spot welded every 6".
 - a. Interior openings: Steel flush channel unfilled at top location. Steel inverted channel at bottom location.
 - 4. Vertical edges on active doors:
 - a. Beveled edges on both sides: 1/8" in 2".
 - b. **Square vertical edges are not acceptable.**
- D. Clearances
 - 1. On fire rated openings: comply with NFPA 80.
 - 2. On non-fire rated openings:
 - a. Between door and frame: 1/8"

- b. Between meeting edges of pair of doors: 1/8"
 - c. Between bottom of door and bottom of frame: 3/4" without threshold.
- E. Manufacturing tolerances:
- 1. Frames: Width: +1/16", -1/32"
Face, stop, rabbet and jamb depth: +/-1/32
 - 2. Doors: Width and height: +/- 3/64"
Thickness: +/- 1/16"
Flatness: +/- 1/16"
Door Twist: +/- 1/16"
- F. Fire rated openings
- 1. Manufacture doors and frames as successfully tested, in accordance with:
 - a. NFPA 80
 - b. NFPA 252
 - c. NFPA 257
 - d. UL10C
 - 2. Identify each product with a fire label from one of the following testing agency:
 - a. Underwriters Laboratories (UL)
 - b. Warnock Hersey (ITS)
- G. Frame hardware preparation
- 1. Surface-applied hardware: factory reinforced only, 12-gauge
 - 2. Mortise hardware: factory reinforced, drilled and tapped.
 - 3. Hinge and pivot reinforcements: to prevent door sagging.
 - a. 7-gauge flat hinge reinforcements at all locations or
 - b. 10-gauge high frequency hinge reinforcements, with a flange.
 - 4. Strike reinforcement: 16-gauge.
 - 5. Closer reinforcement: 12-gauge.
 - 6. Other reinforcements: 16-gauge.
- H. Door hardware preparation
- 1. Surface-applied hardware: factory reinforced only, 16-gauge
 - 2. Mortise hardware: factory reinforced, drilled and tapped.
 - 3. Hinge and pivot reinforcements: to prevent door sagging.
 - a. 7-gauge flat hinge reinforcements at all locations or
 - b. 10-gauge high frequency hinge reinforcements, with a flange.
 - 4. Lock front reinforcement: 12-gauge
 - 5. Flush bolt reinforcement: 12-gauge
 - 6. Closer reinforcement: 16-gauge
 - 7. Other reinforcements: 16-gauge
- I. Finishing
- 1. Hot dipped galvanized A40/A60

- a. Factory applied primer to protect the area where zinc was removed in the welding process.
2. Primer
 - a. Factory applied primer. Primer shall comply with ANSI A250.10.

2.4 ACCESSORIES

- A. Vision kits
 1. Sandwich overlapping kit.
 2. 20-gauge.
 3. Countersunk holes.
 4. Install screws on non-secure side.
 5. 18-gauge channel reinforcements on half-glass doors.
 6. Glazing by Section 08800.
- B. Frame accessories
 1. Dust/mortar box at strike location on drywall frames
 2. Shipping bars on welded frames
 - a. 1 for frames with less than 7" jamb depth
 - b. 2 for frames with 7" jamb depth and more
 3. Drill holes for silencers:
 - a. Single openings: 3 per strike jamb.
 - b. Pair openings: 2 per header.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect rough openings to detect problems that would prevent the proper installation of doors and frames.
- B. Rough openings shall be square, level and plumb with accurate dimensions.

3.2 INSTALLATION

- A. Plan and manage a pre-installation meeting to explain the proper methods to install hollow metal doors and frames.
- B. Remove shipping bars on welded frames before installation and verify frame dimensions.
- C. For grouted frames, apply on site a coat of bituminous coating inside the frame throat.
- D. Install doors and frames in accordance with:
 1. Approved door and hardware schedule
 2. Approved shop drawings

3. Manufacturer's recommendations
4. Local building codes
5. NFPA 80
6. ANSI/DHI A115.1G
7. NAAMM HMMA 840

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Repair or replace damaged products.
- B. Correct defects in installation.
- C. Protect doors and frames until transfer of the building to the Owner.

END OF SECTION 08 11 13

SECTION 08 31 13 - ACCESS DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing access doors for installation in the following types of construction:
 - 1. Gypsum drywall construction, sized for adequate access to otherwise concealed valves, gauges, operable parts.
- B. Access doors required for Division 23, and Division 26 installations are to be furnished and installed by those Trade Contractors.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product data in form of manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions, and directions for installation of anchorage, devices.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain access doors for entire project from one source from a single manufacturer.
- B. Size Variations: Obtain Architect's acceptance of manufacturer's standard size units, which may vary slightly from sizes indicated.
- C. Coordination: Furnish inserts and anchoring devices that must be built into other work for installation of access doors. Coordinate delivery with other work to avoid delay.

1.5 PROJECT CONDITIONS

- A. Verification: Obtain specific locations and sizes for required access doors from trades requiring access to concealed equipment, and indicate on submittal schedule.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide access doors by one of the following:
 - 1. Cesco Products
 - 2. J.L. Industries
 - 3. Milcor, Inc.
 - 4. Nystrom, Inc.

2.2 MATERIALS AND FABRICATION

- A. General: Furnish each access door assembly manufactured as an integral unit, complete with all parts, and ready for installation.
- B. Steel Access Doors and Frames: Fabricate units of continuous welded steel construction unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of support shown.
- C. Frames: Fabricate from 16-gage steel.
 - 1. Fabricate frame with exposed flange nominal 1-inch wide around perimeter of frame for units installed in the following construction:
 - a. Drywall finish.
 - b. Plywood.
 - 2. For gypsum drywall furnish perforated frames with drywall bead.
- D. Flush Panel Doors: Fabricate from not less than 20 gage sheet steel, with concealed continuous piano hinge set to open 175 degrees. Finish with manufacturer's factory-applied prime paint.
- E. Locking Devices: Furnish flush, screwdriver-operated cam locks of number required to hold door in flush, smooth plane when closed.
 - 1. Provide one cylinder lock per access door. Furnish 2 keys per lock. Key all locks alike, unless otherwise scheduled.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with manufacturer's instructions for installation of access doors.
- B. Coordinate installation with work of other trades.
- C. Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

3.2 ADJUST AND CLEAN

- A. Adjust hardware and panels after installation for proper operation.
- B. Remove and replace panels or frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 31 13

08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same Sections as the doors and door frames on which they are installed. Furnish and deliver all door hardware necessary for all doors, also hardware as specified herein and as enumerated in hardware sets and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware.
- B. **ALL DOOR HARDWARE MUST BE FURNISHED BY SECTION 087100 DOOR HARDWARE SUPPLIER.**

"CONTRACTS, Including Door Hardware, ISSUED TO ALUMINUM DOOR SUPPLIER" must stipulate aluminum door hardware must be purchased from SECTION 087100 HARDWARE SUPPLIER
- C. **Hardware Supplier:** Must employ an experienced **Architectural Hardware Consultant (AHC)** who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
- D. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 8 Section 08 06 10 "SCHEDULE FOR OPENINGS".
 - 2. Division 8 Section 08 11 13 "HOLLOW METAL DOORS AND FRAMES".
 - 3. Division 26 "ELECTRICAL"

1.3 REFERENCES

A. Standards:

1. ANSI/BHMA, A156.1 (2013) - Butts & Hinges
2. ANSI/BHMA, A156.3 (2008) - Exit Devices
3. ANSI/BHMA, A156.4 (2008) - Door Controls - Closers
4. ANSI/BHMA, A156.5 (2010) - Auxiliary Locks and Associated Products
5. ANSI/BHMA, A156.6 (2010) - Architectural Door Trim
6. ANSI/BHMA, A156.7 (2009) - Template Hinge Dimensions
7. ANSI/BHMA, A156.8 (2010) - Door Controls - Overhead Stops and Holders
8. ANSI/BHMA, A156.13 (2012) - Mortise Locks & Latches, Series 1000
9. ANSI/BHMA, A156.16 (2008) - Auxiliary Hardware
10. ANSI/BHMA, A156.18 (2012) - Materials and Finishes
11. ANSI/BHMA, A156.21 (2009) - American National Standard for Thresholds
12. ANSI/BHMA, A156.22 (2012) - Door Gaskets and Edge Seal Systems
13. ANSI/BHMA, A156.25 (2007) - Electrified Locking Devices
14. ANSI/BHMA, A156.28 (2007) - Recommended Practices for Keying Systems
15. ANSI/BHMA, A156.29 (2012) - American National Standard for Exit Locks, Exit Alarms, Alarms for Exit Devices
16. ANSI/BHMA, A156.30 (2003) - American National Standard for High Security Cylinders
17. ANSI/BHMA, A156.36 (2010) - American National Standard for Auxiliary Locks
18. ANSI/BHMA, A156.115 (2006) - Hardware Preparation in Steel Doors and Steel Frames
19. NFPA 80 - Fire Doors and Windows
20. UL10C - Positive Pressure Fire Tests of Door Assemblies
21. AIA 232 2009 - General Conditions of the Contract for Construction, Construction Manager as Advisor Edition.

B. Codes:

1. Applicable state and local building codes.
2. 2003 International Building Code / 2005 State Building Code
– State of Connecticut
3. NFPA 101 - Life Safety code
4. NFPA 105 - Smoke and Draft Control Door Assemblies
5. ICC / ANSI A117.1 - Accessible and Usable Buildings and Facilities
6. ADA - Americans with Disabilities Act

C. UL Underwriters Laboratories

1. UL 10C – Fire Tests of Door Assemblies
2. UL 305 – Panic Hardware

D. DHI – Door and Hardware Institute

1. Sequence and Form and for the Hardware Schedule
2. Recommended Locations for Builders Hardware

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Section 1 Specification Sections.
- B. Product data including manufacturer's technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish of door hardware.
- C. Final hardware schedule must be coordinated with doors, frames, and related work to ensure proper size, thickness, hand function, and finish of door hardware. **Conflicts between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.**
- D. **HARDWARE SUPPLIER shall confirm specified LOCK FUNCTIONS with the OWNER at the KEYING MEETING.**

1. **Final Hardware Schedule Content:** Based on hardware indicated, organize schedule into "**HARDWARE SETS**" indicating complete designation of every item required for each door or opening. Include the following information:

Type, style, function, size, and finish of each hardware item.

- a. Name and manufacturer of each item.
- b. Fastenings and other pertinent information.
- c. Location of Hardware Set, cross-referenced to indication of Drawings both on floor plans, in door, and frame schedule.
- d. Explanation of all abbreviations, symbols, and codes contained in schedule.
- e. Mounting locations for hardware.

Door handles, pulls, latches, locks and other operating devices shall be installed 34 inches (864 mm) minimum and 48 inches (1219 mm) maximum above the finish floor. Locks used only for security purposes and not used for normal operation are permitted at any height.

Provide "DHI" Standard Mounting Locations in the Hardware Submittal.

- f. Door and frame sizes and materials.
- g. Keying information.
- h. Name and phone number for the local manufacturer's representative for each product.

2. Submittal Sequence: submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review to schedule.
 3. Keying Schedule: After a keying meeting between representatives of the Owner, Architect, hardware supplier, and, if requested, the representative for the lock manufacturer, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled.
- E. Samples: If requested by Architect, submit samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
1. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.
- F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- G. Wiring Diagrams: Upon final approval of the hardware schedule, submit wiring and riser diagrams as required for the complete and proper installation of all electrical, electromechanical, and electromagnetic products. Submittals must represent that coordination has occurred with the security system submittals and shop drawings. Also, that shop drawings submitted and schedules developed have been specifically reviewed and coordinated for both physical equipment fitment and power requirements with the security system contractor approved shop drawings.
- H. "Hardware Schedule and Templates", Hardware schedules shall be created which reference specifically to the specified lock voltages and separately indicating whether the door is a "fail safe" or "fail secure" electrified lock arrangement.
- I. Electrified Hardware: Electrified Hardware to be used for security purposes must be UL Listed for Burglary Applications.
- J. At the completion of hardware installation, and prior to issuance of certificate of occupancy, prepare and submit the hardware inspection report to include the following:

1. Current and predictable problems of substantial nature in the performance of the hardware.
 2. Hardware has been installed and adjusted in accordance with manufacturer's recommendations and instructions.
- K. At the completion of the project, provide Owner with two (2) copies of an Operation and Maintenance Manual. This manual shall consist of a hard cover (3) ring binder with the project name listed on the front. Included will be:
1. A final copy of the approved and as built hardware schedule.
 2. A final copy of the approved keying schedule.
 3. Catalog cuts for each item used in the project.
 4. Parts list and numbers for each item used.
 5. Maintenance instructions for all items.
 6. Name, address and phone number of local representative for each item used.

1.5 QUALITY ASSURANCE

- A. Substitutions: Products are to be those specified to ensure a uniform basis of acceptable materials. Requests for substitutions must be made in accordance with Section 1 requirements. If proposing a substitute to a specified item, indicate basis for substitution and savings to be made. Provide sample if requested. Certain products have been selected for their unique characteristics and particular project suitability. All Hardware is "Basis-of-Design" product specification as defined in Section 08 71 00. Model numbers (and Manufacturer's) listed in "Hardware Set Schedule" are "Basis-of-Design".
1. Items specified, as "no substitution" shall be provided exactly as listed.
 2. Items listed with no substitute manufacturers listed have been requested by the Owner or Architect to match existing for continuity and/or future performance and maintenance standards or because there is no known equal product.
 3. If no other products are listed in a category, then "no substitution" is implied.
- B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, architect, and Contractor, at reasonable times during the course of the Work, for consultation.
1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.

- C. A pre-installation meeting shall be held to instruct installers on the proper installation and adjustment of door hardware. A representative of each major hardware category, including, but not limited to, Locks, Exit Devices, & Closers, shall instruct the installers on the correct installation of their products. The manufacturers of the Door Hardware provided on this project shall certify to the Architect that the door hardware installer for this project has been trained in the proper installation procedures and is certified to install the door hardware.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Intertek Testing Services, Warnock Hersey, Factory Mutual, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.
- E. Accessible Hardware: Door Hardware; *Handles, pulls, latches, locks and other operable parts on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, pinching, or twisting of the wrist to operate. Such hardware shall 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides. EXCEPTION: Locks used only for security purposes and not used for normal operation are permitted in any location.*
- F. Accessible Hardware: Door-Opening Force; Fire Doors shall have the minimum opening force allowable by the appropriate administrative authority. The maximum force for pushing open or pulling open doors other than fire doors shall be as follows:
1. Interior hinged door: 5.0 pounds
 2. Sliding or folding door: 5.0 pounds
 3. Fire Doors: Minimum opening force allowable by authorities having jurisdiction, but not greater than 10 lbf

These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. The maximum force required to release the latch shall not exceed 15 lbf.

4. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
5. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

- C. No liability is to be assumed where damage or faulty operation is due to improper installation, improper use, or abuse.
- D. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Butts and Hinges:
 - a. Hager Companies
 - b. Bommer
 - c. Ives, Allegion
 - d. McKinney Hinge, Div of Assa Abloy.
 - e. PBB World Class Hinges
 - f. Stanley Hardware
 - 2. Cylinders and Locks:
 - a. Corbin-Russwin Architectural Hardware, Div of Assa Abloy, "ML2000" Series.
 - 3. Push/Pull Units:
 - a. Hager Companies
 - b. Burns Manufacturing, Inc
 - c. Ives, Allegion
 - d. Rockwood, Mfr.
 - 4. Overhead Surface Closers:
 - a. DORMA Architectural Hardware "8900" Series.
 - b. LCN, Allegion. "4000 (Heavy Duty Arms)" Series
 - c. Norton, Div of Assa Abloy. "PR7500/PR7700" Series
 - d. Sargent, Div of Assa Abloy, Inc., "351 (Heavy Duty Arms)" Series

5. Door Control Devices:
 - a. DORMA Architectural Hardware.
 - b. Burns Manufacturing, Inc
 - c. Glynn Johnson, Allegion.
 - d. MAG Security
 - e. Rixson, Div of Assa Abloy
 - f. Sargent, Div of Assa Abloy

6. Kick and Mop Plates:
 - a. Hager Companies
 - b. Burns Manufacturing, Inc.
 - c. Ives, Allegion.
 - d. Rockwood

7. Thresholds:
 - a. Hager Companies
 - b. National Guard Products.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.

8. Smoke and Sound Stripping:
 - a. Hager Companies
 - b. National Guard Products.
 - c. Pemko Manufacturing Co., Inc.
 - d. Reese Enterprises, Inc.

9. Door Stops
 - a. Hager Companies
 - b. Burns Manufacturing, Inc
 - c. Glynn Johnson, Allegion.
 - d. H.B. Ives, Allegion
 - e. Rockwood Manufacturing

10. Electrified Hinges
 - a. Hager Companies
 - b. Bommer
 - c. McKinney Hinge, Div of Assa Abloy
 - d. PBB World Class Hinges
 - e. Stanley Hardware

2.2 SCHEDULED HARDWARE

- A. Requirements for each type of door hardware are indicated on the “Door Schedule”, and in the Schedule at the end of this Section. Products are identified by using hardware designation numbers of the following:
 - 1. Manufacturer’s Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Manufacturer and model numbers indicated in Hardware Sets constitute a “Basis-of-Design” product specification as defined in this Section.

2.3 MATERIALS AND FABRICATION

- A. Manufacturer’s Name Plate: Do not use manufacturers’ products that have manufacturer’s name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
 - 1. Manufacturer’s identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Product hardware units of basic metal and forming methods indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized), quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish “optional” materials or forming methods for those indicated, except as otherwise specified.
- C. Fasteners: Provide hardware manufactured to conform to published templates generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including “prepared for paint” surfaces to receive paint.
- E. Provide concealed fasteners. Provide tamper resistant fasteners when they cannot be concealed. Fasteners shall be of the same finish as the balance of the hardware. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES, BUTTS, AND CONTINUOUS HINGES

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1. For metal doors and frames install machine screws into drilled and tapped holes.
 - 2. For wood doors and frames install wood screws.
 - 3. For fire-rated wood doors install #12 x ¼ inch, threaded-to-the-head steel wood screws.
 - 4. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Out-Swing Exterior Doors: Non-removable pins.
 - 2. Interior Doors: Non-rising pins.
 - 3. All "Card Reader Doors": Non-removable pins.
- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches of additional height.
 - 1. Fire-Rated Doors: Not less than 3 hinges per door leaf for doors 86 inches or less in height with same rule for additional hinges.
- E. Size and weight of butts:
 - 1. See Hardware Sets for Details.
- F. Power Transfer Hinges
 - 1. Power transfer hinges may be EPT or ETW types. Armored cable may be used only where EPT or ETW electrified hinges are not practical.
 - 2. Furnish all power transfer hinges as 12 conductor units.

2.5 LOCK CYLINDERS AND KEYING

- A. Review the keying system with the Owner and provide the type required grandmaster or great-grandmaster, integrated with Owner's existing system.
- B. HARDWARE SUPPLIER SHALL CONFIRM SPECIFIED LOCK FUNCTIONS WITH OWNER AT THE KEYING MEETING.

- C. Construction Keying: Provide temporary keyed construction cores where specified. Provide construction master keys in quantity as required by project Contractor. Replace construction cores with permanent cores. Furnish permanent cores for installation by contractor unless directed in writing otherwise.
- D. Key Registration List: Provide keying transcript list to Owner's representative in the proper format for importing into key control software.

- E. Equip locks with manufacturer's 6-pin tumbler "interchangeable core" cylinder employing "RESTRICTED KEYWAY". Such cylinders have cores that are removable by the use of a special "control key". Deliver hardware to the contractor with temporary cores installed and keyed alike. Permanent cores are to be mastered keyed as directed by the owner. Deliver permanent cores and keys to the owner when notified by the owner in writing. Temporary cores and keys are to be returned to the hardware supplier by the contractor within 10 days of their replacement by permanent cores.
(Do Not Provide Extra Key Blanks if Restricted Keyway has been specified.)
 - 1. Furnish 12 each "Temporary Change Keys" and 2 each "Temporary Core Control Keys".
 - 2. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, and 5 grandmaster keys for each grandmaster system. Furnish 6 each "Core Control Keys".
Furnish 12 Temporary Change Keys and 2 Temporary Core Control Keys.
 - 3. Furnish 12 each additional core for owner's stock.
 - 4. Install "FINAL CORES" when instructed by Owner.
 - 5. Deliver keys to Owner.
- F. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
- G. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
- H. Key Material: Provide keys of nickel silver only.
- I. Final cores to be installed by the hardware supplier, installer must verify that all cylinders are working correctly.

2.6 KEY CONTROL SYSTEM

- A. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150 percent of the number of "Key Sets" required for the Project.
 - 1. Provide complete cross-index system set up by key control manufacturer, and place keys on markers and hooks in the cabinet as determined by the final key schedule.
 - 2. Provide hinged-panel type cabinet for wall mounting.
 - 3. Acceptable Manufacturers
 - a. Lund Equipment.
 - b. MMF Industries.
 - c. Telkee.

2.7 LOCKS, LATCHES, AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 - 1. Provide flat lip strikes for locks with 3 pieces, anti-friction latchbolt as recommended by manufacturer.
 - 2. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
 - 3. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.
 - 4. Provide roller type strikes where recommended by manufacturer of the latch and lock units.
 - 5. Electrified locks, wherever possible, shall be "fail secure". Specified hardware must always allow exiting in the path of exiting travel from the secured room. Where "fail safe" doors are required to comply with life safety exiting code, insure that the fire alarm specifications call for an appropriate relay to kill power between the lock power supply and the electrified lock so that it must go to an unlocked condition.
- B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the 2010 ADA Standards, ICC/ANSI A117.1.
 - 1. Comply with the following maximum opening-force requirements:

- a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 - b. Folding Doors: 5 lbf applied parallel to door at latch.
 - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction, but not greater than 10 lbf.
2. Comply with the following maximum closing speed requirements:
 - a. Adjust closers so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees is to be 5 seconds minimum.
 - b. Adjust closers so that from an open position of 70 degrees, the time required to move the door to an open position of 3 inches from the latch is to be 3 seconds minimum.
- C. Mortise Locks
1. Mortise locks shall be certified as ANSI A156.13, Series 1000, Operational and Security Grade 1, and meets A117.1 Accessibility Code, and shall be manufactured from heavy gauge steel, containing components of steel with zinc dichromate plating for corrosion resistance. Lock case shall be multi-function and field reversible for handling.
 2. Locks are to have a standard 2-3/4" backset with a full 3/4" throw 2-piece stainless steel mechanical anti-friction latch-bolt.
 3. Lever trim shall be solid brass, bronze, or stainless steel, cast or forged in the design specified, with wrought roses and external Security requirement. Levers shall be thru-bolted to assure proper alignment, and shall have a 2-piece spindle. Lever trim on the secure side of doors serving rooms considered by the authority having jurisdiction to be hazardous shall have a tactile warning.
 4. Furnish and Install "THRU BOLTS" on Hollow Metal, and Wood Doors.
 5. Provide electrical options as scheduled.
 - a. "Request to Exit / Touch Bar Monitor", Electrified Panic Hardware shall be provided with one internal SPDT switch which monitors the touch bar, as called for on the security system drawings.
 - b. "Latch bolt Monitoring", Electrified Panic Hardware shall be provided with one internal SPDT switch which monitors the latch bolt, as called for on the security system drawings.
 - c. Lock Power Supplies: It is imperative that the security contractor and hardware supplier coordinate the lock voltage requirements, fail safe/fail secure requirements, lock in-rush current requirements, whether locks are continuous duty or not and any other related issues. Power supplies to be furnished by Door Hardware Suppliers and installed by the Security or Electrical Contractor. Locate power supplies and battery backup in the access control mechanical space when wire run lengths permit. Where wire runs

- exceed manufacturer's written recommendations, coordinate the installation location with Construction Manager / General Contractor and Architect..
- d. Power transfer hinges may be "EPT" or "ETW" types. Armored cable may be used only where "EPT" or "ETW" electrified hinges are not practical.
 - e. Furnish all power transfer hinges as 10 conductor units.

- D. Where notation for knurling appears on door schedule, provide knurled outside lever.

2.8 CLOSERS AND DOOR CONTROL DEVICES.

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 - 1. Where parallel arms are indicated for closers, provide closer with Heavy Duty Arm.
 - 2. Provide parallel arms for all overhead closers, except as otherwise indicated.
 - 3. Closers must operate at 180 degree opening where indicated on plans and door schedule.
 - 4. Provide all necessary Drop Plate Brackets, Shims, and Angle Brackets, where required to complete installation of closers on doors and frames.
 - 5. Furnish and Install "THRU BOLTS" on Hollow Metal, and Wood Doors.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and closing speed.

2.9 DOOR STOPS AND HOLDERS

- A. It shall be the responsibility of the hardware supplier to provide door stops for all doors in accordance with the following requirements. Provide Door Stops as indicated in Hardware Sets.

2.10 DOOR TRIM UNITS

- A. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
- B. Fabricate protection plates not more than 2 inches less than door width on push side of door and by height indicated.
 - 1. Metal Plates: Stainless steel, 0.050 inch (U.S. 18 gage).

2. Provide UL Rated "KICK / ARMOR" Plates where detailed on UL Rated Openings.

2.11 THRESHOLDS, WEATHER-STRIPPING, SOUND STRIPPING AND SEALS

- A. Furnish as scheduled and per architectural details. Match finish of other items as closely as possible. Provide only those units where resilient or flexible seal strip is easily replaceable and readily available.

2.12 MISCELLANEOUS HARDWARE

- A. Furnish four (4) extra screws or fasteners of each type, used for the hinges, door closers, holders and protective plates of the same finish used in this project.
- B. Furnish two (2) additional adjusting wrenches for the door closers.

2.13 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if not latch or lock sets).
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes", including coordination with the traditional U.S. finishes show by certain manufacturers for their products.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of any hardware, examine all doors, frames, walls and related items for conditions that would prevent proper installation of door hardware. Correct all defects prior to proceeding with installation.

3.2 INSTALLATION

- A. All hardware to be installed by qualified tradesmen, skilled in the application of commercial grade hardware. For technical assistance if necessary, installers may contact the manufacturer's rep for the item in question.
- B. Furnish and Install "THRU BOLTS" on Hollow Metal and Wood Doors.
- C. Electronic hardware shall be furnished and installed by qualified tradesmen, but shall be wired by the security system contractor. Door Hardware installer shall be present to complete final adjustments to door hardware, when security contractor completes electrical terminations.
- D. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.
- E. Install each hardware item in compliance with the manufacturer's instructions and recommendations, using only the fasteners provided by the manufacturer.
- F. Do not install surface mounted items until finishes have been completed on the substrate. Protect all installed hardware during painting.
- G. Set units' level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- H. All operating parts shall move freely and smoothly without binding, sticking, or excessive clearance.

3.3 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units, which cannot be adjusted to operate freely and smoothly.
- B. Where door hardware is installed more than one-month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy to perform a final check and adjustment of all hardware items in such space or area. Clean operating doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.
- C. Clean adjacent surfaces soiled by hardware installation.
- D. At the completion of "BALANCING" of all "AIR HANDLING SYSTEMS", prior to owner taking occupancy, 'Hardware Installer" will re-adjust all closer closing and latching cycles.

- E. **Approximately six months after the Date of Substantial Completion, the installer shall perform the following:**
1. **Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified hardware.**
 2. **Consult with and instruct owners' personnel on recommend maintenance procedures.**
 3. **Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.**

3.4 FIELD QUALITY CONTROL

- A. Prior to Substantial Completion, the installer, accompanied by representatives of the manufacturers of latchsets and locksets, door closers, and exit devices, and of other major hardware suppliers, shall perform the following work.
- B. Examine (by representatives of the manufacturers) and re-adjust (by hardware installer) each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements.
- C. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
- D. Replace hardware items that have deteriorated or failed due to faulty design or materials (work to be performed by representatives of the manufacturers including removal and reinstallation).
- E. Replace hardware items that have deteriorated or failed due to incorrect installation (work to be performed by hardware installer including removal and reinstallation) of hardware units.
- F. Prepare a written report of current and predictable problems of substantial nature in the performance of the hardware.

3.5 PROTECTION

- A. Provide for the proper protection of all items of hardware until the Owner accepts the project as complete. Damaged or disfigured hardware shall be replaced or repaired by the responsible party.

3.6 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of this Section, Door and Hardware Schedule Section 08 06 10", and the following

Hardware Sets. The door hardware sets listed herein shall not be considered as a complete hardware schedule and shall only be considered as an indication of the hardware requirements desired by the Owner. It shall be this Contractor's responsibility to visit the site, examine the drawings and door schedule and provide all necessary hardware as shown. Such items shall be of same quality, quantity and type as that scheduled for similar doors or parts of the building used for similar purposes.

- B. Door and Hardware Schedule Section 08 06 10, "BULLETS", "SCHEDULE GENERAL NOTES" and "OPENING NOTES" shall be considered part of Section 087100**
- C. As part of the submittal process, the Contractor and/or Door, Frame, and Hardware Suppliers must inspect all existing doors and frames to confirm that the new hardware will work with existing conditions, and if necessary, Door, Frame, and Hardware Suppliers shall advise the contractor of modifications that must be made to existing doors and frames to accommodate new hardware. The Contractor is responsible for making all such modifications.
- D. Conflicts between the SPECIFIED DOOR HARDWARE and the DOORS / FRAMES must be brought to the attention of the ARCHITECT prior to submitting HARDWARE SUBMITTAL to the ARCHITECT.**

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Hardware Set 001

3	Hinge, Ball Bearing	BB1279 - 4.5 x 4.5 - US26D	Hager
1	Electric Hinge, Ball Bearing	BB1279 - 4.5 x 4.5 - US26D - RETW-QC (12-Wire)	Hager
1	Mortar Box	430	Hager
1	Electrically Unlocked	ML20906 x SEC - NSA - 626 - M17 - M91 - M92 - 24 Volt AC/DC	Corbin-Russwin
1	Closer, Overhead Regular Arm	7500 - 689 - SN (Sex Bolt)	Norton
1	Armor Plate	K1050 - 34" x 34" - 18 ga. - US32D - "MUST BE UL LISTED"	Rockwood
1	Stop, Wall	409 - US26D	Rockwood
1	Smoke Gasket	S88D (Smoke Gasket) - 36" x 84"	Pemko
1	Power Supply	BPS-24-1 (24VDC @ 1 Amps), (Provide Necessary Relays)	Securitron
1	Diagrams	Diagrams - Elevation and Riser	By MFR
1	Diagrams	Diagrams - Point To Point	By MFR

Hardware Set 002

3	Hinge, Ball Bearing	BB1279 - 4.5 x 4.5 - US26D	Hager
1	Push Plate	70C - 4" x 16" - US32D	Rockwood
1	Pull Plate	BF-107 - 70C - 4" x 16" - US32D	Rockwood
1	Closer, Overhead Regular Arm	7500 - 689 - SN (Sex Bolt)	Norton
1	Armor Plate	K1050 - 34" x 34" - 18 ga. - US32D	Rockwood
1	Stop, Wall	409 - US26D	Rockwood
3	Silencer, HM Dr. Frame	608 - Gray	Rockwood

Hardware Set 003

3	Hinge, Ball Bearing	BB1279 - 4.5 x 4.5 - US26D	Hager
1	Electric Hinge, Ball Bearing	BB1279 - 4.5 x 4.5 - US26D - RETW-QC (12-Wire)	Hager
1	Mortar Box	430	Hager
1	Electrically Unlocked	ML20906 x SEC - NSA - 626 - M17 - M91 - M92 - 24 Volt AC/DC	Corbin-Russwin
1	Closer, Overhead Parallel Arm	PR7500 - H (LHR) - 689 - SN (Sex Bolt) (Set Hold Open Arm to 90 Degrees)	Norton
1	Kick Plate	K1050 - 16" x 34" - 18 ga. - US32D	Rockwood
1	Stop, Wall	409 - US26D	Rockwood
3	Silencer, HM Dr. Frame	608 - Gray	Rockwood
1	Power Supply	BPS-24-1 (24VDC @ 1 Amps), (Provide Necessary Relays)	Securitron
1	Diagrams	Diagrams - Elevation and Riser	By MFR
1	Diagrams	Diagrams - Point To Point	By MFR

END OF SECTION 08 71 00

SECTION 08 80 00 – GLASS AND GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing glazing for the following products, including those specified in other Sections where glazing requirements are specified by reference to this Section:
1. Full width mirrors over Locker Room vanities (**Men's Restroom 101 and Women's Restroom 104**), total of three (3) locations.
 2. Alternate No. 2 - Mirrored wall surfaces within **Physical Training 107**
- B. Related Sections: The following sections contain requirements that relate to this Section.
1. Section 01 23 00 "ALTERNATES" for work affecting this section.
 2. Section 10 28 00 "TOILET ACCESSORIES", for factory glass full height mirrors in frames.
 3. Section 11 19 00 – "DETENTION EQUIPMENT" for impact rated glazing at detention cell doors.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide glazing systems that are produced, fabricated, and installed to withstand normal thermal movement, wind loading, and impact loading (where applicable), without failure including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; and other defects in construction.
- B. Glass Design: Glass thickness indicated on Drawings are for detailing only. Confirm glass thickness by analyzing Project loads and in-service conditions. Provide glass lites for the various size openings in the thickness and strengths (annealed or heat-treated) to meet or exceed the following criteria:

1. Minimum glass thickness of lites, whether composed of annealed or heat-treated glass, are selected so the worst-case probability of failure does not exceed the following:
 - a. 8 lites per 1000 for lites set vertically or not over 15 degrees off vertical and under wind action. Determine minimum thickness of monolithic annealed glass according to ASTM E 1300. For other than monolithic annealed glass, determine thickness per glass manufacturer's standard method of analysis including applying adjustment factors to ASTM E 1300 based on type of glass.

- C. Normal thermal movement results from the following maximum change (range) in ambient and surface temperatures acting on glass-framing members and glazing components. Base engineering calculation on materials, actual surface temperatures due to both solar heat gain and nighttime sky heat loss.
 1. Temperature Change (Range): 120 deg F (67 deg C) ambient; 180 deg F (100 deg C), material surfaces.

1.5 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specification Sections.

- B. Product data for each glass product and glazing material

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials to comply with manufacturer's directions and as needed to prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 WARRANTY

- A. General: Warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MIRRORS

- A. Mirror: provide ¼ inch thick tempered mirrored float glass, meeting ASTM 1036-85, with stainless steel edge molding on all edges.
 - 1. Mirrors to be installed at full width vanities within **Men's Restroom 101 and Women's Restroom 104** and wall surface within **Physical Training 107** as indicated on Contract Documents.
 - 2. Products: Subject to compliance with requirements, provide mirrored glass units by the following:
 - a. LOF
 - b. Guardian
 - c. PPG

2.2 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine glass framing, with glazier present, for compliance with the following:
 - 1. Manufacturing and installation tolerances, including those for size, squareness, offsets at corners.
 - 2. Minimum required face or edge clearances.
- B. Do not proceed with glazing until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.3 PROTECTION AND CLEANING

- A. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.

- B. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period.

- C. Wash glass on both faces in each area of Project not more than 4 days prior to date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION 08 80 00

SECTION 09 21 00 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing the following:
1. Non-load-bearing interior steel framing members for gypsum board and sheathing board assemblies.
 2. Gypsum board assemblies attached to steel framing.
 3. Moisture, Mold, and Mildew-resistant gypsum backing board installed with gypsum board assemblies.
 4. Cementitious fiber-mat reinforced sheathing located at all tiled wall areas.
 5. Sound attenuation blankets in interior partitions as indicated.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 06 10 00 "ROUGH CARPENTRY" for the following:
 - a. Wood blocking and furring.
 2. Section 07 84 00 "FIRESTOPPING" for firestopping systems and fire-resistive rated joint sealants.
 3. Section 09 30 00 "TILE" for ceramic tile.

1.3 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.5 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified.

1.6 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory".
- B. Single-Source Responsibility for Steel Framing: obtain steel framing members for gypsum board assemblies from a single manufacturer.
- C. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
- D. Single-Source Responsibility for Finishing Materials: obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.
- E. Testing: Materials and construction are subject to testing and inspection by the Owner's agent. Work or materials failing to meet the requirements of the Contract Documents and submitted design drawings will be subject to removal and replacement at no expense to the Owner.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.
- C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.8 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
- C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Framing and Furring:
 - a. Marino Industries Corp.
 - b. Unimast Inc.
 - c. or equal
 - 2. Gypsum Board and Related Products:
 - a. Georgia-Pacific Corp.
 - b. Gold Bond Building Products Div., National Gypsum Co.
 - c. United States Gypsum Co.

2.2 STEEL FRAMING FOR INTERIOR WALLS AND PARTITIONS

- A. General: Provide steel framing members complying with the following requirements:
 - 1. Component Sizes and Spacings: As indicated but not less than that required to comply with ASTM C 754 under the following maximum deflection and lateral loading conditions:
 - a. Maximum Deflection: L/240 at 5 lbf per sq. ft.
 - b. Protective Coating: Manufacturers standard corrosion-resistant coating.
 - c. Protective Coating: G40 hot-dip galvanized coating per ASTM A 525 for framing members attached to and within 10 feet of exterior walls.

- B. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16-inch-wide minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
 - 1. Thickness: 0.0179 inch, for less than 6 inch depth unless otherwise indicated.
 - 2. Thickness: 0.0329 inch for 6 inch and greater depth.
 - 3. Depth: As indicated.

- C. Fasteners for Metal Framing: Provide fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

2.3 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.
 - 1. Thickness: Provide gypsum board in thickness indicated or, if not otherwise indicated, in 5/8 inch thickness to comply with ASTM C 840 for application system and support spacing indicated.

- B. Moisture, Mold, and Mildew Resistant Gypsum Board: ASTM C 1396 or ASTM C 630, manufactured with additives to enhance the water resistance and fire resistance of the core; surfaced with moisture/mold/mildew resistant paper on front, back and long tapered edges, and Type X 5/8" minimum thickness:
 - 1. Minimum Performance Properties
 - a. Mold and Mildew Resistance: (ASTM D 3273) Minimum panel score of 10 or greater.
 - b. Moisture Resistance: (ASTM C 473) shall not have surface absorption of not more than 5% of weight.
 - c. Surface Burning Characteristics: (ASTM E 84) Flame spread of 15 and smoke development of 0.
 - 2. Approved Products:
 - a. XP Wallboard, National Gypsum Company
 - b. Mold Tough, United States Gypsum Co.
 - c. Dens Armor Plus, Georgia Pacific
 - 3. To be utilized at all installations where ceramic tile is not indicated for final wall finish.

- C. Cementitious Fiber-Mat Reinforced Sheathing: ASTM C 1325; ANSI A118.9; Cementitious backer and as follows:
 - 1. Thickness: 5/8 inch thick.
 - 2. Size: 48 by 96 inches.

3. Products: Subject to compliance with requirements, provide one of the following products where proprietary gypsum wallboard is indicated:
 - a. DUROCK Brand Cement Board by United States Gypsum Company.
 - b. PermaBase® BRAND Cement Board, National Gypsum Company.
 - c. approved equal.
4. To be utilized at all installations where ceramic tile is indicated for final wall finish.

2.4 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
 1. Material: Formed metal, with metal complying with the following requirement:
 - a. Sheet steel zinc-coated by hot-dip process.
 2. Shapes indicated below by reference to Fig. I designations in ASTM C1047:
 - a. Cornerbead on outside corners, unless otherwise indicated.
 - b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge trim unless otherwise indicated.
 - c. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.
 - d. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.5 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
- B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
- C. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
 1. Ready-Mixed Formulation: Factory-mixed product.
 2. All-purpose compound formulated for both taping and topping compounds.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.
- C. Fastening Adhesive for Metal: Special adhesive recommended for laminating gypsum panels to steel framing.
- D. Steel drill screws complying with ASTM C 1002 for the following applications:
 - 1. Fastening gypsum board to steel members less than 0.03 inch thick.
 - 2. Fastening gypsum board to gypsum board.
- E. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0. 1 1/2 inch thick.
- F. Sound Attenuation Blankets: Unfaced mineral-fiber blanket insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing):
 - 1. Mineral-Fiber Type: Fibers manufactured from glass.
 - 2. Owens Corning, Sound Attenuation Batt Insulation, 3-1/2 inches thick, 16 inches wide, or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.

3.3 INSTALLING STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at termination's in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer or, if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details shown on Drawings.
 - 1. Where building structure abuts ceiling perimeter or penetrates ceiling.
 - 2. Where partition framing and wall furring abut structure except at floor.
 - a. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading.
- D. Do not bridge building expansion and control joints with steel framing or furring members. Independently frame both sides of joints with framing or furring members as indicated.
- E. All steel frame wall assemblies including gypsum board and sound attenuation blankets, are to extend to underside of structure above. All voids at mechanical, electrical, fire protection, or plumbing to be filled solid.

3.4 INSTALLING STEEL FRAMING FOR WALLS AND PARTITIONS

- A. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings. Cut studs 1/2 inch short of full height. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.

1. For STC-rated and fire-resistive-rated partitions requiring partitions to extend to the underside of floor/roof slabs and decks or other continuous solid structural surfaces to obtain ratings, install framing around structural and other members extending below floor/roof slabs and decks, as needed, to support gypsum board closures needed to make partitions continuous from floor to underside of solid structure.
- D. Install steel studs and furring in sizes and at spacing indicated but not less than that required by the referenced steel framing installation standard to comply with maximum deflection and minimum loading requirements specified:
 1. Single Layer Construction: Space studs at 16 inches o.c., or as indicated on drawings.
- E. Install steel studs so that flanges point in the same direction and so that leading edges or ends of each gypsum board can be attached to open (unsupported) edges of stud flanges first.
- F. Frame door openings to comply with details indicated, with GA-219, and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
- G. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
- H. Frame openings other than door openings to comply with details indicated or, if none indicated, in same manner as required for door openings. Install framing below sills of openings to match framing required above door heads.

3.5 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
- B. Install sound attenuation blankets in all required interior partitions prior to installing gypsum panels unless blankets are readily installed after panels have been installed on one side.
- C. Install ceiling board panels across framing to minimize the number of abutting end joints and avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

- D. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At high walls, install panels horizontally with end abutting joints over studs and staggered.
- E. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.
- F. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Attach gypsum panels to framing provided at openings and cutouts.
- H. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
- I. Cover both faces of steel stud partition framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chase walls that are braced internally.
 - 1. Except where concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
- J. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- K. Seal construction at perimeters, behind control and expansion joints, openings, and penetrations with a continuous bead of acoustical sealant including a bead at both faces of the partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies, including sealing partitions above acoustical ceilings.
- L. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.8 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 - 1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls 10 feet or less in height, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
 - 3. On partitions walls greater than 10 feet in height, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.
- B. Wall Tile Substrates: For substrates indicated to receive thin-set ceramic tile and similar rigid applied wall finishes, comply with the following:
 - 1. Install water resistant gypsum board to comply with ANSI A1 08.1 1.
- C. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
 - 1. Fasten with screws.

3.9 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner beads at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed or semi-exposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
 - 1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 - 2. Install U-bead where indicated.
- D. Install control joints and reveal joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

3.10 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare

gypsum board surfaces for decoration and levels of gypsum board finish indicated.

- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
- C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.
- D. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
 - 1. Level 1 for ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies.
 - 2. Level 4 for gypsum board surfaces unless otherwise indicated.
 - 3. Level 5 for gypsum board surfaces at all ceilings and false work.
- E. For level 4 gypsum board finish, embed tape in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration. Use the following joint compound combination:
 - 1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound.
 - 2. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
 - 3. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
- F. Where level 5 gypsum board finish is indicated, apply joint compound combination specified for level 4 plus a thin, uniform skim coat of joint compound over entire surface. Use joint compound specified for the finish (third coat) or a product specially formulated for this purpose and acceptable to gypsum board manufacturer. Produce surfaces free of tool marks and ridges ready for decoration of type indicated.
- G. Where level 1 gypsum board finish is indicated, apply joint compound specified for embedding coat.
- H. Finish water-resistant gypsum backing board forming base for ceramic tile to comply with ASTM C 840 and board manufacturer's directions for treatment of joints behind tile.

3.11 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.

- B. Provide final protection and maintain conditions, in a manner suitable to Installer that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

- C. Protect gypsum sheathing that will be left exposed to weather for more than one month as follows:
 - 1. Protect cutouts, corners, and joints in the sheathing by filling with a flexible sealant or by applying sheathing tape recommended by sheathing manufacturer at the time sheathing is applied.

END OF SECTION 09 21 00

09 30 00 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY/DESCRIPTION OF WORK

- A. The extent of tile work is shown on Drawings/ Schedules. The work includes furnishing and installing medium set porcelain floor tile, thin-set ceramic tile walls, ceramic mosaic floor tile and base, marble thresholds at doorways of ceramic tiled spaces, metal edge protection, uncoupling membrane, waterproofing membrane, grouting materials and all accessories as specified herein and indicated on the drawings.
 - 1. Tile dimensions, coursing, colors, and manufacturer's products shall be as noted in Drawings/ Schedules as shown and specified.
 - 2. Large Format Porcelain Floor tile.
 - 3. Glazed wall tile.
 - 4. Unglazed ceramic mosaic floor tile.
 - 5. Beige marble travertine where marble thresholds are scheduled.
 - 6. Crack suppression & Waterproofing Membrane.
- B. Related Work Specified Elsewhere:
 - 1. Section 10 28 00 - TOILET AND BATH ACCESSORIES
 - 2. Section 07 92 00 - JOINT SEALERS
 - 3. Section 09 21 00 - GYPSUM BOARD ASSEMBLIES
 - 4. Division 22 – PLUMBING

1.3 QUALITY ASSURANCE

- A. Furnish tile conforming with the Standard Grade Requirements of ANSI/TCA 137.1.
- B. When using setting and grouting materials manufactured under TCA license, include identification and formula number on each container.
- C. Provide materials obtained from only one source for each type of tile and color to minimize variations in appearance and quality.
- D. Manufacturer's Products: Provide ceramic tile products, colors, textures, patterns, as noted on Drawings. Products where noted should be

calibrated to insure dimensional accuracy required to create patterns as shown in drawings.

1.4 SUBMITTALS (all products)

- A. Manufacturer's Data.
- B. Technical Information.
- C. Warranty Information.
- D. Drawings of floor or wall tile if required.
- E. Details regarding patterns and layout information.
- F. Certificates.
- G. Electronic Submittals in addition to hard copies required.
- H. Samples:
 - 1. Tile: Submit an electronic copy and 3 tangible samples of each type and color of tile required, not less than 12" square on plywood or hardboard backing, and grouted as required.
 - 2. Marble Threshold: Submit 6" section of unit proposed for use.
 - 3. Colored Grout: Manufacturer's standard range of mineral oxide pigment grout colors.
- I. Maintenance Stock:
 - 1. After completion of work deliver replacement materials to the project site, as follows:
 - a. For each type and color of tile, including trim and special shapes of each color and type, not less than 10% of total tiled area.
 - 2. Furnish replacement materials from same manufactured lot as material installed.
- J. Tile Grade Certificate: Provide manufacturer's Master Grade Certificate bearing TCA certification mark for each shipment of tile.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged materials and store in original containers with seals unbroken and labels intact until time of use, in accordance with manufacturer's directions.

1.6 PROJECTS CONDITIONS

- A. Contractor shall phase ceramic tile work to proceed only after all toilet room lighting has been installed.

PART 2 - PRODUCTS

2.1 GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TNCA installation methods specified in tile installation schedules, and other requirements specified.
- C. ISO 13007 Standards for Ceramic Tiles, Adhesives and Grouts.
- D. FloorScore Compliance: Tile for floors shall comply with requirements of FloorScore Standard.
- E. Low-Emitting Materials: Tile flooring systems shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- F. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- G. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
- H. Retain subparagraph below if tile is used in swimming pools, on exteriors, or in wet areas. According to ANSI A137.1, manufacturers must specify whether back- or edge-mounted tile assemblies are suitable for these installations because mounting materials will decrease contact area of setting material to tile, and mounting materials may not be as strong or as waterproof as setting materials.
 - a. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

- I. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces

2.2 CERAMIC AND PORCELAIN TILE

- A. Mesh Mounted Porcelain Floor Tile: **CT-1.**
 1. Manufacturer: Daltile, Haut Monde.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size: 12" x 24"
 4. Finish: Matte.
 5. Recommended grout joint: 1/8".
 6. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 7. Or Approved Equal Products from the following manufacturers:
 - 1) Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.
 - 2) American Olean, Belnap White Group. Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com./ Mobile: 203-868-7811.
- B. Mesh Mounted Porcelain Floor Tile: **CT-2.**
 1. Manufacturer: Daltile, Haut Monde.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size: 2"x2" Mosaic – dot mounted on 12" x 24" sheet.
 4. Finish: Matte.
 5. Recommended grout joint: 1/8".
 6. Pattern: 2"x2".
 7. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 8. Or Approved Equal Products from the following manufacturers:
 - 1) Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.
 - 2) American Olean, Belnap White Group. Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com./ Mobile: 203-868-7811.
- C. Mesh Mounted Porcelain Floor Tile: **CT-3.**
 1. Manufacturer: Daltile, Keystones.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size: 2"x2" Mosaic – dot mounted on 12" x 24" sheet.
 4. Finish: Matte.
 5. Recommended grout joint: 1/8".
 6. Pattern: 2"x2" solid color (no pattern).
 7. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 8. Or Approved Equal Products from the following manufacturers:

- 1) Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.
 - 2) American Olean, Belnap White Group. Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com./ Mobile: 203-868-7811.
- D. Porcelain Floor Base: **CB-1**.
1. Manufacturer: Daltile, Haut Monde.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size Varies: 6"x8"-S-3689T-CD31.
 4. Finish: Matte.
 5. Recommended grout joint: 1/4".
 6. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 7. Or Approved Equal Products from the following manufacturers:
 - a. Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.
 - b. American Olean, Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com.
- E. Porcelain Floor Base: **CB-2**. This is also used in shower areas.
1. Manufacturer: Daltile, Keystones.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size Varies: Build Up Base- MB-5C.
 4. Finish: Matte.
 6. Recommended grout joint: 1/8".
 7. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 8. Or Approved Equal Products from the following manufacturers:
 - 1) Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.
 - 2) American Olean, Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com.
- F. Porcelain Floor Base: **CWT-1**.
1. Manufacturer: Daltile, Formula, Polished.
 2. Type: Porcelain Tile, Rectified Edges.
 3. Size Varies: 12"x 24" x 3/16".
 4. Finish: Polished.
 6. Recommended grout joint: 3/16" staggered brick joint.
 7. Contact: Daltile, Lucia Franco, lucia.franco@daltile.com, cell: 203-671-0930.
 8. Or Approved Equal Products from the following manufacturers:
 - 1) Crossville, Garden State Tile, Pam King, pking@gstile.com, cell: 203-434-5547.

- 2) American Olean, Contact: Roanne Marquardt, roanne.marquardt@belknapwhite.com.

2.3 MARBLE THRESHOLDS

- A. Provide sound Group "A" Travertine marble 7/8" thick, shaped as shown, with an abrasive hardness of not less than 10.0, when tested in accordance with ASTM C241. Top of threshold shall not be more than 3/8" above lowest finish floor. (Beige in color).

2.4 SETTING MATERIALS

- A. Provide thin-set application as indicated on Drawings and per manufacturer's recommendations.
 1. Dry-Set Portland Cement Mortar: ANSI A118.1
 2. Latex-Portland Cement Mortar: ANSI A118.4. Latex additive (water emulsion): Manufacturer's standard, serving as replacement for part or all of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by latex additive manufacturer.
- B. Modified, Dry-Set, Cement Mortar for Small and Large format tile and stone: ANSI A118.4-A118.11 and ISO 13007; C2TES1P1
 1. Manufacturer: Mapei Ultraflex LFT or equal: LATICRETE LHT Plus
 2. Type: Polymer- modified medium bed mortar for floors and walls.
 3. Characteristics:
 - a. Suitable as 1/8" to 3/4" leveling bed to compensate for uneven tile and stone thickness, to fill irregular and uneven substrates and to minimize lippage. (Though these can be installed up to 3/4" thick compressed, setting materials aren't recommended for correcting substrate deficiencies, self leveling or patching materials would be recommended)

2.6 GROUTING MATERIALS

- A. Commercial Grade Water-Cleanable Acrylic based premixed grout.
 1. Basis-of-Design Product: Mapei Corporation **Flexcolor CQ**. Color to be selected (for floors and walls both interior and exterior) Contact: Mike Shay, mshay@mapei.com, cell: 203-314-0833.
 2. Equal Products by the approved manufacturers:
 - a. LATICRETE ReadyToUse, Contact: Matt Snell, mbsnell@laticrete.com. Mobile- 917-838-0459.
 - b. Hydroment by Bostik Americas, www.bostik-us.com.

2.7 CRACK SUPPRESSION AND WATERPROOFING MEMBRANE:

- A. WATERPROOF MEMBRANE, for use with all Ceramic and Porcelain tile flooring products.

- B. PREMIUM LATEX BASED WATERPROOFING AND CRACK ISOLATION MEMBRANE; **for use with all Ceramic and Porcelain tile flooring products 3" x 3" tile and smaller**; fast setting, flexible, thin, load-bearing, waterproofing membrane system consisting of a premixed, quick-drying liquid latex, for installation under ceramic tile or stone complying with ANSI A118.10 and ANSI A118.12; and having IAPMO certification.
1. Mapei- Mapelastic- AquaDefense or Equal. Contact: Mike Shay, mshay@mapei.com, cell: 203-314-0833.
 2. LATICRETE Hydroban, Matt Snell, mbsnell@laticrete.com. Mobile: 1-917-838-0459.

2.8 **CRACK SUPPRESSION / UNCOUPLING AND WATERPROOFING MEMBRANE:**

- A. UNCOUPLING MEMBRANE, for use with all Ceramic and Porcelain tile flooring products.
- B. Manufacturer: Schulter Systems, Ditra or Equal: LATICRETE Stratamat.
- C. DESCRIPTION:
1. 1/8" (3 mm) thick, orange, high-density polyethylene membrane with a grid structure of 1/2" x 1/2" (12 mm x 12 mm) square cavities, each cut back in a dovetail configuration, and a polypropylene anchoring fleece laminated to its underside.
 2. Conforms to definition for uncoupling membranes in the Tile Council of North America Handbook for Ceramic Tile Installation; and meets or exceeds the requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10," and is listed by cUPC[®], and is evaluated by ICC-ES (see Report No. ESR-2467 and PMG 1204).
 - a. Waterproofing seaming membrane:
 1. Provide with Schluter[®]-KERDI-BAND Seams and Corners material 0.004" (4 mil) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides.

PART 3 - EXECUTION

3.1 **INSPECTION**

- A. Installer must examine the substrate and conditions under which ceramic tile is to be installed and notify the Contractor in writing of any conditions detrimental to the proper and timely completion of work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION, GENERAL

- A. Comply with the ANSI standard installation specifications for applications indicated.
- B. Handle, store, mix and apply proprietary setting and grouting materials in compliance with the manufacturer's instructions.
- C. For pre-grouted sheets, field grout perimeters of individual sheets and other un-grouted joints using same elastomeric material as used in the factory or as recommended by manufacturer for specific application.
- B. Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignment.
- E. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight, aligned joints. Fit tile closely to electrical outlets, piping and fixtures so that plates, collars, or covers overlap tile.
- F. Acceptability of Surfaces: Before tiling, be sure variations of surface to be tiled fall within maximum variations of 1/8" in 8' for walls and 1/16" in 8' for floors.
- G. Surface preparation: Surface must be free of dust, grease, wax, plaster drippings or other extraneous material to assure proper adhesion. All movement joints must be located prior to starting to lay tile.
- H. Cuts must be planned to be in the least conspicuous locations, and cuts under 2" (5 cm) should be avoided.
- I. Install in accordance with the applicable standards.

3.3 SETTING AND GROUTING

- A. Use setting materials only on properly prepared smooth, flat surfaces.
- B. Unless otherwise shown, lay tile in grid pattern for ceramic tile. Align joints when adjoining tiles on floor, base, walls, and trim are the size. Lay out tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.
- C. Set marble saddles in same setting material as floor tile.
- D. Tint grout as directed by Architect to match samples.

- E. Apply grout to all tile joints and at marble saddle in accordance with instructions and recommendations of approved grout manufacturer.

3.4 CLEAN AND PROTECTION

A. Cleaning:

1. Clean grout and setting materials from face of tile and marble where materials are workable. Leave surfaces clean and free of all foreign matter. Stained material will not be accepted.
2. Unglazed tile may be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than 14 days after installation. Protect metal surfaces, cast iron and citreous plumbing fixtures from effects of acid. Flush the surface with clean water before and after cleaning.
3. Leave finished installation clean and free of cracked, chipped, broken, un-bonded, or otherwise defective tile work.

B. Protection:

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to complete tile walls and floors.
2. Protect installed tile work with Kraft paper or other heavy covering during the construction period to prevent damage and wear.
3. Prohibit all foot and wheel traffic from using tiled floors for at least 5 days.
4. Before final inspection, remove protective coverings and rinse neutral cleaner from all tile surfaces.

END OF SECTION 09 30 00

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, “The General Conditions of the Contract for Construction,” the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This section includes furnishing and installing acoustical panel ceilings with exposed suspension systems where indicated on the drawings.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Section 01 23 00 – ALTERNATES.
 - 2. Division 23 for grilles, registers, and diffusers in acoustical ceilings.
 - 3. Division 26 for lighting fixtures in acoustical ceilings.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Product data for each type of product specified.
 - 2. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below and of same thickness and material indicated for final unit of Work. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.
 - a. 6-inch-square samples of each acoustical panel type, pattern, and color.
 - b. Set of 12-inch-long samples of exposed suspension system members, including moldings, for each color and system type required.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for Project. Installer shall thoroughly review Contract Documents and be familiar with structure and all necessary requirements for attachment to same.

- B. Fire-Performance Characteristics: Provide acoustical ceilings that are identical to those tested for the following fire-performance characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
 - 1. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 for Class A products.
 - a. Flame Spread: 25 or less.
 - b. Smoke Developed: 50 or less.
- C. Single-Source Responsibility for Ceiling Units: Obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
- D. Single-Source Responsibility for Suspension System: Obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work.
 - 1. Obtain suspension system from same manufacturer that produces acoustical ceiling units.
- E. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.6 PROJECT CONDITIONS

- A. Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.7 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.
1. Acoustical Ceiling Units: Furnish quantity of full-size units equal to 2.0 percent of amount installed.
 2. Exposed Suspension System Components: Furnish quantity of each exposed component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Ceiling Panel Products: Subject to compliance with requirements, provide one of the following:
1. For use in 2 x 2 Grid Systems where indicated on drawings unless noted otherwise:
 - a. 2 x 2 x 5/8 inch panels, "Dune" Item #1772, fine texture, square lay-in, Armstrong, or equal.
 - b. NRC Range: .50
 - c. Light Reflectance: 0.83
 - d. Sag resistance: Humigard Plus
 - e. Fire rating: Class A
 - f. Color: White
 - g. Warranty: 10 years
 2. For use in 2 x 4 Grid Systems where indicated on drawings unless noted otherwise:
 - a. 2 x 4 x 5/8 inch panels, "Dune" Item #1773, fine texture, square lay-in, Armstrong, or equal.
 - b. NRC Range: .50
 - c. Light Reflectance: 0.83
 - d. Sag resistance: Humigard Plus
 - e. Fire rating: Class A
 - f. Color: White
 - g. Warranty: 10 years
- B. Ceiling Grid Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Non-Fire-Resistance-Rated Wide-Face Double-Web Steel Suspension Systems for use in ceilings designated:
 - a. "15/16" Prelude XL", Armstrong World Industries, Inc.
 - b. "200 Snap-Grid System", Chicago Metallic Corporation.
 - c. "DX System", USG Interiors, Inc.
 2. Edge Moldings:

- a. Armstrong World Industries, Inc.
- b. Chicago Metallic Corporation.
- c. National Rolling Mills, Inc.

2.2 ACOUSTICAL CEILING UNITS, GENERAL

- A. Standard for Acoustical Ceiling Units: Provide manufacturers' standard units of configuration indicated that comply with ASTM E 1264 classifications as designated by reference to types, patterns, acoustical ratings, and light reflectance's, unless otherwise indicated.
 1. Mounting Method for Measuring NRC: Type E-400 (plenum mounting in which face of test specimen is 15-3/4 inches away from the test surface) per ASTM E 795.
- B. Colors and Patterns: Provide products to match appearance characteristics indicated under each product type. Color: white.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

- A. Standard for Metal Suspension System: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable ASTM C635 requirements.
- B. Finishes and Colors: Provide manufacturer's standard factory-applied finish for type of system indicated. Color: white.
- C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.
- D. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
 1. Gage: Provide wire sized so that stress at 3 times hanger design load (ASTM C 635, Table 1, Direct-Hung), will be less than yield stress of wire, but provide not less than 0.106-inch diameter (12 gage).
- E. Edge moldings and Trim: Metal of manufacturer's standard moldings for edges and penetrations that fit type of edge detail and suspension system indicated.
 1. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 2. For narrow faced suspension systems, provide suspension system manufacturer's standard edge moldings that match width and configuration of exposed runners.
 3. For radius corners, provide manufacturer's standard bullnose corner cover to conform to outline of wall and/or CMU radius profile.

2.4 NON-FIRE-RESISTANCE-RATED DIRECT-HUNG SUSPENSION SYSTEMS

- A. Wide-Face Capped Double-Web Steel Suspension System: Main and cross-runners roll-formed from prepainted or electrolytic zinc-coated cold-rolled steel sheet, with prefinished 15/16-inch-wide metal caps on flanges; other characteristics as follows:
 - 1. Structural Classification: Intermediate-Duty system.
 - 2. End Condition of Cross-Runners: Override or Butt-edge type, as stated with Manufacturer.
 - 3. Cap Material and Finish: Steel sheet painted white.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and structural framing to which ceiling system attaches or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half-width units at borders, and comply with reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical ceiling systems to comply with installation standard referenced below, per manufacturer's instructions and CISCA "Ceiling Systems Handbook".
 - 1. Standards for Installation of Ceiling Suspension Systems: Comply with ASTM C 636 and ASTM E 580 for areas requiring seismic restraint.
- B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected ceiling plans.
- C. Suspend ceiling hangers from building structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling space that are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 2. Where width of ducts and other construction within ceiling space produces hanger spacings that interfere with the location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers

to support ceiling loads within performance limits established by referenced standards.

3. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eyescrews, or other devices that are secure and appropriate for substrate, and in a manner that will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 4. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 5. Space hangers not more than 4 feet-0 inch o.c. along each member supported directly from hangers, unless otherwise shown, and provide hangers not more than 8 inches from ends of each member.
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.
1. Install hold-down clips in areas where required by governing regulations; space as recommended by panel manufacturer unless otherwise indicated or required.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 65 00 – RESILIENT FLOORING AND BASE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, “The General Conditions of the Contract for Construction,”, the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. Section includes furnishing and installing the following as indicated on the drawings and specified herein:
 - 1. Resilient Tile –Solid Vinyl Tile Flooring (SVT).
 - 2. Resilient- Rubber Sport Floor (RSF). ALTERNATE #2 only.
 - 3. Resilient – Rubber Base (B) and accessories (RRS).
- B. Related Sections:
 - 1. Section, 09 30 00 - CERAMIC TILE.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of product indicated.
- C. Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.
- D. Product Schedule: For resilient products. Use same designations indicated on Drawings.

1.4 QUALITY ASSURANCE

- A. Mockups: Provide resilient products with mockups specified in other Sections.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range

recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

1.6 PROJECT CONDITONS

- A. Install resilient products after other finishing operations, including painting, have been completed.
- B. Maintain ambient temperatures within range recommended by Johnsonite, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C) in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation
 - 2. During installation
 - 3. 48 hours after installation
- C. Maintain the ambient relative humidity between 40% and 60% during installation.
- D. Until Substantial Completion, maintain ambient temperatures within range recommended by Johnsonite, but not less than 55 deg F (13 deg C) or more than 85 deg F (29 deg C).

PART 2 - PRODUCTS

2.1 RESILIENT FLOORING, BASE, AND ACCESSORY PRODUCTS:

- A. SOLID VINYL TILE, SVT-1.
 - 1. Manufacturer: SVT-1 - Azrock /Tarkett Co.
 - a. Type: Cortina Grande.
 - b. Size: 16" x 16" x 1/8"
 - c. Fire Resistance: Exceeds ASTM E648
ASTM E 662, Smoke Density - Less Than 450
Critical Radiant Flux: ASTM E-648- Less than 1.0 watts per Square Centimeter.
 - d. Static Load Limit: 800 psi.
 - e. Slip Resistance: ADA Compliant.<0.6 COF
 - f. Contact: Carrie Bartucca, Contact: Michael Halebian & CO.,inc) cbartucca@michaelhalebian.com, cell: 860-305-2599.

Equal Products:

- 1. Toli, Homogeneous Vinyl Tile, Fasol Plus.(18"x 18").

2. American Biltrite, Texas Granite, (24" x 24") Contact: Michael Halebian & CO.,inc) cbartucca@michaelhalebian.com, cell: 860-305-2599.
2. Resilient Rubber Athletic Tile Flooring (RSF-1) Burke Eco Fitness.
 - a. Manufactured from a composition of recycled truck tire crumb rubber encapsulated in a urethane binder.
 - b. Overall thickness: 3.75" thick.
 - c. Tile texture and color: Textured Speckled Color see Finish Schedule.
 - d. Square Edge : Glue Down rolls in 4'x25 or 4'x50'.
 - e. ASTM D 2240 Standard Test Method for Rubber Property— Durometer Hardness: 55 Shore A.
 - f. Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring or 0.6 or greater.
 - g. ASTM F 970, Standard Test Method for Static Load Limit – passes 250 PSI.
 - h. ASTM D 3389 Standard Test Method for Coated Fabrics Abrasion Resistance: < 1.00 gram weight loss.
 - i. ASTM D 2859 Standard Test Method for Ignition Characteristics of Finished Floor Covering Materials (Pill Test): passes with greater than 1" of un-charred area.
 - m. Contact:
Carrie Bartucca for base bid via email cbartucca@michaelhalebian.com or Cell Phone: 860-305-2599.
 - A. Equal Products:
 1. Nora Rubber Flooring, Matt Dorf, matt.dorf@nora.com.
 2. Johnsonite, Replay, Carrie Bartucca.
3. RUBBER COVE BASE, B-1 & B-2.
 1. B-1 & B-2
 - a. Manufacturer: Johnsonite, Tarkett Group.
 - b. Type: Rubber with Toe.
 - c. Height: 4".
 - d. Contact: Carrie Bartucca, (Michael Halebian & CO. Inc) cbartucca@michaelhalebian.com, cell: 860-305-2599.
 - e. Equal Products: Roppe Products: Contact Salesmaster, Kyle Gable, kyle@salesmaster.com.

4. RESILIENT ACCESSORIES:
 1. RRS-1
 - a. Manufacturer: Johnsonite, Tarkett Group.
 - b. Type: T-Molding with Track from 1/8" SVT to CT.
 - c. Model #: CD-XX-D.
 2. RRS-2:
 - a. Manufacturer: Johnsonite, Tarkett Group.
 - b. Type: Edge Guard for 3/8" Material to Floor.
 - c. Model #: EG-29W.
 3. Equal Products:
 - a. Roppe Industries.
 - b. Armstrong World Industries Inc.

2.2 INSTALLATION MATERIALS FOR SOLID VINYL TILE (SVT).

- A. Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.
- B. Adhesives: As recommended by Tarkett to meet site conditions.
 1. Vinyl Enhanced Tile:
 - a. Tarkett 800 Pressure Sensitive Adhesive.

2.3 INSTALLATION MATERIALS FOR COVE BASE (B-1 & B-2) AND FLOOR ACCESSORIES, TRANSITION STRIPS, REDUCERS, ADAPTORS ETC.

- A. Rubber Base Adhesive
 1. Type: #960 Solvent-free, Environmentally Safe Acrylic Cove.
 2. Base Adhesive.
 3. Trowel Size: 1/8" x 1/8" x 1/8" SQ Notch.
 4. Follow manufacturer's standards.

2.4 RESILIENT ATHLETIC FLOORING INSTALLATION-RSF.

- A. Comply with manufacturer's written instructions for installing resilient athletic flooring.
 1. Install with Burke's adhesive specified for the site conditions and follow adhesive label for proper use.
 2. Install rolls in sequential order following roll numbers on the labels.
 3. Reverse sheets unless instructed otherwise in Johnsonite Installation Instructions.
 4. Roll the flooring in both directions using a 100 pound three-section roller.
 5. Do not Quarter Turn tile.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to the Manufacturer's written instructions to ensure adhesion of Resilient Tile Flooring.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate paint, coatings and other substances that are incompatible with adhesives or contain soap, wax, oil, solvents, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - 3. Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
 - 4. Prepare Substrates according to ASTM F 710 including the following:
 - a. Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 1) For all Products except VP-1 :Perform anhydrous calcium chloride test, ASTM F 1869. Results must not exceed 5 lbs. Moisture Vapor Emission Rate per 1,000 sq. ft. in 24 hours.
 - or –
 - 2) For all Products Perform relative humidity test using in situ probes, ASTM F 2170. Must not exceed 80%.
 - 3) For SVT-1, Perform relative humidity test using situ probes according to ASTM F 2170. Proceed with

- installation only after substrate are below 95% relative humidity level.
- b. A pH test for alkalinity must be conducted. Results should range between 7 and 9. If the test results are not within the acceptable range of 7 to 9, the installation must not proceed until the problem has been corrected.
 - c. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 - d. Do not install over OSB (Oriented Strand Board), particle board, chipboard, lauan or composite type underlayments.
- B. Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- C. Floor covering shall not be installed over expansion joints.
- D. Do not install resilient products until they are same temperature as the space where they are to be installed.
- 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 INSTALLATION METHODS FOR RESILIENT PRODUCTS

- A. INSTALLATION- SOLID VINYL TILE.
- 1. Install with Azrock/Tarkett (the Manufacturer's) adhesive specified for the site conditions and follow adhesive label for proper use.
 - a. Follow Azrock/Tarkett's (the Manufacturer's) recommendation for monolithic installation of tiles. Batch numbers should not be mixed during the installation.
 - 2. Square the area and establish reference points on the substrate.
 - 3. Apply the adhesive to the substrate. Follow directions on adhesive label for proper adhesive use.
 - 4. Use established reference points and install the flooring.
 - 5. Lay tiles in quarter-turn pattern. The printed numbers on the back may be used as reference.
 - 6. Do not force tiles together creating a ledge condition at the seams and the corners. Sliding tiles will force the adhesive out between the seams.
 - 7. Periodically lift the corner of an installed tile to ensure proper transfer of adhesive.

8. Roll the flooring in both directions using a 100 pound three-section roller. Use a hand roller in areas that cannot be reached with a large roller.
 - a. Lay tiles with grain running in same direction to match existing Coridor.
 9. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
 10. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
 11. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
 12. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor
 13. General: Installation shall be as recommended by manufacturer.
 14. Fit joints tight and vertical. Use as long lengths as is practicable. Miter internal corners. Use pre-formed outside corners.
 15. Scribe to fit to doorframes and other obstructions.
- B. INSTALLATION OF RESILIENT ACCESSORIES, TRANSITION STRIPS, REDUCERS, ADPATORES, ETC. (RSS-X).
1. General: Installation shall be as recommended by manufacturer.
 2. Fit joints tight.
 3. Use as long lengths as is practicable.
 4. Scribe to fit to doorframes and other obstructions.
- C. CLEANING AND PROTECTION FOR RUBBER COVE BASE (B-1) AND ACCESSORIES (RSS-X).
1. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
 2. Perform the following operations immediately after completing resilient product installation:
 - a) Remove adhesive and other blemishes from exposed surfaces.
 - b) Wipe down with clean cloth rubber base surfaces thoroughly.
 - c) Damp-mop floor surfaces to remove marks and soil.
 3. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. CLEANING AND PROTECTION FOR RUBBER SPORT FLOOR (RSF-1).

1. Comply with manufacturer's written instructions for cleaning and protection of resilient products.
2. Perform the following operations immediately after completing resilient product installation: 1. Remove adhesive and other blemishes from exposed surfaces. 2. Sweep and vacuum surfaces thoroughly. 3. Damp-mop surfaces to remove marks and soil.
3. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. 1. No traffic for 24 hours after installation. 2. No heavy traffic, rolling loads, or furniture placement for 72 hours after installation.
4. Wait 72 hours after installation before performing initial cleaning
5. A regular maintenance program must be started after the initial cleaning.

END OF SECTION 09 65 00

09 90 00 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY / DESCRIPTION OF WORK

- A. This Section includes surface preparation, all necessary materials and painting for all interior surfaces in renovated construction where so specified and exposed to view. The extent of painting work is shown on Drawings/ Schedules. Work shall include: latex walls and ceiling paint, trim paints, epoxy paint for cell fronts and bunks (all surfaces) and ceilings, fillers for concrete block, etc.
- B. Manufacturer's products and colors shall be as noted in Drawings / Schedules as shown and specified.
- C. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 4 for cleaning of Unit Masonry.
 - 2. Division 5 for painting of Metal Fabrications.
 - 3. Division 8 for painting of Steel Doors and Frames.
 - 4. Division 9 for painting of Gypsum Board Walls Assemblies.
 - 5. Division 11 for Detention Equipment. See 11 19 00 for special instructions.

1.3 WORK NOT INCLUDED

- A. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper and similar finished materials will not require painting under this Section, unless so noted.
- B. Do not paint the moving parts of operating units, mechanical or electrical parts such as valve operators, linkages, sensing devices and motor shafts.
- C. Do not paint over required labels or equipment identification, performance rating name or nomenclature plates.
- D. Painting not required for shop finished millwork items.

- E. Do not paint ceramic tile or similar finished materials.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Materials data sheet for each type of product specified with an electronic copy.
 - 2. Samples for verification purposes of each type of exposed finish required, prepared on samples of size indicated below. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected. Provide 3 sets of “draw down” samples for each color with the proper finish. See color legend.
- B. Two samples **8”x10” samples of each paint color and each scheme.** Each sample should be labeled with the item ID (P-x, EP-x, TR-x, CP-x). See Finish Schedule for colors.
- C. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has successfully completed painting projects similar in material, design, and extent to those indicated for Project. Installer shall thoroughly review Contract Documents and be familiar with structure and all necessary requirements for attachment to same.
- B. Fire-Performance Characteristics: Conform to Building Code for Flame Rating Requirement for finishes.
- C. Coordination of Work: Coordinate work with other construction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint materials and floor system materials to project site in original, labeled, unopened packages and store them in a fully enclosed space where they will be protected against damage. Labeling to include

manufacturer's name, type of paint, brand name, color designation, drying time, clean up and instructions for mixing and use.

- B. Store paint materials and floor system materials at a minimum ambient temperature of 45 degrees F and a maximum ambient temperature of 90 degrees F in a well-ventilated area, unless otherwise directed by manufacturer's instructions.
- C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.7 PROJECT CONDITIONS

- A. Provide continuous ventilation and heating of space to maintain surface and ambient temperature above 65 degrees F for 24 hours before, during and 48 hours after application of finishes, unless otherwise indicated by manufacturer or specifications herein.
- B. Provide lighting level of 80 foot-candles measured mid-height at substrate surface.

1.8 EXTRA MATERIALS

- A. Deliver extra materials to Owner. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.
 - 1. Minimum of one quart of each finish specified. Labeling shall include manufacturer, type, color name and number.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. The Sherwin Williams Company, Contact: **Mark Weiner**, mark.t.weiner@sherwinwilliams.com, Office: 401-245-5176.
 - 2. Benjamin Moore & Company.
 - 3. Pittsburgh Paints, PPG. - Contact: ppgacit@ppg.com
 - 4. Prosoco Inc. Contact: Thomas.Lane@prosoco.com.

2.2 MATERIALS- GENERAL

- A. Provide products which will meet all Federal regulations for amount of lead in paint (Less than 0.06% lead in non-volatile ingredients).

Coatings: Provide best quality grade of various types of coatings. Materials not displaying manufacturer's identification as a standard, best-grade product will not be accepted.

- B. Use only thinners approved by paint manufacturers for applications intended and use only within recommended limits.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and verify that conditions are ready to receive work as instructed by the product manufacturer.
- B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim and fittings prior to preparing the finishes for painting.
- B. Correct minor defects and clean surfaces which may affect the work of this section.
- C. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
- D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove loose dirt, loose mortar, scale, salt, or alkali powder or other foreign matter. Remove oil or grease with a solution of tri-sodium phosphate. Rinse well and allow to dry.
- F. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt and rust. Where heavy coatings of scale are evident, remove by wire brushing. Clean with solvent. Spot prime paint after repairs.
- G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

3.3 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields and protective methods to prevent spray or droppings from other surfaces.
- D. Remove all empty paint containers from site.

3.4 APPLICATION

- A. Apply all products in accordance with manufacturer's instructions.
- B. No work shall be performed in spaces that are not broom clean and free of dust and waste.
- C. Apply each coat to a uniform finish, free of brush or roller marks, drops, runs or sags.
- D. Sand lightly between coats to achieve required finish.
- E. Allow applied coat to dry before next coat is applied. Allow a minimum of 48 hours for enamel paints to dry before recoating.
- F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- G. All non-finished interior woodwork, wood shelving, wood closet poles, wood wainscot and wood chair rail a satin polyurethane.
- H. Finish doors on tops, bottoms and side edges same as exterior faces.
- I. As work proceeds, promptly remove paint where spilled, splashed or spattered.
- J. Collect cloths and materials which may constitute a fire hazard, place in a closed metal container and remove daily from site.

3.5 CLEANING

- A. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.6 SCHEDULE-INTERIOR SURFACES

- A. Gypsum Board, Satin/ Eggshell finish:

1. One coat latex primer sealer.
 2. Two coats acrylic latex, eggshell / satin finish.
- A.1 Latex Systems: Eg-Shel / Satin Finish:
1. 1st Coat: S-W Pro Mar 200 Zero VOC Primer, B28W2600 Series (4.0 mils wet, 1.5 mils dry).
 2. 2nd Coat: S-W Pro Mar 200 Zero VOC Latex Eg-Shel Acrylic, B20 Series.
 3. 3rd Coat: S-W ProMar 200 200 Zero VOC Latex Eg-Shel, B20 Series (4.0 mils wet, 1.7 mils dry per coat).
- B. Latex Systems: Standard Drywall Ceiling:
1. One coat latex primer sealer.
 2. Two coats acrylic latex, eggshell / satin finish.
- B.1 Latex Systems: Standard Drywall / gypsum Ceiling (for Non-Wet Areas/ and Soffits-CP-1):
1. 1st Coat: S-W Pro Mar 200 Zero VOC Primer, B28W2600 Series (4.0 mils wet, 1.0 mils dry).
 2. 2nd Coat: S-W Pro Mar, Ceiling Paint Latex. (5.0 mils wet, 1.2 mils dry).
 3. 3rd Coat: S-W Pro Mar, Ceiling Paint Latex. (5.0 mils wet, 1.2 mils dry).
- C. Epoxy Systems: for drywall / gypsum Ceilings (CP-3):
1. One coat latex primer sealer.
 2. Two coats acrylic latex, eggshell / satin finish.
- C.1 Epoxy Systems: for drywall / gypsum Ceilings (in moist areas – showers etc. see drawings).
1. 1st Coat: S-W Pro Mar 200 Zero VOC Primer, B28 Series (4.0 mils wet, 1.0 mils dry).
 2. 2nd Coat: S-W Pro Industrial Water Based Catalyzed Epoxy, B73-(5.0 mils wet, 2.0 mils dry).
 3. 2nd Coat: S-W Pro Industrial Water Based Catalyzed Epoxy, B73-5.0 mils wet, 2.0 mils dry).
- D. Concrete Block (includes patch to match areas).
1. One coat block filler.
 2. One coat primer sealer acrylic latex.
 3. Two coats acrylic latex, eggshell enamel.
- D.1 Latex Systems For Concrete and Masonry: Eg-Shel / Satin Finish:
1. 1st Coat: S-W Loxon Concrete & Masonry Primer Sealer, A24W8300 (8 mils wet, 3.2 mils dry).
 2. 2nd Coat: S-W Pro Mar 200 Zero VOC Latex Eg-Shel, B20-

- 2600 Series.
 3. 3rd Coat: S-W Pro Mar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils wet, 1.7 mils dry per coat).
- E. Steel- Primed (included Detention Equipment, Cell Ceilings and Walls).
- G.1 Latex Systems: Eg-Shel / Satin High Performance:
1. 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-310 Series (5.0 mils wet, 2.0 mils dry). Prime on factory primed surfaces for complete system.
 2. 2nd Coat: S-W Pro Industrial DTM Eg-Shel Acrylic Coating B66 Series.
 3. 3rd Coat: S-W Pro Industrial DTM Eg-Shel Acrylic Coating B66 Series (6.0 mils wet, 2.5 mils dry per coat).

3.7 SCHEDULE-EXTERIOR SURFACES- NO EXTERIOR SURFACE IN SCOPE.

END OF SECTION 09 90 00

SECTION 10 11 00 - VISUAL DISPLAY BOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing the following types of visual display boards at **Vestibule 102** and **Vestibule 105**:
 - 1. Vinyl-fabric-faced cork tackboards as indicated on drawings as "TB".
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Section 06 10 00 - "Rough Carpentry" for wood blocking and grounds.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Include manufacturer's data substantiating that tackboard materials comply with requirements indicated.
- C. Shop Drawings: Provide shop drawings for each type of tackboard required. Include sections of typical trim members and dimensioned elevations. Show anchors, grounds, reinforcement, accessories, layout, and installation details.
- D. Samples: Provide the following samples of each product for initial selection of colors, patterns, and textures, as required, and for verification of compliance with requirements indicated.
 - 1. Samples for initial selection of color, pattern, and texture:
 - a. Vinyl-fabric-faced Cork Tackboards: Manufacturer's color charts consisting of actual sections of vinyl fabric, showing the full range of colors, textures, and patterns available for each type of vinyl-fabric-faced cork tackboard indicated.

- E. Certificates: In lieu of laboratory test reports, when permitted by the Architect, submit the manufacturer's certification that vinyl-fabric-faced cork tackboard materials furnished comply with requirements specified for flame spread ratings.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is an authorized representative of the manufacturer for both installation and maintenance of the units required for this Project.
- B. Fire Performance Characteristics: Provide vinyl-fabric-faced tackboards with surface burning characteristics indicated below, as determined by testing assembled materials composed of facings and backings identical to those required in this section, in accordance with ASTM E 84, by a testing organization acceptable to authorities having jurisdiction.
 - 1. Flame Spread: 25 or less.
 - 2. Smoke Developed: 10 or less.
- C. Design Criteria: The drawings indicate dimensional width requirements of visual display boards and are based on the specific type and model indicated. Other visual display boards having equal performance characteristics by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept or intended performance as judged by the Architect. The burden of proof of equality is on the proposer. All visual display boards to be 4 feet-0 inch, high by width indicated on documents.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.
 - 1. Allow for trimming and fitting wherever taking field measurements before fabrication might delay the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. Tackboards:
 - a. Claridge Products and Equipment, Inc.
 - b. Polyvision Corporation

- c. ADP Lemco Corporation

2.2 MATERIALS

- A. Vinyl-Fabric-Faced Tackboards (**TB.**): Provide mildew-resistant, washable, vinyl fabric complying with FS CCC-W-408, Type II, weighing not less than 18 ounces per square yard, laminated to 1/4-inch-thick cork sheet. Provide fabric that has a flame spread rating of 25 or less when tested in accordance with ASTM E 84. Provide color and texture as scheduled or as selected from the manufacturer's standards.
 - 1. Vinyl Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - a. BF Goodrich, Koroseal, Harborweave.
 - b. Claridge, Fabricork.
 - 2. Backing: Make panels rigid by factory laminating cork face sheet under pressure to 5/16-inch-thick particleboard backing.

2.3 ACCESSORIES

- A. Metal Trim and Accessories: Fabricate frames and trim of not less than 0.062-inch-thick aluminum alloy, size and shape as indicated, to suit type of installation. Provide straight, single-length units wherever possible; keep joints to a minimum. Miter corners to a neat, hairline closure.
 - 1. Where the size of boards or other conditions exist that require support in addition to the normal trim, provide structural supports or modify the trim as indicated or as selected by the Architect from the manufacturer's standard structural support accessories to suit the condition indicated.
 - 2. Field-Applied Trim: Provide the manufacturer's standard snap-on trim, with no visible screws or exposed joints.

2.4 FABRICATION

- A. Assembly: Provide factory-assembled tackboard units, except where field-assembled units are required.
 - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with the minimum number of joints, balanced around the center of the board, as acceptable to the Architect.

2. FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual,, for recommendations relative to application and designations of finishes.

1. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Deliver factory-built tackboard units completely assembled in one piece without joints, wherever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Architect. When overall dimensions require delivery in separate units, prefabricate components at the factory, disassemble for delivery, and make final joints at the site. Use splines at joints to maintain surface alignment.
- B. Install units in locations and at mounting heights indicated and in accordance with the manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.
 1. Finished vertical surfaces shall be flat, free of warp or bends.
- C. Coordinate job-site assembled units with grounds, trim, and accessories. Join parts with a neat, precision fit.

3.2 ADJUST AND CLEAN

- A. Verify that accessories required for each unit have been properly installed and that operating units function properly.
- B. Clean units in accordance with the manufacturer's instructions.

3.3 SCHEDULE

- A. Refer to drawings for locations and sizes of tackboards (TB.) (all tackboard/markerboard heights to be 4 feet).
- B. Dimensions indicated on the drawings are for desired width of installations.
- C. Refer to drawings for installation locations. Coordinate mounting locations with General Contractor prior to installations.

END OF SECTION 10 11 00

SECTION 10 14 23 - PANEL ROOM SIGNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing the following types of signs:
 - 1. Interior, panel rooms signs
 - 2. Vinyl, self-adhered numbering on metal detention cell construction

1.3 SUBMITTALS

- A. Samples: Provide samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual signs, profiles, and finishes for each type of sign required.
- C. Full size or scaled proof of each type of sign for approval before fabrication.

1.3 QUALITY ASSURANCE

- A. Code Compliance: Provide panel room signs in conformance with the Uniform Federal Accessibility Standards; Section 4.30, ANSI A117.1; 521 CMR, section 41.1; and Americans with Disabilities Act (ADA), sections 4.28.2, -.3, -.5.
- B. Single-Source Responsibility: For each separate type of sign required, obtain signs from one source from a single manufacturer.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. ADA Panels: Provide 1/8" thick Photopolymer per ANSI A117 and ADA requirements. Letters and graphics shall be raised and Braille shall be raised tactical type detail.
- B. Updatable Panels: ASI Infinity Window Sign or approved equal w/ Anodized Silver Finish & Matte Clear Lens.
- C. Modular Sign Backers: ASI Infinity Chassis or approved equal w/ Powder Coat Black Finish. Modular panels mounted to Chassis w/ ASI Infinity Presstabs or approved equal.
- D. Fasteners: Panels or Backers mounted to surface w/ Double sided foam vinyl VHB.

2.2 PANEL ROOM SIGNS

- A. Panel Room Signs: Comply with requirements indicated for materials, thickness, finishes, colors, designs, shapes, sizes, and details of construction.
 - 1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
- B. Unframed Panel Room Signs: Fabricate signs with edges mechanically and smoothly finished to conform to the following requirements:
 - 1. Edge Condition: Square cut.
 - 2. Corner Condition: Square.
 - 3. Handicapped Accessible Toilet Room Signs: approximately 8" x 12" required, including wheelchair pictogram symbol, and room name in the text below.
 - 4. Color: Backgrounds to be manufacturer's CUSTOM color as selected by Architect.
- C. Graphic Content and Style: Provide signs that comply with format and wording indicated in Schedule, Section 3.3, and conforming to the following characteristics:
 - 1. Letters and Numerals: 3/4" or 5/8" high Univers 57 Condensed, with a width-to-height ratio of 3:3.5, and a stroke-width to height ratio of 1:5. Upper case only.
 - 2. Braille: Grade 2 (ONLY WHERE ISHA INDICATED)
 - 3. Pictograms: Accompanied by the equivalent verbal description placed directly below the pictogram.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 - 1. Vinyl-Tape Mounting: Use double-sided VHB foam tape to mount signs. A blank sign is required to be mounted on the reverse side of any glass-mounted sign.
 - 2. Mounting Location and Height: Install signs on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, install signs at the nearest adjacent wall. Mounting height shall be 60" above the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3" of signage without encountering protruding objects or standing within the swing of a door.

3.2 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

3.3 SCHEDULE

<u>Door Number</u>	<u>Quantity</u>	<u>ISHA</u>	<u>ADA Panel</u>	<u>Updatable Panel</u>
102A	1	Yes	MEN'S LOCKER ROOM (w/ Male pictogram)	0
105A	1	Yes	WOMEN'S LOCKER ROOM (w/ Female pictogram)	0

END OF SECTION 10 14 23

SECTION 10 21 13 - TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction", the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing stock, manufactured toilet compartments as specified and where indicated on the drawings.
- B. Types of toilet partitions and urinal screens include:
 - 1. Solid phenolic core.
- C. Style of Toilet Compartment, include:
 - 1. Floor mounted, overhead braced, toilet partitions.
 - 2. Wall mounted urinal screens
- D. Toilet accessories, such as grab bars are specified in Section 10 28 00 "TOILET ACCESSORIES".

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for materials, fabrication, and installation including catalog cuts of anchors, hardware, fastenings, and accessories.
- C. Shop drawings for fabrication and erection of toilet compartment assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.
- D. Samples of full range of colors for each type of unit required. Submit 6-inch-square samples of each color and finish on same substrate to be used in work, for color verification after selections have been made.

1.4 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of

work. However, allow for adjustments where taking of field measurements before fabrication might delay work.

- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet compartments and related items. Coordinate delivery with other work to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Solid Phenolic:
 - a. American Sanitary Partition Corp.
 - b. Bobrick Washroom Equip, Inc.
 - c. Flush-Metal Partition Corp.
 - d. Global Steel Products, Corp.
 - e. General Partitions Mfg. Corp.

2.2 MATERIALS

- A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.
- B. Solid Phenolic: Provide $\frac{3}{4}$ inch thick solid phenolic doors and pilasters and $\frac{1}{2}$ inch thick solid phenolic partitions and panels. Provide solid phenolic core with multiple resin-impregnated kraft, color, and clear Melamine surface sheets fused at high temperature and pressure. Edges shall be polished phenolic warranted for 10 years against delamination, corrosion or breakage.
- C. Hardware and Accessories: Heavy duty operating hardware and accessories of ASTM 162, Type 302/304 Stainless Steel, #4 satin finish.
- D. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium-plated steel, or brass, finished to match hardware, with theft-resistant-type heads and nuts. For concealed anchors, use stainless steel.
- E. Fire resistance characteristics per ASTM E-84 Tests: flame spread of 0-25 max. smoke density 100 max.

2.3 FABRICATION

- A. General: Furnish doors, fabricated for compartment system. Furnish units with cutouts, drilled holes, and internal reinforcement to receive hardware and accessories as indicated.
- B. Door Dimensions: Unless otherwise indicated, furnish 24-inch-wide in-swinging doors for ordinary toilet stalls and 32-inch-wide (clear opening) out-swinging doors for stalls equipped for use by handicapped.
- C. Hardware: Furnish hardware for each compartment to comply with ANSI A117.1 and U.S. ADA Guidelines for handicapped accessibility and as follows:
 - 1. Hinges: Continuous hinge full height of door. Type 304 satin finish stainless steel; extra heavy duty 16 gauge. Through bolted to door and stile with 12 theft-resistant, one way screws fastened into threaded metal inserts.
 - 2. Latch and Keeper: Door latch with shock resistant nylon track into 1 inch wide keeper formed from one piece 1/8 inch 11 gauge stainless steel. Keeper shall be through bolted to stile with theft resistant one-way screws fastened into threaded metal inserts. Vinyl coated door stops.
 - 3. Coat Hook: Manufacturer's standard unit, combination hook and rubber-tipped bumper, sized to prevent door hitting mounted accessories.
 - 4. Door Pull: Manufacturer's standard unit for out-swinging doors. Provide pulls on both faces of handicapped compartment doors.
 - 5. Pilaster Shoes: ASTM A 167, Type 304 stainless steel not less than 4 inches high, finished to match hardware.
 - 6. Overhead bracing: Continuous stainless steel at all sides and subdivisions.

2.4 FINISH

- A. Color: One (1) of manufacturer's standard colors for each room indicated to receive toilet partitions. Color to be as selected by Architect from manufacturer's standard colors, or as indicated on the Finish Schedules.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install compartment units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch between pilasters and panels, and not more than 1 inch between panels and walls.

3.2 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors (and entrance swing doors) to return to fully closed position.

- B. Clean exposed surfaces of partition system components using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION 10 21 13

SECTION 10 22 13 - WIRE MESH PARTITIONS

PART 1 - GENERAL

1.2 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing heavy duty wire mesh partitions, hinged door, and accessories to be installed at the following locations:
 - 1. **Physical Training 107** as indicated on the drawings. This work is made part of Alternate No. 2.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data consisting of manufacturer's specification, technical data, and installation instructions.
- C. Shop drawings showing fabrication and installation of wire mesh partitions. Include plans, elevations, and large scale details showing anchorage and accessory items. Provide location template drawings for items supported or anchored to permanent construction.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Provide wire mesh partitions as complete units produced by a single manufacturer, including necessary mounting accessories, fittings, and fastenings.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of work. However, allow for adjustments and fitting wherever taking of field measurements before fabrication might delay work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
1. Acorn Wire and Iron Works, Inc.
 2. The G-S Company.
 3. approved equal

2.2 HEAVY DUTY MESH PARTITIONS

- A. Mesh: 6-gauge crimped steel wire woven into 2-inch diamond mesh (or 10 gauge crimped steel wire woven into 1 ½" diamond mesh), securely clinched to frame members.
- B. Frames: Wall Construction
1. Frame Members: 1-1/2-inch by 3/4-inch cold-rolled steel channels with 3/8-inch bolt holes approximately 18 inches o.c.
 2. Horizontal Reinforcing Members: 1-1/2-inch by 3/4-inch by 1/8-inch cold-rolled steel channel with wire woven through, or two 1-inch by 1/2-inch channels bolted or riveted toe-to-toe through the mesh and secured to vertical members. Provide number of horizontal reinforcing members to suit panel height as recommended by partition manufacturer.
- C. Stiffening Bars: Provide flat bar stiffener posts between all abutting panel frames. Size as recommended by partition manufacturer for partition height required. Increase size of stiffening bars if required to maintain partition rigidity.
- D. Top Capping Bars: 3-inch by 4.1-pound channel secured to top framing member with 1/4-inch "All bolts spaced not more than 28 inches o.c.
- E. Floor Shoes: Cast metal, sized to suit vertical framing and to provide approximately 3 inches clear space between finished floor and bottom horizontal frame members. Furnish units with set screw for leveling adjustment.
- F. Corner Posts: 2-inch by 1/8 inch angles with floor shoe and 3/8 inch bolt holes to align with bolt holes in vertical frame members.

2.3 DOORS

- A. Swing Doors: Door frame of 1-1/2-inch by 3/4-inch by 1/8 inch channel with 1-1/2-inch by 1/8-inch flat bar cover plate on all 4 sides. Provide door with non-rising butt hinges and mortise-type cylinder lock with lever

handles. Align bottom of door with bottom of adjacent panels. Door sizes to be as indicated on Drawings.

- B. **Locking Mechanisms: Approach Side: Keyed cylinder lock; Interior Side: Thumb turn.**

2.4 FABRICATION

- A. Do not use components less than sizes indicated. Use larger size components as recommended by partition component manufacturer.
- B. Provide bolts, hardware, and accessories for complete installation. All hardware is to be tamper-resistant type.
- C. Finish: Manufacturer's standard shop-applied enamel finish coat (2 coats) over rust inhibitive primer coat (one coat). Color to be selected by Architect at a later date from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete construction. Coordinate delivery of such items to project site.

3.2 INSTALLATION

- A. Erect partitions plumb, rigid, properly aligned, and securely fastened in place, complying with drawings and manufacturer's recommendations.
- B. Provide additional field bracing as shown or necessary for rigid, secure installation. Erector to provide additional clips and bracing as required.
- C. All panels to extend to underside of finished ceilings. Coordinate the wall panels to accommodate all overhead utilities / ductwork / piping for a complete, secure installation.

3.3 ADJUST AND CLEAN

- A. Adjust moving components for smooth operation without binding.
- B. Touch-up damaged finish after completion of installation using field-applied paint to match color of shop-applied finish.

END OF SECTION 10 22 13

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing toilet and bath accessory items as shown on the drawings and as specified herein.

1.3 RELATED SECTIONS

- A. Installation of toilet and bath accessories is specified in Section 06 10 00, "ROUGH CARPENTRY".
- B. Installation of wood blocking is specified in Section 06 10 00, "ROUGH CARPENTRY".
- C. Full width mirrors over vanities and wall mirrors in Physical Training are specified in Section 08 80 00, "GLASS AND GLAZING".

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 1 Specifications Sections.
- B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.
- C. Schedule indicating types, quantities, sizes, and installation locations (by room) for each toilet accessory item to be provided for project.
- D. Setting drawings where cutouts are required in other work, including templates, substrate preparation instructions, and directions for preparing cutouts and installing anchorage devices.
- E. Maintenance instructions including replaceable parts and service recommendations.

1.5 QUALITY ASSURANCE

- A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.
- B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.
- C. Catalog Standards: Manufacturer's catalog numbers may be shown on drawings for convenience in identifying certain work. Unless modified by notation on drawings or otherwise specified, catalog description for indicated number constitutes requirements for each item.
 - 1. The use of catalog numbers and specific requirements set forth in drawings and specifications are not intended to preclude the use of any other acceptable manufacturer's product or procedures which may be equivalent, but are given for purpose of establishing standard of design and quality for materials, construction, and workmanship.
 - 2. The approval of other listed manufacturers, products does not relieve the Contractor from compliance with the detailed requirements of this Section.

1.6 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

1.7 WARRANTY

- A. Warranty: Submit a written warranty executed by mirror manufacturer, agreeing to replace any mirrors that develop visible silver spoilage defects within warranty period.
- B. Warranty Period: 15 years from date of Substantial Completion.
- C. The warranty shall not deprive the Owner of other rights the owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:
 - 1. American Specialties, Inc. (ASI)
 - 2. Bobrick Washroom Equipment, Inc. (Bobrick)
 - 3. Georgia-Pacific Professional, or equal.

2.2 MATERIALS, GENERAL

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 0.034-inch (22-gage) minimum thickness.
- B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, ASTM B 16; Castings, ASTM B 30.
- C. Sheet Steel: Cold-rolled, commercial quality ASTM A 366, 0.04-inch (20-gage) minimum. Surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: ASTM A 527, G60.
- E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
- F. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- G. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

2.3 PAPER TOWEL DISPENSER AND WASTE RECEPTACLES (P.T.D.W.R.)

- A. Recess-Mounted Paper Towel Dispenser and Waste Receptacle (P.T.D.W.R.):
 - 1. Recessed paper towel dispenser and waste receptacle, Classic series.
 - 2. Cabinet: 18-8, type 304, heavy gauge stainless steel. Welded construction, Exposed surfaces have satin finish.
 - 3. Door: 18-8, type 304, 22 gauge stainless steel with satin finish. Double pan back construction. Secured to cabinet with a full-length stainless steel piano hinge. Equipped with tumbler lock keyed like other washroom accessories.
 - 4. Waste Receptacle: 18-8, type 304, 22 gauge stainless steel with satin finish. Front and sides of bottom all top edges are hemmed for safe handling. Capacity: 12.0 gallons. Unit equipped with LinerMate trash liner holder fabricated with molded plastic trash

liner holder sleeve and a 20-gauge, u-shaped support strap, riveted construction.

5. Accepts 600 C-fold or 800 multifold paper towels.
2. Subject to conformance with requirements, provide "Model B-3944", Bobrick, or equal.

2.4 TOILET TISSUE DISPENSERS (T.T.D.)

- A. Stainless Steel Surface Mounted "Classic" Series Multi-Roll Toilet Tissue Dispenser:
1. Mounting: Surface mounted, concealed anchorage.
 2. Cabinet: Satin finish stainless steel unit with stainless steel dispensing mechanism. Door has flat face with protruding tumbler lock. Theft resistant, heavy duty spindles. Equipped with a tumbler lock keyed like other toilet accessories.
 3. Capacity: Spindles accommodate two toilet tissue rolls up to 5-1/4" diameter.
 4. Subject to conformance with requirements, provide "Model B-2888", Bobrick.

2.5 SOAP DISPENSERS (S.D. / S.D.C)

- A. Lavatory Mounted (S.D.C.):
1. Surface mounted soap dispenser for liquid and lotion soaps and detergents.
 2. Capacity: 34 fluid ounces.
 3. Piston, spout, and top cover: Type 304 stainless steel with bright polished finish.
 4. Body and shank: High impact resistant plastic.
 4. Subject to conformance with requirements, provide "Model B-8226", Bobrick.

2.6 SANITARY NAPKIN DISPOSAL (S.N.D.)

- A. Wall Mounted "Classic" Series Sanitary Napkin Disposal:
1. Construction: Satin finish stainless steel. Door has tumbler lock. Self-closing panel covers disposal opening. Removable, leak proof. All welded construction.
 2. Subject to conformance with requirements, provide "Model B-254", BOBRICK.

2.7 GRAB BARS (G.B.)

- A. Stainless Steel Type: Provide grab bars with wall thickness not less than 0.05 inch (18 gage) and as follows:
1. Mounting: Concealed, manufacturer's standard flanges and anchorages.

2. Clearance: 1-1/2-inch clearance between wall surface and inside face of bar.
3. Gripping Surfaces: Manufacturer's standard nonslip texture.
4. Heavy-Duty Size: Outside diameter of 1-1/2 inches.
5. Subject to conformance with requirements, provide grab bar units manufactured by Bobrick Washroom Equipment, Inc.:
 - a. "Model B-6806x36", for rear wall installation
 - b. "Model B-6806x42", for side wall installation
 - c. "Model B-6806x18", for side wall installation
 - d. "Model B-6806.99 x 24 for shower installation.

2.8 ROBE HOOKS (R.H.)

- A. Single-Prong Single Robe Hook: Heavy-duty satin finished stainless steel single-prong robe hook; rectangular wall bracket with backplate for concealed mounting.
 1. Subject to conformance with requirements, provide "Model B-2116", Bobrick.

2.9 MIRRORS (F.H.M.)

- A. Full Height, Wall Mounted Mirror (**Men's Locker Room 101 and Women's Locker Room 103**): (F.H.M.)
 1. 24"W x 60"H. One-piece, 1/2" x 1/2" x 3/8" channel frame. Type 430 stainless steel with bright polished finish. Mitered corners. Frame screw points easy replacement of glass. No 1 quality, 1/4" glass mirror, warranted against silver spoilage for ten (10) years. Corners shall be protected by friction-absorbing filler strips and the back shall be protected by full-size, shock absorbing, water-resistant, nonabrasive, 3/16" thick polyethylene padding. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed rectangular wall hanger to prevent the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hanger. Mirror shall be removable from the wall. Secured to concealed wall hanger with snap-lock design.
 2. Subject to conformance with requirements, provide "Model B-165-2460", BOBRICK.

2.10 SHOWER RODS, CURTAINS AND HOOKS (S.C.R. / S.C. / S.C.H.)

- A. Shower Rods to be provided within **Men's Locker Room 101 and Women's Locker Room 103** at Shower areas where indicated on the drawings (Refer to Plumbing Drawings for shower units to be supplied with shower Rods):

1. Subject to conformance with requirements, provide shower curtain rod with concealed mounting of the required width to span shower opening.
 - a. "Model B-207", Bobrick, Heavy duty, or equal.
- B. Shower curtain, and hooks to be provided at each shower and for each shower rod installed within **Men's Locker Room 101 and Women's Locker Room 103** as indicated on the drawings.
 1. Subject to conformance with requirements, provide "Model 204-1", BOBRICK, stainless steel shower curtain hooks.
 2. Subject to conformance with requirements, provide "Model 204-2", BOBRICK, shower curtain of opaque white vinyl, required height to be coordinated with shower unit.

2.11 FABRICATION

- A. General: Only a maximum 1-1/2-inch-diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. on either interior surface not exposed to view or back surface, provide additional identification by either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight welded seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.
- C. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:
 1. Provide galvanized-steel backing sheet, not less than 0.034 inch (22 gage) and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.
- D. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theft proof installation, as follows:
 1. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- E. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six (6) keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install toilet accessory units according to manufacturers, instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
 - 1. Reinforcement of stud walls to support wall-mounted cabinets will be accomplished during wall erection by trade involved; however, indicating accurate location and sizing of reinforcement is responsibility of toilet and bath accessories installer.
 - 2. Install toilet accessory units furnished by the owner using fasteners appropriate to substrate as required.
- B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.
- C. Install grab bars to withstand a downward load of at least 250 lbs, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10 28 00

SECTION 10 51 13 - METAL WARDROBE LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing the following:
1. Metal wardrobe lockers and accessories as specified herein and indicated on the drawings at the following locations:
 - a. **Men's Locker Room 100** EIGHTY SEVEN (87) 24" wide wardrobe lockers as specified herein.
 - b. **Women's Locker Room 103** TWENVE (12) 24" wide wardrobe lockers as specified herein.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. Section 06 10 00 "ROUGH CARPENTRY" for wood furring and grounds required for locker installations.
 2. Division 23 – "Mechanical" for air distribution system attached to locker tops.
 3. Division 26 – "Electrical" for power distribution to wardrobe lockers.

1.3 PERFORMANCE REQUIREMENTS

- A. Design Requirements: Total height of all units shall not be greater than elevations per attached drawings.

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: Manufacturer's printed data including materials, accessories, construction, finishes, assembly, and installation instructions for lockers.
- C. Shop Drawings: Layout and dimensions of metal lockers. Indicate relationship to adjoining surfaces. Show locker elevations and details,

fillers, trim, base, and accessories. Include locker numbering sequence. Indicate installation and anchorage requirements.

- D. Samples for Initial Color Selection: Manufacturer's color charts showing a full range of available colors.
- E. Maintenance Instructions: Instructions for cleaning lockers and for adjusting, repairing, and replacing locker doors and latching mechanisms.
- F. Warranty: Submit a written warranty, by Contractor, Installer, and Manufacturer, agreeing to repair or replace units which fail in materials or workmanship within the specified warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under Contract Documents.

The entire installation will be warranted against defects in material and workmanship of moving parts for 5 years from date of acceptance by the Owner. Provide a 10 year warranty on the frame.

- G. Project detailed completion timeline from date of award showing detailed milestones for manufacturing, delivery and installation.
- H. Reference List: Provide a list of 10 installed systems of same size, scope and magnitude to be contacted by owner. Reference list must include system address, contact and phone number, number and type of lockers.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installation supervisor who is an authorized and certified representative (employee) of the vendor with two (2) years' experience installing systems similar to those required for this project, and certified by the manufacturer. Certification required by manufacturer on manufacturer's letterhead at time of bid. Certifications by sales reps, dealers or distributors are unacceptable. Guaranteed maximum response time to service call of 24 hours required, and must be part of submittal. Qualification must include resume of certified installation supervisor.
- B. Single-Source Responsibility: Obtain metal wardrobe locker units and accessories from one manufacturer.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify locker locations by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.
- B. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings". Review methods and procedures related to units including, but not limited to, the following:
 1. Inspect and discuss condition and levelness of flooring and other preparatory work performed under other contracts.
 2. Review structural loading limitations.
 3. In addition to the Contractor and the installer, arrange for attendance of the following:
 - a. Other installers affected by the work of this section.
 - b. The Owner's representative.
 - c. The Architect.
 - d. Manufacturer's representative.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery, Storage, & Handling: Comply with instructions and recommendations of manufacturer for special delivery, storage and handling requirements.
- B. Do not deliver lockers until spaces to receive them are clean, dry, and ready for locker installation.
- C. Protect lockers from damage during delivery, handling, storage, and installation.
- D. Sequence & Scheduling: Sequence installation with other work to minimize possibility of damage and soiling during remainder of construction period.

PART 2 – PRODUCTS

2.1 MATERIALS / BASIS OF DESIGN

- A. Basis-of-design shall be SENTINEL *AIRFLOW* Wardrobe Lockers by TIFFIN METAL PRODUCTS, Tiffin, Ohio USA (800-537-0983), or equal product as manufactured by LINCORA GROUP, Montreal, Quebec, Canada. Products by other manufacturers will be considered provided they comply with technical requirements and match the specified product

in layout, configuration, construction, appearance and finish, in accordance with the design concept and intent.

- B. Provide overall wardrobe locker assemblies with the following dimensions where indicated on the drawings:
 - 1. 24" W x 24" D x 72" H. (without bench assembly). Lockers shall be factory assembled to specifications, quantity, and size listed.

2.2 PRODUCT DESCRIPTION

- A. Locking Mechanism: Combination Lock with Master Key Override
- B. Locker Material: Top, bottom, back and sides are 14-gauge. Shelves, door and reinforcements are 16-gauge, cold-rolled steel conforming to ASTM A 1008B. All steel to be free from imperfections and capable of taking a high-grade powder coat finish. Surfaces shall be cleaned in a multi-stage process to inhibit corrosion. Door hinges shall be continuous type, 14-gauge.
- C. Finish: All parts shall be finished with heavy (5 mil min) baked on powder coat finish.
- D. Locker Fabrication
 - 1: Frames: Formed as integrated part of sides and tops with doors installed.
 - 2: Body Parts: Formed shelves, tops and bottoms (perforated to allow air to flow through the bottom and out the top of the locker), back panels and sides. All body parts to be attached to assembly by using corrosion resistant nuts/bolts and 3/16" plated steel rivets.
 - 3: Doors: Both doors are formed on all sides and are solid with no louvers. Lift latch operated, right door top and bottom bayonet engaged, allows door to latch when pushed closed without raising lift handle. Equipped with lock as specified in section 2.2.A. Left door is secured in place by right door overlap. Doors can be opened with one-handed operation. No twist handles.
 - a. Doors open at least 130 degrees and have steel 14-gauge continuous full-length hinges.
 - b. Recessed door latch, painted cup with integral door latch/pull so locking device does not protrude beyond face of door, pry resistant.
 - c. Number plates included and shipped loose for installation in factory punched mounting holes.
- E. Interior Equipment: Each 24" wide locker to be supplied with the following:

1. Three (3) small shelves: Two are 7"W x 13-15/16"D x 8"H. Including a lockable compartment for storage of sidearm and/or other valuables. One is 7"W x 10-15/16"D x 8"H. NOTE: All shelves stop 2" from rear of locker to allow a positive flow of fresh air.
 2. Two (2) larger shelves (1) 24"W x 13-15/16"D x 4-15/16"H for briefcases and (1) shelf 24"W x 20 -11/16"D x 7-7/8"H for headgear etc.
 3. Clothing section, with slotted coat rack bar, 17"W x 22 - 3/4"D x 55-5/16"H
 4. Perforated metal boot tray allows dirt/sand to fall thru, easily removable for cleaning, shall sit below the clothing section for the storage and drying of footwear.
 5. Separate compartment with hook for body armor 7"W x 22-3/4"D x 29-5/16"H allowing a full flow of air around it.
 6. Single hooks on each side of interior.
 7. Left door equipped with pegboard type panel with two (2) hooks to allow hanging of duty belt.
 8. Left door furnished with large pocket for police clipboard
 9. Unbreakable mirror with magnetic attachment (shipped loose)
 10. Standard knockout placement for running conduit to the locker
 11. Modular electrical Plug and Play Kit to be provided by locker manufacturer, each locker to include two receptacles. Plug and Play kit to be 3 circuit system with dedicated neutral. Electrical Contractor to provide necessary wiring from circuits indicated to junction boxes adjacent to locker outlet connection in ceiling space of locker room.
- F. Drawer Unit: A separate compartment under each locker, 24"W x 36"D x 18"H, complete with a nominal 24"W x 36"D x 18"H drawer, heavy-duty 200# capacity -28" drawer slides and integrally formed ventilated handles. Keyless lock (Drawer locks when pushed shut. Drawer can be closed when doors are shut. A mechanical release lever located inside of the upper compartment is pulled to unlock the drawer. A hardwood bench in lengths of 2', 4', 6', 8', 10' or 12' (longest length as required) x 9-1/2" D x 1-1/4"H to be attached to the top of drawer unit.

2.3 ACCESSORIES

- A. Finish trim and filler panels for a complete installation from finished wall surface to finished wall surface.
- B. Finished end panels to be provided at all exposed locker ends to conceal all fasteners and perforations.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. INSTALLATION: Install metal wardrobe lockers at location shown in accordance with approved shop drawings and manufacturer's instructions for plumb, level, and flush installation.
 - 1. Use Factory Trained and Certified installers
 - 2. Follow all manufacturers' supplied installation specifications without deviation.
 - 3. Perform a post installation walk-thru with the owner for verification of specification adherence and overall performance of the locker system.
- B. Anchor lockers / bases to the floor and wall as recommended by the manufacturer to suit adjacent materials and finishes.
- C. Install continuous fillers using concealed fasteners and holding devices where possible. Provide flush hairline joints against adjacent surfaces to completely close off unwanted openings.
- D. ADJUST & CLEAN: Adjust doors and latches to operate without binding. Verify that the latches are operating properly.
- E. Touch up marred finishes with manufacturer supplied, color matched, aerosol or touch-up paint.

END OF SECTION 10 51 13

SECTION 11 19 00 - DETENTION EQUIPMENT

PART 1 - GENERAL REQUIREMENTS

1.1 **GENERAL PROVISIONS**

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.
- B. Detention Equipment Manufacturer is designated as DEM in this Section of this specification.

1.2 **SCOPE OF WORK**

- A. The work under this section consists of demolition and removal of existing detention equipment indicated for replacement and furnishing and installation of all Detention Wall Systems consisting of sliding door assemblies (eight (8) total) and 7/8 inch laminated glass assembly including all related hardware and fasteners as required and as indicated on the Contract Drawings and as specified herein and as required to make a complete door operating system at **Cell Block 110**.
- B. Security Vents (total of 2 at **each cell**) as indicated on the drawings. Total of sixteen (16).
- C. Steel plate bunks (total of 8) as indicated on the drawings.
- D. Detention Equipment Manufacturer shall coordinate work with all other trades under the direction of the General Trades Contractor.

1.3 **RELATED WORK SPECIFIED ELSEWHERE**

- A. Finish painting, as specified under section 09 90 00 - Painting. NOTE: General Trades Contractor shall coordinate the finish painting of the Detention Entrance System including requiring the Painting Contractor to be on the job-site DURING INSTALLATION OF THE DETENTION ENTRANCE SYSTEM to assure that the inaccessible portions of the door and fixed wall system are finish painted prior to hanging the doors. Finish Painting Contractor shall start work 2 days after written notification by Detention Equipment Contractor.
- B. Joint Sealants, Section 07 92 00 for security sealants related to Detention Equipment installations.
- C. HVAC Division 23. HVAC Contractor shall coordinate vent dimensions and locations with this contractor.

1.4 QUALITY ASSURANCE

- A. Detention Equipment Manufacturer must show, to the satisfaction of the Designer and owner, that they are fully capable of completing and servicing the detention equipment in strict accordance with the Contract Drawings and Specifications.
- B. Manufacturers shall have at least five (5) years active experience in the design/manufacture of equivalent detention systems.
- C. Quality Control
 - 1. Allowable Tolerances:
 - (a) Materials: Steel components min. 10 gauge +/-0.006 in. nom. metal thickness.
 - (b) Size: +/-1/16 in. width and height.
 - (c) Size: +/-1/32 in. frame depth.
 - (d) Glazing: As per manufacturers published standards.
- D. List of Installations
 - 1. Detention Equipment Manufacturer shall submit a list of at least five (5) installations of detention equipment, including locking devices, equal to the requirements of this project, which have been fabricated entirely in his plant and which have been installed by him. These installations shall have been in satisfactory use for a minimum of five years each. Submitted list of installations shall include the following information: Name and location of installation, date of occupancy by Owner, and dollar value of contract.
- E. Manufacturer/Installer
 - 1. The Detention Equipment Manufacturer shall install all detention equipment specified in this section of the specification to assure a single source responsibility.

1.5 SUBMITTALS

- A. Submit shop drawings of all work under this Section to the Designer for approval in accordance with the General Requirements of this Specifications.
- B. Shop Drawings
 - 1. Shop Drawings shall be prepared in the offices of the Detention Equipment Manufacturer, and shall be prepared by designers regularly employed by him. The drawings shall exhibit all necessary dimensions, configurations and connections of detention equipment materials.
 - 2. Shop Drawings shall indicate elevations of each frame type, profiles and gauges of materials, wall conditions of all anchorages, typical

and special details of construction, methods of assembling sections, shop finishes, and all other necessary information.

3. Provide details at 3 in. to 1 ft. scale and dimensioned elevations at not less than 3/8 in to 1 ft. scale.

C. Templates

1. DEM shall furnish necessary templates for all items of hardware that are applied or installed to door systems.

D. Hardware Schedule

1. DEM shall provide a hardware schedule that specifies all hardware items such as lock types, hinges, door closers, door roller assemblies, key schedules etc, that each door requires according to the specifications herein.
2. DEM shall coordinate with the Owner a key schedule specifying all key changes and designating which locks are one-way and two-way and, in the case of one-way locks, the schedule shall indicate on which side of the door the key operation will occur. If a key schedule is not provided by the Owner, the DEM shall submit a proposed schedule to the Owner for approval.
3. DEM shall submit a door schedule along with the hardware schedule specifying door swing, lock mounting side, etc. for all doors in this Section.

1.6 FIRE RESISTIVE RATINGS

- A. Comply with fire resistive classifications as required by governing authorities and local building codes. Provide materials and application procedures which have been tested in accordance with ANSI/U.L.10B (NFPA 252, ASTM E-152 CAN4 S-104, UBC 43.2).

1.7 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project as designated in their original unopened packages, containers and bundles, bearing the manufacture's label, brand name and product identification number.
- B. Materials shall be properly sorted and stored in an enclosed space protected from damage due to the elements and or other contractors on the project. The General Contractor shall designate a storage area within the building within the closest proximity of where the materials will be installed.
- C. Laminated glass sheet material shall be stored flat, under cover and out of contact with damp surfaces, and in a manner to prevent warping, twisting and/or chipping until ready for installation.

1.9 PROTECTION

- A. Provide adequate protection of all products under this Section from the accumulation of dirt, dust and debris so as to avoid damage to the finished surfaces. The Detention Contractor shall assure that stored and install materials are not damaged by other contractors. All costs associated with repairing and replacing damaged materials caused by other contractors shall be paid by the Detention Contractor.

1.8 GUARANTEE

- A. The Detention Equipment Manufacturer shall guarantee that the Detention Benches will be free from defects for a period of one (1) year after OWNER OCCUPATION. This Guarantee shall cover faulty materials and workmanship, but does not cover damage from abuse. Upon notification of any such defects the DEM shall make all necessary repairs and replacements at no cost or expense to the OWNER.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. All Detention Equipment described within this section and as indicated on the Contract Drawings, shall be as manufactured by:
1. GS Company, 7920 Stansbury Road, Baltimore, MD, (401)-284-9549
 2. Jails Correctional Products, a division of Fabcor, Inc., Minster, Ohio, (419)-628-4428
 3. or approved equal.
- B. For the purpose of establishing performance criteria the Contract Drawings and specifications have been based on GS Company.

2.2 SECURITY DOOR UNITS

- A. Doors shall be made of bullet-resisting steels complying with UL 752 and other code criteria if applicable. Steel shall be free of scale, pitting or other surface defects. Face sheets for doors shall be not less than 1/8 inch.
1. All materials required for the work specified herein shall be new and produced especially for detention use and shall conform with accepted standards of the Detention Equipment Industry.
 2. Detention type hollow metal doors shall have face sheets of 1/8 inch steel with continuous inner-reinforcement full width and height of door. Vertical reinforcement shall be of truss design or 2 inch x 1 inch channels spaced approximately 7 inches on center, either

construction shall meet testing criteria as specified in article 2.3 paragraph E.2.a.

B. Design and Construction

1. All doors shall be of the types as shown on the Contract Drawings, sliding type.
2. Doors shall be of fully welded construction with no visible seams or joints on their faces or vertical edges. Door thickness shall be 2¼ inch.
3. At all glass stop locations a continuous 10 gauge reinforcement shall be provided, spot welded or stitch welded to face sheets.
4. Face sheets shall be stiffened by continuous formed steel sections spanning the full thickness of the interior space between door faces. These stiffeners shall be provided at all window openings and wherever necessary to provide maximum reinforcement. The stiffeners shall be constructed of 1/8 inch steel and attached to the face sheets with fillet welds and spot welds. Spaces between face sheets shall be sound deadened and insulated with an inorganic noncombustible insulation.
5. Top and bottom edges of doors shall be closed with a continuous steel channel not less than 1/8 inch thick.
6. All doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used.
7. Doors constructed of mill tubing will not be accepted.

C. Hardware Reinforcements

1. Doors shall be mortised, reinforced, drilled and tapped at the factory for full template hardware, in accordance with the approved hardware schedule. Current templates shall be acquired by the DEM from the hardware manufacturer. All hardware shall be applied by the DEM at his plant to the doors and shipped to the job-site.
2. Minimum gauges for all hardware reinforcements shall be 10 gauge, including but not limited to lock cover plate screws, door pulls, flush bolts and door closers.

D. Test Reports

1. Testing laboratory shall be a recognized independent testing laboratory capable of complying with the Specifications of the American Society for Testing and Materials. Testing laboratory shall be selected by the DEM and approved by the designer. Cost or required testing shall be borne by the DEM. Certification and reports shall be furnished direct to the DEM with a copy to the Designer.
2. Doors
 - a. The DEM shall submit to the Architect an independent testing laboratory report, certifying the following minimum

performance data for a typical security hollow metal door. Test report shall indicate all gauges of component parts and shall describe construction methods. The test sample shall be a 3 feet, x 7 feet, blank door panel.

TEST 1 - STATIC LOAD: Under a static load of 14,000 pounds at quarter points, with the door supported at 6 feet there shall be no more than .58 inch, deflection, without any failure of the door panel.

TEST 2 - RACK (Twist): Under a concentrated load of 7,500 pounds, on one unsupported corner, maximum deflection shall not exceed 3.50 inches with no failure of construction or welds.

2.3 GLAZING FOR FIXED PANEL

- A. Transparent Security Armor: Security transparent armor for doors shall be 7/8 inch thick clear, and shall be constructed from five (5) layers of heat strengthened float glass and four (4) Polyvinyl Butyryl inter-layers of not less than 0.060". Each layer of heat strengthened glass shall be 1/8 inch thick and the total product thickness shall be 7/8 inch thick and shall be "Riotglass Detention Strength" Product no. Riotglass 5-360 as manufactured by Guardian Industries, Inc. or Laminated Glass Corporations "Superguard" or approved equal as determined by the Architect and Owner.
- B. The DEM shall factory glaze all vision panels.
- C. All glazing stops shall be positioned on the non-threat side of the vision panel.

2.4 FACTORY-SUPPLIED HARDWARE FOR SECURITY DOORS / FRAMES (SLIDING DOOR ASSEMBLIES AND ACCESS PANELS)

- A. The DEM shall fully prepare and supply the following hardware items, which shall be factory installed by him at his manufacturing plant.
 - 1. Deadlock shall be equal to Southern Steel #1030A-1 series lock, keyed on one side, SLAM-LOCK activated.
 - 2. Lock Mounting Plate shall be fabricated from 3/16 inch steel plate, and it shall be flush mounted. The outer surface of the lock mounting plate shall be on the same plane as the outer face sheet of the door or frame dependent on the type of hardware utilized, surface mounted lock mounting or cover plates will not be accepted.
 - 3. Door Pull shall be detention type heavy duty flush pull #FP4 as manufactured by Folger Adam Co.

4. Food pass locks shall utilize Southern Steel, Model1017A, Snap latch, or equal.
- B. Sliding Door Hardware Specifications: The following sliding door hardware is intended to provide a system that is virtually maintenance free, corrosive resistive and smooth operating. Roller wheel assemblies of any kind will not be accepted.
1. #3154 Traveler Track
Track shall be #3154 as manufactured by Harken. Track shall be 6061-T6 aluminum which is Hardkote anodized with Teflon impregnation. Track shall be supported for its entire length. Mounting screws shall be 5/16 inch round flat head stainless steel machine screws spaced at 3-15/16" on center. Track shall be 1.25 inch wide x .75 inch high.
 2. #3163 Traveler Car
Traveler Car shall be #3163 as manufactured by Harken. Cars shall have maximum working load of 3000 lbs. and breaking load of 7000 lbs.
 3. Ball Bearings
The #3163 traveler car shall ride on recirculating ball bearings. The bearings shall be Duratron for a totally non corrosive bearing system.
 4. Hanger Assembly
Hanger assembly shall be adjustable in height with the use of eccentric bolts. Hanger assemblies shall be constructed with steel having a thickness of not less than ¼ inch.

2.5 MATERIAL FINISHES

- A. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of irregularities. Doors and Vision Panels shall then be chemically treated to insure maximum paint adhesion and shall be spray painted on all exposed surfaces with a rust prohibitive primer that shall be fully cured prior to shipment.

2.6 STEEL PLATE BUNKS WITH ENCLOSURE

- A. Steel plate bunks within **Cell Block 110 (total of 8)** shall be constructed with 10 gauge open hearth steel. They shall span entire length of cell and they shall be supported along ends and back with continuous 2 inch x 2 inch x 3/16 inch angles.
- B. Along front of bunk a vertical plate shall be provided that will completely close in the underside of the bunk. The plate shall be 10 gauge open hearth steel and it shall be welded to bunk with 1 inch welds at 1 foot and connected to floor with a 2 inch x 2 inch x 3/16 inch angle.

- C. DEM shall surface apply a metal sound dampening compound to the inside vertical and horizontal surface of the bunk.
 - 1. Sound dampening compound to be Metal Damping Compound, VBD-10 (3/16" thickness when dry) or Soundamp Damping Sheet, as manufactured by Acoustical Solutions, Richmond, VA, or equal.

2.7 CELL VENTS

- A. Cell vents shall be of the same gauge steel as where they are mounted, (3/16 inch) plate. They shall be flush mounted plates on the same plane of the material of which they are mounted. The vents shall have 3/16 inch round holes at 5/16 inch on center, staggered. A 2 inch x 2 inch x 3/16 inch angle shall be provided around the perimeter of the vent for attachment by the HVAC contractor. The vents shall be 12 inch square unless noted otherwise on the Contract Drawings. The HVAC Contractor shall calculate air flow requirements and he shall notify the DEM of any changes to vent sizes through the Design/Build Contractor with the approved shop drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Prior to installation all frames must be checked and corrected for rack, twist and out-of-square. Frames must be set true and plumb and remain in alignment until permanently built into walls.
- B. Proper door clearances must be maintained in accordance with manufacturer's requirements for Swinging Door Assemblies, except for special conditions otherwise noted. Where necessary metal hinge shims are acceptable to maintain clearances. Hardware must be applied in accordance with the Hardware Manufacturer's instructions.
- C. All Detention Wall Systems shall be installed by experienced installation crews.
- D. All glazing shall be set according to the glazing manufactures installation instructions.
- E. Adjust all detention hardware prior to acceptance by Owner.

3.2 ANCHORING

- A. Anchorage devices required for the work of this Section shall be furnished and installed by the DEM.

- B. It is the responsibility of the DEM to determine that all detention equipment is properly anchored for the type of abuse expected of this equipment.
- C. Masonry Contractor shall secure all built in plates, bars and frames into masonry by filling voids solid with concrete.

3.3 FASTENING

- A. DEM shall fasten detention equipment components to each other and to the building construction as detailed or otherwise required to provide a secure installation.
- B. Where spacings or sizes are not shown for fasteners, use fasteners which shall develop of the members being fastened so that failure due to over stress will occur in the member before occurring in the fastening.
- C. Fastenings to concrete shall be with expansion bolts or anchor bolts. Toggle bolts will not be accepted.
- D. Fasteners which must be removed for maintenance or service shall be Torx security screws.
- E. Permanent fastenings shall be welds, screws, or rivets unless otherwise noted. Use security fasteners in all detention rooms.
- F. Where bolts are exposed to detainee's they shall have their threads disturbed or they shall be tack welded or security bolts shall be utilized. Where bolts are not exposed to detainee's, hex head bolts may be utilized.

3.4 WELDING

- A. Welding shall be executed in accordance with the best-approved standard, as established by the American Welding Society. Arc welding shall be used in fabrication and erection work where practical, and where called for on detailed drawings, and where neat workmanship is reasonably possible. All welding shall be by fully competent workmen and shall exhibit first class workmanship for this classification of work.
- B. Surfaces to welded shall be cleaned of all loose scale, rust, oil, grease, paint, or other foreign matter. Welds shall show uniform section and smoothness of weld metal without overlaps and a minimum of craters, porosity, and clinkers.
- C. Projecting burrs, edges, or rough spots shall be removed by grinding. Plug welds shall be ground smooth where exposed to view.

- D. Visual inspection of edges and end fillets and butt joint welds shall indicate good fusion width and penetration into base metals. Precautions shall be taken to minimize stresses and distortions due to heat.

3.5 PAINING AND FINISHING

- A. All burns, weld spatter, exposed field rivets, bolts, nuts, welds, and any marring of the shop coat of paint on the detention equipment shall be thoroughly cleaned and retouched as part of this contract.
- B. All steel detention equipment herein specified, except aluminum, bronze, or stainless steel hardware, and part of the work to be enameled or plated, shall be painted one (1) shop coat of rust resistant, red oxide metallic primer before shipment from factory. All burns, welds and weld splatter on detention equipment shall be thoroughly cleaned prior to the prime coat by the DEM.
- C. Finish painting of all detention equipment, after erection and final adjustment, shall be completed by the Painting Contractor under the direction of the General Contractor.
- D. DEM shall be fully responsible for surfaces adjacent to his work, whether finished or not, and shall be required to clean burns, weld splatter etc. from these surfaces and restore them to the condition in which they were when his work commenced.
- E. The DEM shall submit for approval to the General Contractor the Primer Paint he proposes to utilize. The General Contractor shall coordinate with the Finish Painting Contractor to assure compatibility with Finish Painting.

3.6 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. The DEM shall provide two (2) paper copies and one (1) electronic copy of an operation and maintenance manual for the locking and operating devices, including the DEM's standard part numbers for each component included the assembly. These instructions shall be presented prior to final acceptance of the project.
- B. After the building is substantially complete and prior to the final payment, the DEM shall provide four (4) hours of instruction of the maintenance and operation of the equipment furnished and installed under the work of this Section.
- C. DEM shall provide to the Owner two (2) of each type of security tool required for security screws provided under this Section.

END OF SECTION 11 19 00

SECTION 11 48 00 - SHOOTING RANGE EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials and equipment required and install all firearms range equipment complete with all accessories and incidentals required, in accordance with the drawings and these specifications
 - 1. Horizontal Range Baffles (total of two (2)), ceiling suspended, in **INDOOR RANGE 111** where indicated on the drawings and specified herein.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. HVAC Section 15000. HVAC Contractor shall coordinate vent sizes and locations with this contractor.
- B. Electrical Section - Electrical Contractor shall coordinate lighting fixtures and electrical requirements with this Contractor.

1.4 QUALITY ASSURANCE

- A. Shooting Range Manufacturer must show, to the satisfaction of the Designer and Owner, that they are fully capable of completing and servicing the shooting range equipment in strict accordance with the Contract Drawings and Specifications. The entire work of this Section shall be performed by a single Shooting Range Equipment Manufacturer.
- B. Manufacturers shall have at least (5) years active experience in the design and manufacture of equivalent shooting range systems.
- C. During installation of the pistol range equipment, provide at least one (1) person who shall be thoroughly familiar with installation requirements of the equipment and who shall be present at all times during actual installation and who shall personally supervise the installation work.

- D. The manufacturer shall have available a technician for final inspection and adjustment of the equipment, and for instructions to the operation and maintenance personnel.

1.5 SUBMITTALS

- A. Submit shop drawings of all work under this Section to the Designer for approval in accordance with the General Requirements of this Specifications.
- B. Shop Drawings
 - 1. Shop Drawings shall be prepared in the offices of the Shooting Equipment Manufacturer, and shall be prepared by designers regularly employed by him. The drawings shall exhibit all necessary dimensions, configurations and connections of shooting range equipment materials.

1.6 GUARANTEE

- A. Upon completion of the installation, and as a condition of acceptance, deliver to the Architect/Engineer all copies of guarantees, warranties, operating instructions, and maintenance instructions.
- B. Submit a written warranty stating this work will be free from defective materials and workmanship for a period of two (2) years from the date of substantial completion. Include two (2) on-site visits per year by shooting range manufacturer for each of the two (2) years (four total on-site visits) at no additional cost to the Owner.
- C. Shooting range manufacturer to replace defective work within the warranty period at no additional cost to the Owner, delivered and installed on-site.

1.7 PROTECTION

- A. Use all means necessary to protect the equipment before, during and after installation and to protect the installed work and materials of other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/Engineer at no additional cost to the owner.
- C. Provide adequate protection of all products under this Section from the accumulation of dirt, dust and debris so as to avoid damage to the finished surfaces.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project as designated in their original unopened packages, containers and bundles, bearing the manufacture's label, brand name and product identification number.
- B. Materials shall be properly sorted and stored in an enclosed space protected from damage due to the elements and or other contractors on the project. The General Contractor shall designate a storage area within the building within the closest proximity of where the materials will be installed.

1.9 COORDINATION

- A. Work of this Section shall be coordinated with the respective trades.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER AND MATERIALS

- A. The Basis of Design is Meggitt Training Systems, Inc. 296 Brogdon Road, Suwanee, GA 30024, Telephone No. (763) -568-7166, Fax No. (763) 568-7167. All equipment shall be as specified, or an equal approved by the Architect.
- B. All items of equipment shall be the products of the same manufacturer to assure compatibility.
- C. The equipment shall consist of the standard products of a company regularly engaged in such manufacture for five (5) years or more. The company must show evidence of at least twenty (20) successful installations of the equipment specified.
- D. Equipment other than that specified shall be considered as equally acceptable if it fulfills all of the functional requirements of these Specifications.

2.2 CEILING SYSTEM

- A. Ceiling System - A ceiling system shall be provided so that misdirected high shots are interrupted before striking any part of the newly installed downrange ductwork, thereby also providing sheltered areas for lighting, ventilation and other equipment as may be required. The ceiling system shall consist of a series of downrange baffles.
 - 1. Type of System - The ceiling system shall be of the air-space principle. The air-space principle utilizes an air space between a soft frontal surface and a hard back surface so that bullets may enter the front but after ricocheting off of the back surface, their particles cannot escape through the entrance holes.

2. Spatial Requirements - The ceiling system shall shelter all new mechanical ductwork installations (two total). The sheltered area shall extend from 1 inch of either sidewall.
 3. The ceiling system shall consist of baffles suspended laterally across the range where indicated on the drawings.
 4. The suspended baffles shall be of the approximate size and location shown on the plans.
- B. Design Requirements - The air-space ceiling panels shall be pre-fabricated by the range equipment manufacturer in units of approximately 4 feet square for ease of handling. The dimensions may be altered to suit the requirements of the facility. They shall be furnished complete with all suspension hardware and acoustical surfacing.
1. The panels shall consist of frames constructed of 2 inches by 4 inches lumber faced with plywood lumber of 5/8-inch minimum thickness and covered on the back with hot rolled galvanized steel plate of 10 gauge minimum thickness. The entire assembly shall be rigidly constructed using screws, lag bolts or 1 in--shank nails spaced on 6-inch maximum center distances.
 2. Affixed to the panels shall be suitable cleats or eye-bolts for the attachment of the suspension hardware, and means shall be provided for securing the contiguous panels to each other.
 3. The manufacturer shall furnish appropriate suspension hardware. This shall consist of No. 2/0 twin loop, zinc plated chain and suitable attachment hardware that provides vertical adjustment to facilitate alignment.
- C. Acoustical Surfacing - After erection and alignment, the panels are to be surfaced with acoustical material. The material shall be 2" sculptured foam, Model No. AAF-8.
- D. Absorption Acoustical Foam - The shooting range will have two-inch acoustical sculptured foam mounted on any down range air space baffles provided.
1. The material will be supplied by Range Equipment manufacturer and will be Model No. AAF-8.
 2. The material will be attached to the wood panels with structural adhesive provided with the foam material.
 3. The absorption acoustical foam contour is based on the Anechoic wedge principle. The sculptured surface presents a surface area 300% greater than a flat surface.
 4. Color: charcoal.

PART 3 - EXECUTION

3.1 INSPECTION OF ON SITE CONDITIONS

- A. Before starting work, this Subcontractor shall examine the areas where Shooting Range Equipment is to be installed that may affect his work. He shall report in writing to the General Contractor any condition which might adversely affect the work and shall not proceed with such work until defects have been corrected and conditions are satisfactory.

3.2 INSTALLATION REQUIREMENTS

- A. All shooting range equipment specified under this Section shall be installed in place and put into operation under the supervision of a qualified superintendent trained by the manufacturer.
- B. Shooting range equipment installations shall not be started until the areas have electrical access, properly lighted, climate controlled, exterior enclosing walls in place, roof completely installed and floor broom cleaned.

3.3 INSTALLATION

- A. All shooting range equipment shall be installed by experienced installation crews.
- B. Adjust all equipment prior to acceptance by Owner.

3.4 PAINTING AND FINISHING

- A. All burns, weld spatter, exposed field rivets, bolts, nuts, welds, and any marring of the shop coat of paint on the shooting range equipment shall be thoroughly cleaned and retouched as part of this contract.
- B. Shooting range installer shall be fully responsible for surfaces adjacent to his work, whether finished or not, and shall be required to clean burns, weld splatter etc. from these surfaces and restore them to the condition in which they were when his work commenced.

END OF SECTION 11 48 00

SECTION 12 32 16 - MANUFACTURED ARCHITECTURAL CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201-2007, "The General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and/or Subcontractor who performs this work. Note also all Addenda.

1.2 SUMMARY

- A. This Section includes furnishing and installing the following for vanity tops at **Men's Restroom 101** and **Women's Restroom 104** as indicated on the drawings and specified herein:
1. Laminate clad casework
 2. Countertops: solid surface
 3. Backsplashes, filler panels and scribe pieces for complete installation.
- B. Related Sections: The following sections contain requirements that relate to this section:
1. Furring, blocking, and other carpentry work that is not exposed to view is specified in Section 06 10 00 "ROUGH CARPENTRY".

1.3 DEFINITIONS

- A. Exposed Surfaces: Surfaces visible when drawers and opaque doors are closed; behind clear glass doors; bottoms of casework 43 inches or more above finished floor.
- B. Semi-exposed Surfaces: Surfaces which become visible when opaque doors are open or drawers are extended; bottoms of casework are more than 30 inches and less than 42 inches above finished floor.
- C. Concealed Surfaces: Surfaces considered concealed when surfaces not visible after installation; bottoms of casework less than 30 inches above finished floor; tops of casework over 78 inches above finished floor and not visible from an upper level; stretchers, blocking, and components concealed by drawers.
- D. Flush Overlay: Door and drawer faces cover cabinet frame with space between faces sufficient for operating clearance.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of product and process specified in this section and incorporated into items of architectural casework during fabrication, finishing, and installation.
- C. Shop drawings for casework and fittings showing plan layout, elevations, ends, cross-sections, service run spaces, location and type of service fittings, together with associated service supply connection required.
 - 1. Include details and location of anchorages and fitting to floors, walls, and base, including required blocking or back-blocking.
 - 2. Include layout of units with relation to surrounding walls, doors, windows, and other building components.
 - 3. Coordinate shop drawings with other work involved.
 - 4. Include manufacturer's recommendations for blocking and securing of casework units and fittings.
- D. Samples for initial selection purposes of the following in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of material indicated.
 - 1. Plastic laminate.
 - 2. Exposed cabinet hardware, one unit of each type and finish.
- E. Product certificates signed by casework manufacturer certifying that products comply with specified requirements.
- F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, and other information specified.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Firm experienced in successfully producing architectural casework similar to that indicated for this Project, with sufficient production capacity to produce required units without causing delay in the Work.
- B. Single-Source Manufacturing and Installation Responsibility: Engage a qualified Manufacturer to assume undivided responsibility for casework specified in this section, including fabrication, finishing, and installation.

- C. AWI Quality Standard: Comply with applicable requirements of "Architectural Casework Quality Standards" published by the Architectural Casework Institute (AWI) except as otherwise indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect casework during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration. Keep covered with polyethylene film or other protective coating.
- B. Do not deliver casework until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."
 - 1. Follow procedures and schedules as provided by the General Contractor.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install casework until optimum temperature and humidity conditions for casework have been attained and stabilized so that casework is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.
- B. Field Measurements: Where casework is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing casework; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with if construction progress to avoid delay of Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with manufacture of casework without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.
- C. Field Measurements: Verify countertop size and shape prior to fabrication by field measurements taken after base units are installed.

PART 2 - PRODUCTS

2.1 PLASTIC LAMINATE

- A. High pressure plastic laminate shall be used on all doors and drawer faces and shall meet all NEMA standards.

- B. Colors to be as scheduled on Finish Drawings.

2.2 COUNTER TOP (PLASTIC LAMINATE)

- A. Horizontal grade plastic laminate on 45 pound particle board.
- B. Melamine plastic laminate backing.
- C. Color to be as scheduled on the Finish Drawings.

2.3 COUNTER TOP (SOLID SURFACE)

- A. Provide solid surface countertops and edge treatment where indicated on drawings. Provide sink cutouts as required.
- B. Solid surface material to be as scheduled on the Finish Drawings.

2.4 MELAMINE LAMINATED PARTICLE BOARD

- A. Thermofused impregnated decorative overlay bonded to 45 pound density industrial grade particle board.
- B. Particle board shall have a moisture content not to exceed 8%.
- C. Interior melamine laminate color is white.
- D. White melamine laminate for cabinet interiors behind doors and drawers and interior of all open cabinets.

2.5 CABINET CONSTRUCTION

- A. Countertops
 - 1. Refer to drawings for locations of solid countertops. Countertops to include backsplash and rolled front edge.
- B. Workmanship
 - 1. All exterior vertical surfaces shall be finished with high pressure plastic laminate unless otherwise indicated.
 - 2. Cabinet parts shall be accurately machined and constructed with glue and dowel method.
 - 3. Cabinet ends shall be dadoed to receive bottoms, tops and backs. Backs shall be securely glued into sides, tops and bottoms.

PART 3 - EXECUTION

3.1 STORAGE AND PROTECTION

- A. Casework shall be protected in transit. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes. Do not install casework in building until concrete, masonry and plaster work is dry.

3.2 WORKMANSHIP

- A. Erect casework straight, level and plumb and securely anchor in place. Scribe and closely fit to adjacent work. Cut and fit work around pipes, ducts, etc.
- B. Install all items complete and adjust all moving parts to operate properly.
- C. Leave surfaces clean and free from defects at time of final acceptance.

3.3 CLEAN UP

- A. Installer to remove all cartons, debris, sawdust, scraps, etc. and leave spaces clean and all casework ready for use.

END OF SECTION 12 32 16

SECTION 31 11 00 - SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 DESCRIPTION OF WORK

- A. Clearing and grubbing of existing site lawn areas, trees, and shrubs to be removed and regraded to prepare new site surfaces for new improvements where indicated on the drawings.
- B. Site demolition work including removal and legal disposal of all sitework impacted to prepare areas for new construction and new site improvements.

PART 2 - PRODUCTS

Not used in this Section.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

- A. Before any clearing operations begin, stake out all structures, walks, pavements and "Contract Limit Lines" for final approval by the Architect. Remove all shrubbery and plant materials of all kinds, except as shown or as directed to remain, within the area bounded by the Contract Limit Lines or where any construction of site improvements are shown or called for, or where conformation of the ground is changed within the Contract Limit Lines.
- B. The Contractor shall remove any trees and brush that are in the line of his work but only after receiving approval from the Architect. Removal shall mean taking trees out by the roots. No burning is allowed on site. Remove all clearing debris from the site.
- C. Grubbing shall consist of grubbing up and removing for a depth of at least 12 inches below the existing adjacent ground level, all the stumps and roots 3 inches or more in diameter.

3.2 SITE DEMOLITION WORK

- A. This section includes all labor, materials, equipment, and appliances required to complete the entire demolition work. Demolition is limited to those items as noted on the plans. The clearing and prompt removal and disposal of all rubbish and debris shall be in accordance with the requirements of the Owner.
- B. Obtain all permits as required.
- C. Provide protection for all shrubs, trees, lawns, landscape work, walks, roads, drives, adjacent buildings, and equipment, both on and off the property and in adjacent roads and streets.
- D. The Contractor shall provide, erect, and maintain such fences, planking, bridges, bracing, shoring, lights, barricades, warning signs and guards as necessary for the protection of streets, sidewalks, adjoining property and the general public during the performance of the work.
- E. The Contractor shall not close or obstruct any public street, sidewalk, alley or passageway, nor store equipment or materials thereon without permits from and the notification of the proper authorities. Public access and egress for emergency equipment to any building must be maintained at all times during construction. The Contractor must coordinate schedules with the property Owner's Representative or Officials.
- F. All operations shall be conducted with minimum interference to both vehicular and pedestrian traffic.
- G. Before starting work, the Contractor shall ascertain that all utility branches or main connections, such as water, gas, and electricity have been disconnected in accordance with the municipality and the regulations of the utility concerned. No wires, conduits, pipes or other connections shall be removed until the applicable services have been disconnected as herein described above. All utility disconnections with the exception of the sewers and drain work described below, shall be done by the appropriate subcontractor in accordance with appropriate utility regulations (if applicable), plans and specifications.
- H. It shall be the responsibility of the Contractor to protect and preserve in operating conditions, all utilities adjacent to and traversing the project site, protect manholes including frames and covers, valve boxes and other appurtenances. Damage to any utility due to work under this contract shall be repaired to the satisfaction of the Owner, at the Contractor's expense.

- I. All materials, rubbish, and debris shall be promptly removed from the premises.
- J. Accumulation of same will not be permitted.
- K. No blasting will be permitted on the project site except upon written permission from the Owner.

END OF SECTION 31 11 00

SECTION 32 91 13 - TOPSOILING & SEEDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Instructions to Bidders, AIA Document A201 - 2007, "General Conditions of the Contract for Construction," the Supplementary General Conditions and Division 1, General Requirements, are a part of this Section and shall be binding on the Contractor and or Subcontractor who performs this Work. Note also all Addenda.

1.2 DESCRIPTION OF WORK

- A. Work consists of stripping and stockpiling of existing on-site topsoil and/or furnishing, placing and shaping topsoil in areas shown on the plans and seeding to lawn or preparing for stone bedding.

1.3 SUBMITTALS

- A. The Contractor shall submit the following samples, certifications or test results prior to use on the project.
 - 1. Fertilizing and liming requirements as determined by an approved testing laboratory for existing topsoil and each source of borrow topsoil.
 - 2. Mechanical analysis, including percentage of organic matter content, as determined by an approved testing laboratory for existing topsoil and each source of borrow topsoil.
 - 3. Product certification for Seed mix for lawns.
 - 4. Product certification for Fertilizers

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. The topsoil shall be loose, friable, and reasonably free of admixtures of subsoil; and free from refuse, stumps, roots, brush, weeds, rocks, and stones 1/2 inch in overall dimensions. Topsoil shall be mechanically screened to remove any stones or debris having a dimension greater than 1/2 inch. The topsoil shall also be free from any material that will prevent the formation of a suitable seedbed or prevent seed germination and plant growth.
- B. The Contractor shall notify the Architect of the location from which he proposes to furnish topsoil to the project at least 15 calendar days prior to delivery, if he needs additional topsoil.

- C. The topsoil and its source shall be inspected and approved by the Architect before the material is delivered to the project. Any material delivered to the project which does not meet specifications, or which has become mixed with undue amounts of subsoil during any operation at the source or during placing or spreading, will be rejected and shall be replaced by the Contractor with acceptable material at no extra cost to the Owner.

2.2 PLANTING SOIL

- A. The Architect reserves the right to draw such samples and to perform such tests as he deems necessary to assure that these specifications are met.

2.3 SEED MIX

- A. Lawns: Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 1 percent weed seed, in the proportion by weight as follows:
 - 1. 35 percent Kentucky bluegrass.
 - 2. 35 percent Creeping Red Fescue.
 - 3. 30 percent Perennial Ryegrass.

2.4 FERTILIZER

- A. Commercial Fertilizer: Commercial-grade fertilizer uniform in composition, dry and free flowing bearing the manufacturer's guaranteed statement of analysis. Fertilizer shall be derived from natural organic sources of urea formaldehyde, phosphorous, and potassium.
 - 1. Original fertilization: Composition and rate of application shall be as indicated by soils testing.
 - 2. Refertilization: Composition shall be 10-6-4 by weight with 50% organic nitrogen applied at a rate of 20 pounds per 1,000 s.f.

PART 3 - EXECUTION

3.1 STRIPPING OF TOPSOIL

- A. Strip all topsoil of acceptable quality from within the contract limit line where construction work occurs. Acceptable quality shall meet the standards of 2.1 above. Special attention shall be taken where stripping operations meet areas of existing trees to avoid damage to

tree root systems. Areas to be regraded or resurfaced shall be stripped of topsoil without the admixture of subsoil; protect the stockpile against loss and the admixture of debris. Do not strip topsoil in a muddy or frozen condition.

- B. Procedure for topsoil stripping shall be as follows:
 - 1. Contractor shall thoroughly shred existing turf by mechanical means (i.e., heavy duty power tiller) so as to thoroughly shred all clumps of turf, or shall strip and remove all turf.
 - 2. Topsoil shall then be stripped with care to keep admixture of subsoil to a minimum.
 - 3. Topsoil shall not be removed from the property, but shall be stored in neat soil banks, and shall be available for use as required under this Section.
 - 4. Protect stockpile of topsoil by seeding with Annual Rye grass, and surround topsoil with erosion control geotextile fencing.

3.2 PLACEMENT OF TOPSOIL

- A. Topsoil shall not be removed from the property until construction is completed.
- B. The areas on which topsoil is to be placed shall be graded to a reasonably true surface. Topsoil shall then be spread and shaped to the lines and grades shown on the plans, or as directed by the Architect. The topsoil is to be placed 6 inches deep in lawn areas, 12 inches deep in perennial beds, and 18 inches deep in shrub beds after settlement of material has taken place. All stones, roots, debris, sod, weeds and other undesirable material shall be removed. After shaping and grading, all trucks and other equipment shall be excluded from the topsoiled area to prevent excessive compaction. The Contractor shall perform such work as required to provide a friable surface for seed germination and plant growth prior to seeding. Do not place topsoil in a muddy or frozen condition.
- C. During hauling and spreading operations, the Contractor shall immediately remove any material dumped or spilled on pavement areas.
- D. It shall be the Contractor's responsibility to restore to the line, grade and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until the completion of the construction work.

3.3 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Sow seed at the rate of **10 lbs./1,000 sq. ft.** unless noted otherwise.
 - 3. Rake seed lightly into top 1/8 inch (3 mm) of topsoil, roll lightly, and water with fine spray.

- B. Planting Restrictions: Plant only during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Spring Planting: March 15 to June 1.
 - 2. Fall Planting: August 15 to October 15.
 - 3. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

3.4 MAINTENANCE OF SEEDED AREAS

- A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
 - 1. Sixty (60) days from date of Substantial Completion or a minimum of one (1) mowing , whichever is greater.
 - 2. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

- B. Maintain and establish seeded areas by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
 - 1. In areas where mulch has been disturbed by wind or maintenance operations, restore topsoil grades and add new mulch. Anchor as required to prevent displacement.

- C. Watering: Provide and maintain temporary piping, hoses, and lawn watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches (100 mm).
 - 1. Schedule watering/control irrigation system to prevent wilting, puddling, erosion, and displacement of seed or mulch.
 - 2. Water lawn at a minimum rate of 1 inch per week.

- D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 - 1. Mow lawns 2 to 2-1/2 high.
- E. Refertilization: Apply fertilizer as required after initial mowing and when grass is dry to provide an acceptable stand of grass.

3.5 SATISFACTORY LAWNS

- A. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 4 by 4 inches.
- B. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

END OF SECTION 32 91 13

