EAST CAMPUS TUNNEL ASSESSMENT – ELEVATED WALKWAY DEMOLITION
AUGUSTA, MAINE

February 12, 2024

Prepared For:

Bureau of General Services
State of Maine DAFS
111 Sewall Street
77 SHS, 4th Floor
Augusta, ME 04333

Prepared By:

Gale Associates, Inc.
5 Moulton Street, Suite 201
Portland, ME 04101

Gale JN: 840090

EAST CAMPUS TUNNEL ASSESSMENT – ELEVATED WALKWAY DEMOLITION
AUGUSTA, MAINE

GALE JN: 840090

TABLE OF CONTENTS

CONTRACT DRAWINGS

\\NHFile\BT-DOC\840090\02 Design\specs\840090 00 01 01 Cover_TOC.docx

00 11 13
Notice to Contractors

East Campus Tunnel Assessment - Elevated Walkway Demolition PT 3425

The project scope is to demolish walkways connecting the Elkins, Center, Tyson, and Williams buildings.

The cost of the work is approximately $ 0. The contract shall designate the Substantial Completion Date on or before *28 September 2024*, and the Contract Final Completion Date on or before *28 October 2024*.

1. Submit bids on a completed Contractor Bid Form, plus bid security when required, all scanned and included as an attachment to an email with the subject line marked "**Bid for *East Campus Tunnel Assessment - Elevated Walkway Demolition***" and addressed to the Bid Administrator at: BGS.Architect@Maine.gov, so as to be received no later than **2:00:00 p.m.** on ***March 20, 2024***.

   Bid submissions will be opened and read aloud at the time and date noted above at the Bureau of General Services office, accessible as a video conference call. Those who wish to participate in the call must submit a request for access to BGS.Architect@Maine.gov.

   Any bid received after the noted time will not be considered a valid bid and will remain unopened. Any bid submitted by any other means will not be considered a valid bid. The Bid Administrator may require the Bidder to surrender a valid paper copy of the bid form or the bid security document in certain circumstances.

   Questions on the bid opening process shall be addressed to the Bid Administrator: Joseph H. Ostwald, Director, Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, BGS.Architect@Maine.gov.

2. The bid shall be submitted on the Contractor Bid Form (section 00 41 13) provided in the Bid Documents. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

3. Bid security *is required* on this project.
   If noted above as required, the Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.

4. Performance and Payment Bonds *are required* on this project.
   If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds $125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.

5. Filed Sub-bids *are not required* on this project.

6. There *are no* Pre-qualified General Contractors on this project.
   If Pre-qualified General Contractors are identified for this project, the name of each company, with their city and state, are listed below.

7. An on-site pre-bid conference *will* be conducted for this project.
   If a pre-bid conference is scheduled, it is *mandatory* for General Contractors and optional for Subcontractors and suppliers. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding. *Pre-bid confrence will be held on site on February 27, 2024 at 9:00 am*.

8. Bid Documents - full sets only - will be available on or about *February 16, 2024* and may be obtained *at no cost* from:
   Gale Associates Inc.
   6 Bedford Farms Drive
   Bedford, NH
   Alan Pinciaro
   Phone: 603 - 471 - 1887
   Email: acp@gainc.com

9. Bid Documents may be examined at:
   AGC Maine
   188 Whitten Road
   Augusta, ME 04330
   Phone 207-622-4741 Fax 207-622-1625

   Construction Summary
   734 Chestnut Street
   Manchester, NH 03104
   Phone 603-627-8856 Fax 603-627-4524

00 21 13
Instructions to Bidders

1. Bidder Requirements

1.1 A bidder is a Contractor which is evidently qualified, or has been specifically pre-qualified by the Bureau of General Services, to bid on the proposed project described in the Bid Documents.

1.2 Contractors and Subcontractors bidding on projects that utilize Filed Sub-bids shall follow the requirements outlined in these Bid Documents for such projects. See Section 00 22 13 for additional information.

1.3 Contractors and Subcontractors are not eligible to bid on the project when their access to project design documents prior to the bid period distribution of documents creates an unfair bidding advantage. Prohibited access includes consultation with the Owner or with design professionals engaged by the Owner regarding cost estimating, constructability review, or project scheduling. This prohibition to bid applies to open, competitive bidding or pre-qualified contractor bidding or Filed Sub-bidding. The Bureau may require additional information to determine if the activities of a Contractor constitute an unfair bidding advantage.

1.4 Each bidder is responsible for becoming thoroughly familiar with the Bid Documents prior to submitting a bid. The failure of a bidder to review evident site conditions, to attend available pre-bid conferences, or to receive, examine, or act on addenda to the Bid Documents shall not relieve that bidder from any obligation with respect to their bid or the execution of the work as a Contractor.

1.5 Prior to the award of the contract, General Contractor bidders or Filed Sub-bidders may be required to provide documented evidence to the Owner or the Bureau showing compliance with the provisions of this section, their business experience, financial capability, or performance on previous projects.

1.6 The selected General Contractor bidder will be required to provide proof of insurance before a contract can be executed.

1.7 Contracts developed from this bid shall not be assigned, sublet or transferred without the written consent of the Owner.

1.8 By submitting a bid the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Director of the Bureau of General Services may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.

1.9 The Contractor attests that it is not presently indicted for or otherwise criminally or civilly charged by a Federal, State or local government entity with commission of any of the following offenses and has not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction, or contract under a public transaction, violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

1.10 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

2. Authority of Owner

2.1 The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

2.2 Subject to the Owner's stated right to accept or reject any or all bids, the Contractor shall be selected on the basis of the lowest dollar value of an acceptable Base Bid, or any combination of Base Bid plus Alternate Bids, as well as other limited cost modifications the Owner determines may best serve the interests of the Owner. An acceptable bid is a duly submitted bid from a responsive and responsible bidder.

2.3 The Owner reserves the right to require Bid Bonds or Performance and Payment Bonds for any project of any contract value.

3. Submitting Bids and Bid Requirements

3.1 Each bid shall be submitted on the forms provided in the Bid Documents.

3.2 Each bid shall be valid for a period of thirty calendar days following the Project bid closing date and time. The bid expiration date may be extended in unusual circumstances by mutual consent of the Bidder and the Owner. The bid amount shall not be modified due to the bid expiration date extension.

3.3 Any provision contained in a bid which shows cost escalation, or any modification of schedule or other requirements shall not be accepted. Such a provision causes the bid to be invalid, or, at the discretion of the Owner and BGS, that element of the bid submission may be disregarded for the purpose of awarding the contract without that provision.

3.4 Bidders shall include a Bid Bond or other approved bid security with the bid form submitted to the Owner when the bid form indicates such bid security is required. The bond value shall be 5% of the bid amount. The form of bond is shown in section 00 43 13.

3.5 Bidders recognize that inclusion of contract bonds and the cost of those bonds is dependent on the awarded contract dollar value. Therefore, a Base Bid, or any combination of Base Bid plus Alternate Bids, as well as other limited cost modifications, resulting in a contract award shall include the cost of Performance and Payment Bonds in the submitted bid amount when the construction contract value is over $125,000.00. Similarly, the cost of Performance and Payment Bonds is excluded in the submitted bid amount when the construction contract value is $125,000.00 or less unless bonds are specifically required by the Bid Documents. When required for the project, the selected Contractor shall provide these bonds before a contract can be executed, pursuant to 14 M.R.S.A., Section 871, Public Works Contractors' Surety Bond Law of 1971, subsection 3. The form of bonds is shown in section 00 61 13.13 and 00 61 13.16.

3.6 Bidders may modify bids in writing, by the same means as the original bid submission, prior to the bid closing time. Such written amendments shall not disclose the amount of the initial bid. If so disclosed, the entire bid is considered invalid.

3.7 Bidders implicitly acknowledge all Addenda issued when they submit the bid form. By usual practice the Consultant shall not issue Addenda less than 72 hours prior to the bid closing time, to allow ample time for bidders to incorporate the information. However, some information, such as extending the bid due date and time, may be issued with shorter notice. Addenda shall be issued to all companies who are registered holders of Bid Documents.

3.8 A bid may be withdrawn without penalty if a written request by the bidder is presented to the Owner prior to the bid closing time. Such written withdrawal requests are subject to verification as required by the Bureau.

A bid may be withdrawn without penalty after the bid closing time if, in the determination of the Bureau, evidence provided by the Contractor shows an apparent unintended error such as a miscalculation, or an erroneous number on estimating documents, was the cause of an inaccurate bid. The Bureau may allow withdrawal in consideration of the bid bond or, without utilizing a bid bond, if the Bureau considers documented evidence provided by the Contractor shows factual errors had been made on the bid form.

3.9 In the event State of Maine Offices unexpectedly close on the published date of a public bid opening in the location of that bid opening, prior to the time of the scheduled deadline, the new deadline for the public bid opening will be the following business day at the originally scheduled hour of the day, at the original location. Official closings are posted on the State of Maine government website.

3.10 The Owner may require, in a Notice of Intent to Award letter to the apparent low bidder, a Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers as both a demonstration of capability of the Bidder and as a condition of award.

3.11 Projects which require a State of Maine wage determination will include that schedule as part of the Bid Documents. See section 00 73 46, if such rates are required.

3.12 Projects which require compliance with the Davis-Bacon Act are subject to the regulations contained the Code for Federal Regulations and the federal wage determination which is made a part of the Bid Documents. See section 00 73 46, if such rates are required.

3.13 The Owner is exempt from the payment of Maine State sales and use taxes as provided in 36 M.R.S. §1760 (1). The Contractor and Subcontractors shall not include taxes on exempt items in the construction contract.

00 41 13
Contractor Bid Form

East Campus Tunnel Assessment - Elevated Walkway Demolition PT 3425

Bid Form submitted by: *email only to email address below*

Bid Administrator:

Renae Snow Renae.M.Snow@maine.gov
Bureau of General Services
111 Sewall Street, Cross State Office Building, 4th floor
77 State House Station
Augusta, Maine 04333-0077

Bidder:

Signature: _____

Printed name and title: _____

Company name: _____

Mailing address: _____

City, state, zip code: _____

Phone number: _____

Email address: _____

State of incorporation, if a corporation: _____

List of all partners, if a partnership: _____

The Bidder agrees, if the Owner offers to award the contract, to provide any and all bonds and certificates of insurance, as well as Schedule of Values, Project Schedule, and List of Subcontractors and Suppliers if required by the Owner, and to sign the designated Construction Contract within twelve calendar days after the date of notification of such acceptance, except if the twelfth day falls on a State of Maine government holiday or other closure day, or a Saturday, or a Sunday, in which case the aforementioned documents must be received before 12:00 noon on the first available business day following the holiday, other closure day, Saturday, or Sunday.

As a guarantee thereof, the Bidder submits, together with this bid, a bid bond or other acceptable instrument as and if required by the Bid Documents.

00 41 13
Contractor Bid Form

1. The Bidder, having carefully examined the *East Campus Tunnel Assessment - Elevated Walkway Demolition* Project Manual dated *Februrary 12, 2024*, prepared by *Gale Associates Inc.*, as well as Specifications, Drawings, and any Addenda, the form of contract, and the premises and conditions relating to the work, proposes to furnish all labor, equipment and materials necessary for and reasonably incidental to the construction and completion of this project for the **Base Bid** amount of:

   $ _____.00

2. Allowances *are included* on this project.
   Bid amount above includes the following Allowances
   Deteriorated Wood Trim Replacement $ *0*.00

3. Alternate Bids *are not included* on this project.
   No Alternate Bids
   Any dollar amount line below that is left blank by the Bidder shall be read as a bid of **$0.00**.

   1 Not Used $ _____.00

   2 Not Used $ _____.00

   3 Not Used $ _____.00

   4 Not Used $ _____.00

4. Bid security *is required* on this project.
   If noted above as required, or if the Base Bid amount exceeds $125,000.00, the Bidder shall include with this bid form a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with this completed bid form submitted to the Owner.

5. Filed Sub-bids *are not required* on this project.
   If noted above as required, the Bidder shall include with this bid form a list of each Filed Sub-bidder selected by the Bidder on the form provided (section 00 41 13F).

00 43 13
Contractor Bid Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Contractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***select title of obligee*** in the penal sum of ***five percent of the bid amount***, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, signed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the first specified bid due date, or subsequent bid due date revised by addendum.

The condition of the above obligation is such that whereas the principal has submitted to the Owner, or State of Maine, to a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the construction of ***insert name of project as designated in the contract documents***

Now therefore:

If said bid shall be rejected, or, in the alternate,

If said bid shall be accepted and the principal shall execute and deliver a contract in the form of contract attached hereto, properly completed in accordance with said bid, and shall furnish a bond for the faithful performance of said contract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time within which the Obligee may accept such bid and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 43 13
Contractor Bid Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the first specified bid due date, or subsequent bid due date revised by addendum.

Contractor

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 43 16
Subcontractor Bid Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Subcontractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***select title of obligee*** in the penal sum of ***five percent of the bid amount***, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns, signed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the first specified Subcontractor bid due date, or subsequent bid due date revised by addendum.

The condition of the above obligation is such that whereas the principal has submitted to the Owner, or State of Maine, to a certain Subcontractor bid, attached hereto and hereby made a part hereof, to enter into a subcontract in writing with any Contractor listed in said Subcontractor bid, provided the designated Contractor has entered into a written agreement with the Owner, for the construction of ***insert name of project as designated in the contract documents***.

Now therefore:

If said Subcontractor bid shall be rejected, or, in the alternate,

If said Subcontractor bid shall be accepted and the principal shall execute and deliver a subcontract to the Contractor designated by the Owner in the form of subcontract attached hereto, properly completed in accordance with said Subcontractor bid, and shall furnish a bond for the faithful performance of said subcontract, and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Subcontractor bid, then this obligation shall be void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time within which the Obligee may accept such Subcontractor bid and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 43 16
Subcontractor Bid Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the first specified Subcontractor bid due date, or subsequent bid due date revised by addendum.

Subcontractor

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Subcontractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

AdvantageME CT# _____

State of Maine
CONSTRUCTION CONTRACT

Large Construction Project

This form is used when the Contract value is $50,000 or greater.
The Project Manual, Specifications and Drawings, and any Addenda are considered part of this Contract.

Agreement entered into by and between the ***contracting entity name*** hereinafter called the ***Owner*** and ***Contractor company name*** hereinafter called the ***Contractor***.

BGS Project No.: ***number assigned by BGS*** Other Project No.: _____

For the following Project: ***title of project as shown on bid documents*** at ***facility or campus name***, ***municipality***, Maine.

The Specifications and the Drawings have been prepared by ***Consultant firm name***, acting as Professional-of-Record and named in the documents as the Consultant Architect or Engineer.

The *Owner* and *Contractor* agree as follows:

ARTICLE 1 COMPENSATION AND PAYMENTS

1.1 The Owner shall pay the Contractor to furnish all labor, equipment, materials and incidentals necessary for the construction of the Work described in the Specifications and shown on the Drawings the Contract Amount as shown below.

Base Bid	*$0.00*
Alternate Bid number and name or "no Alternates"	*$0.00*
Alternate Bid number and name or "no Alternates"	*$0.00*
Alternate Bid number and name or "no Alternates"	*$0.00*
Alternate Bid number and name or "no Alternates"	*$0.00*
Alternate Bid number and name or "no Alternates"	*$0.00*
Total Contract Amount	***$0.00***

1.2 The Contractor's requisition shall contain sufficient detail and supporting information for the Owner to evaluate and support the payment requested.

1.2.1 Payments are due and payable twenty-five working days from the date of receipt of a Contractor requisition which is approved by the Owner.

1.2.2 Provisions for late payments are governed by 5 M.R.S. Chapter 144, *Payment of Invoices Received from Business Concerns*, and interest shall be calculated at 1% per month.

ARTICLE 2 COMMENCEMENT AND COMPLETION DATES

2.1 The Work of this Contract shall commence no sooner than the date this document is executed by the approval authority, or a subsequent date designated in the contract documents.

2.2 The Substantial Completion Date shall be _____.

2.3 The Work of this Contract shall be completed on or before the Contract Final Completion Date of _____.

2.4 The Contract Expiration Date shall be _____. (This date is the Owner's deadline for internal management of contract accounts. The Contract Expiration Date does not directly relate to any contract obligation of the Contractor.)

ARTICLE 3 INELIGIBLE BIDDER

3.1 By signing this contract the Contractor attests that it has not been declared ineligible to bid on State of Maine projects. The Bureau of General Services may disallow award of this contract to any Contractor if there is evidence that the Contractor or any of its Subcontractors, through their own fault, have been terminated, suspended for cause, debarred from bidding, agreed to refrain from bidding as part of a settlement, have defaulted on a contract, or had a contract completed by another party.

3.2 By signing this contract the Contractor attests that it is not presently indicted for or otherwise criminally or civilly charged by a Federal, State or local government entity with commission of any of the following offenses and has not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction, or contract under a public transaction, violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

3.3 The Contractor shall not make any award or permit any award (subgrant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs or State of Maine projects.

ARTICLE 4 CONTRACTOR'S RESPONSIBILITIES

4.1 On this project, the Contractor ***shall*** furnish the Owner the appropriate contract bonds in the amount of 100% of the Contract Sum. Contract bonds are mandated if the Contract Sum exceeds $125,000, or if bonds are specifically required by the Contract Documents.

4.2 The Contractor shall comply with all laws, codes and regulations applicable to the Work.

4.3 The Contractor shall acquire all permits and third-party approvals applicable to the Work not specifically identified as provided by the Owner. Costs for Contractor-provided permits and third-party approvals shall be included in the Contract Sum identified in Section 1.1 above.

4.4 The Contractor shall remain an independent agent for the duration of this Contract, shall not become an employee of the State of Maine, and shall assure that no State employee will be compensated by, or otherwise benefit from, this Contract.

4.5 The Contractor shall be responsible for any design cost, construction cost, or other cost incurred on the Project to the extent caused by the negligent acts, errors or omissions of the Contractor or their Subcontractors in the performance of Work under this Contract.

ARTICLE 5 OWNER'S RESPONSIBILITIES

5.1 The Owner shall provide full information about the objectives, schedule, constraints and existing conditions of the project. The Owner has established a budget with reasonable contingencies that meets the project requirements.

5.2 By signing this contract, the Owner attests that all State of Maine procurement requirements for this contract have been met, including the solicitation of competitive bids.

ARTICLE 6 INSTRUMENTS OF SERVICE

6.1 The Contractor's use of the drawings, specifications and other documents known as the Consultant's Instruments of Service is limited to the execution of the Contractor's scope of work of this project unless the Contractor receives the written consent of the Owner and Consultant for use elsewhere.

ARTICLE 7 MISCELLANEOUS PROVISIONS

7.1 This Contract shall be governed by the laws of the State of Maine.

7.2 The Owner and Contractor, respectively, bind themselves, their partners, successors, assigns and legal representatives to this Contract. Neither party to this Contract shall assign the Contract as a whole without written consent of the other party, which consent the Owner may withhold without cause.

7.3 Notwithstanding any other provision of this Agreement, if the Owner does not receive sufficient funds to fund this Agreement or funds are de-appropriated, or if the Owner does not receive legal authority from the Maine State Legislature or Maine Courts to expend funds intended for this Agreement, then the Owner is not obligated to make payment under this Agreement; provided, however, the Owner shall be obligated to pay for services satisfactorily performed prior to any such non-appropriation in accordance with the termination provisions of this Agreement. The Owner shall timely notify the Contractor of any non-appropriation and the effective date of the non-appropriation.

ARTICLE 8 CONTRACT DOCUMENTS

8.1 The Project Manual, Specifications and Drawings, and any Addenda, together with this agreement, form the contract. Each element is as fully a part of the Contract as if hereto attached or herein repeated.

8.2 Specifications: ***indicate date of issuance of project manual***

8.3 Drawings: ***note here or attach each sheet number and title***

8.4 Addenda: ***note each addenda number and date, or "none"***

BGS Project No.: _____

The Contract is effective as of the date executed by the approval authority.

OWNER	**CONTRACTOR**
Signature *Date* *name and title* *name of contracting entity* *address* *telephone* *email address*	*Signature* *Date* *name and title* *name of contractor company* *address* *telephone* *email address* *Vendor Number*

Indicate the names of the review and approval individuals appropriate to the approval authority.

select proper approval authority	
Reviewed by:	**Approved by:**
Signature *Date* *insert name*	*Signature* *Date* *Joseph H. Ostwald*
Project Manager/ Contract Administrator	*Director, Planning, Design & Construction*

00 61 13.13
Contractor Performance Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Contractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***select title of obligee*** in the penal sum of the Contract Price $ ***insert the Contract Price in numbers*** for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly and faithfully perform the contract entered into this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of ***insert name of project as designated in the contract documents***, then this obligation shall be null and void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.13
Contractor Performance Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.16
Contractor Payment Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Contractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***select title of obligee*** in the penal sum of the Contract Price $ ***insert the Contract Price in numbers*** for the use and benefit of claimants, defined as an entity having a contract with the principal or with a subcontractor of the principal for labor, materials, or both labor and materials, used or reasonably required for use in the performance of the contract, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly satisfy all claims and demands incurred for all labor and materials, used or required by the principal in connection with the work described in the contract entered into this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of ***insert name of project as designated in the contract documents***, and shall fully reimburse the obligee for all outlay and expense with said obligee may incur in making good any default of said principal, then this obligation shall be null and void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.16
Contractor Payment Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Contractor

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Contractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.23
Subcontractor Performance Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Subcontractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***insert company name of Contractor*** in the penal sum of the Contract Price $ ***insert the Contract Price in numbers*** for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly and faithfully perform the contract entered into this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of ***insert name of project as designated in the contract documents***, then this obligation shall be null and void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee or Contractor may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.23
Subcontractor Performance Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Subcontractor

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Subcontractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.26
Subcontractor Payment Bond

Bond No.: **insert bond number**

We, the undersigned, ***insert company name of Subcontractor***, ***select type of entity*** of ***insert name of municipality*** in the State of ***insert name of state*** as principal, and ***insert name of surety*** as Surety, are hereby held and firmly bound unto ***insert company name of Contractor*** as obligee, in the penal sum of the Contract Price $ ***insert the Contract Price in numbers*** for the use and benefit of claimants, defined as an entity having a contract with the principal or with a subcontractor of the principal for labor, materials, or both labor and materials, used or reasonably required for use in the performance of the contract, for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of the above obligation is such that if the principal shall promptly satisfy all claims and demands incurred for all labor and materials, used or required by the principal in connection with the work described in the contract entered into this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract, for the construction of ***insert name of project as designated in the contract documents***, and shall fully reimburse the obligee for all outlay and expense with said obligee may incur in making good any default of said principal, then this obligation shall be null and void.

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

The Surety, for value received hereby stipulates and agrees that the obligation of said Surety and its bonds shall be in no way impaired or affected by any extension of the time which the Obligee or Contractor may accept during the performance of the contract and said Surety does hereby waive notice of any such extension.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

00 61 13.26
Subcontractor Payment Bond

In witness whereof, the principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set above.

Signed and sealed this ***insert date, i.e.: 8th*** day of ***select month***, ***select year***, which is the same date as that of the notice of intent to award letter, or in the absence of such a letter, not later than the date the Owner signs the construction contract.

Subcontractor

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

Surety

_____

(Signature)

insert name and title

insert company name

insert address
insert city state zip code

If Subcontractor is a partnership, all partners shall execute the bond. A power of attorney document indicating that it still is in full force and effect shall be provided by the person executing this bond.

[Fillable bond forms may be downloaded from the Bureau of General Services website.]

Form revision date: 12 May 2023

AdvantageME CT# 00000000000000000000

State of Maine
CONSTRUCTION CONTRACT
Application for Payment

Project name
location / school / campus

Contractor Company name
address
city state zip code

Application Number: **1**
Period Start Date: 1-Jul-2020
Period End Date: 31-Jul-2020
BGS Project No.: n
Other Project No.: x

1	Original Contract Amount			$0
2	Net of Change Orders to Date	(from table below)		$0
3	Contract Sum to Date	(line 1 plus or minus line 2)		$0
4	Total Completed and Stored to Date	(column G on Continuation Sheet)		$0
5a	5% Retainage of Completed Work	(columns D + E x 5%)	$0	
5b	5% Retainage of Stored Materials	(column F x 5%)	$0	
5c	Total Retainage	(column I)		$0
6	Total Earned Less Retainage	(line 4 minus line 5c)		$0
7	Less Previous Approved Applications for Payment	(line 6 from previous Application)		$0
8	Current Payment Due	(line 6 minus line 7)		**$0**
9	Balance to Finish, Including Retainage	(line 3 minus line 6)	$0	

Change Order Summary	Additions	Deductions	
Total Changes Approved in Previous Months	$0	$0	
Total Changes Approved this Month	$0	$0	
Subtotals	$0	$0	
Net of Change Orders to Date			$0

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information, and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which the previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

Contractor
Type company name here
Type person's name, title here

signature date

In accordance with the Contract Documents, based on on-site observations and the data comprising this Application, the Consultant certifies to the Owner that to the best of the Consultant's knowledge, information, and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the Amount Certified. **Amount Certified:** _____

Consultant (Architect or Engineer)
Type firm name here
Type person's name, title here

signature date

Owner
Type contracting entity name here
Type person's name, title here

signature date

Owner's Rep / other - clear this text if not used
Type entity name here
Type person's name, title here

signature date

Bureau of General Services

Type person's name, title here

signature date

Form revision date: 12 May 2023

State of Maine
CONSTRUCTION CONTRACT
Application for Payment - Continuation Sheet

Application Number: **1**
Period Start Date: 1-Jul-2020
Period End Date: 31-Jul-2020
BGS Project No.: n
Other Project No.: x

Project name

Contractor Company name

page 1 of 2

A	B	C	D	E	F	G		H	I
Item No.	Description of Work	Scheduled Value	Work Completed From Previous Application (Previous D + E)	Work Completed From This Period	Total Stored Materials (Not in D or E)	Total Completed and Stored to Date (D + E + F)	Percent Complete (G ÷ C)	Balance to Finish (C - G)	Retainage 5%
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0
		$0	0	0	0	0	0.0%	$0	0

	Total	$0	$0	$0	$0	$0	0.0%	$0	$0

revised 05 April 2021

State of Maine
CONSTRUCTION CONTRACT
Construction Change Directive

Project name
location / school / campus

Contractor Company name
address
city state zip code

C. C. D. Number: **1**
CP (Change Proposal) Number 1
Issue Date of this Document: 31-Oct-2021

BGS Project No.: n
Other Project No.: x

CCD Item	Type name of CCD item here		
Description of Work	Type brief description here of work scope here.		
Reason or Necessity of Work	Type brief justification for change here.		
Method of Compensation	Select from drop down box…	**Projected Total Cost**	$0
Supporting Documentation	is attached	**Projected Calendar Days***	0

** Calendar Days refers to Contract Final Completion Date only.*
Fully describe the scope of work of the CCD item in the table above and on attached drawings and specifications as necessary.
Indicate the reason for the work, and the estimated schedule and cost impacts.
This CCD records the order to do the work. The documented actual final time and cost changes are subject to approval in a subsequent Change Order process.

Consultant (Architect or Engineer)
Type firm name here
Type person's name, title here
signature date

Contractor
Type company name here
Type person's name, title here
signature date

Owner
Type contracting entity name here
Type person's name, title here
signature date

Owner's Rep
Type entity name here
Type person's name, title here
signature date

Bureau of General Services
Division of Planning, Design & Construction
Type person's name, title here
signature date

revised 05 April 2021

AdvantageME CT# 0000

State of Maine
CONSTRUCTION CONTRACT
Change Order

Project name
location / school / campus

Change Order Number: **1**

Issue Date of this Document: 31-Dec-2022

Contractor Company name
address
city state zip code

BGS Project No.: n
Other Project No.: x

Cost Change *Show Deduct as a negative number, e.g.: "-$850".*

	Add	Deduct	Total
Net Amount of this Change Order	$0	$0	
Net Amount of Previous Change Orders	$0	$0	
Net of Change Orders to Date	$0	$0	$0
Original Contract Amount			$0
		Revised Contract Amount	**$0**

Time Change *Show Deduct as a negative number, e.g.: "-8".*

	Add	Deduct	Total
Net Calendar Days Adjusted by this Change Order	0	0	
Net Calendar Days Adjusted by Previous Change Orders	0	0	
Net of Change Orders to Date	0	0	0
Original Contract Final Completion Date			31-Dec-2023
		Revised Contract Final Completion Date*	**31-Dec-2023**

Consultant (Architect or Engineer)
Type firm name here
Type person's name, title here

signature date

Contractor
Type company name here
Type person's name, title here

signature date

Owner
Type contracting entity name here
Type person's name, title here

signature date

Type Entity, such as "Owner's Rep", or "not used"
Type entity name here
Type person's name, title here

signature date

Bureau of General Services
Division of Planning, Design & Construction
Type person's name, title here

signature date

Attach the "List of Change Order Items" sheet, plus all supporting documentation for each Change Order Item.

Substantial Completion Date: the deadline for first beneficial use by Owner, as certified by Consultant.	*1-Dec-2023*
**** Contract Final Completion Date** : the Contractor's final completion deadline for contract work.*	*31-Dec-2023*
Contract Expiration Date: the Owner's deadline for internal management of contract accounts; Contract Expiration Date does not directly relate to any contract obligation of the Contractor.	*29-Feb-2024*

00 71 00
Definitions

1. Definitions

1.1 *Addendum*: A document issued by the Consultant that amends the Bid Documents. Addenda shall not be issued less than seventy-two hours prior to the specified bid opening time.

1.2 *Allowance*: A specified dollar amount for a particular scope of work or service included in the Work that is identified in the Bid Documents and included in each Bidder's Bid. The Contractor shall document expenditures for an Allowance during the Project. Any unused balance shall be credited to the Owner. The Contractor is responsible for notifying the Owner of anticipated expenses greater than the specified amount and the Owner is responsible for those additional expenses.

1.3 *Alternate Bid*: The Contractor's written offer of a specified dollar amount, submitted on the Bid Form, for the performance of a particular scope of work described in the Bid Documents. The Owner determines the low bidder based on the sum of the base Bid and any combination of Alternate Bids that the Owner selects.

1.4 *Architect*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to "Consultant" in State of Maine contract forms.

1.5 *Architectural Supplemental Instruction (ASI)*: A written instruction from the Architect for the purpose of clarification of the Contract Documents. An ASI does not alter the Contract Price or Contract Time. ASIs may be responses to RFIs and shall be issued by the Architect in a timely manner to avoid any negative impact on the Schedule of the Work.

1.6 *Bid*: The Contractor's written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of the Work. A Bid may include bonds or other requirements. A base Bid is separate and distinct from Alternate Bids, being the only cost component necessary for the award of the contract, and representing the minimum amount of Work that is essential for the functioning of the Project.

1.7 *Bid Bond*: The security designated in the Bid Documents, furnished by Bidders as a guaranty of good faith to enter into a contract with the Owner, should a contract be awarded to that Bidder.

1.8 *Bidder*: Any business entity, individual or corporation that submits a bid for the performance of the work described in the Bid Documents, acting directly or through a duly authorized representative. See also *Responsive and Responsible Bidder*.

1.9 *Bid Documents*: The drawings, procurement and contracting requirements, general requirements, and the written specifications -including all addenda, that a bidder is required to reference in the submission of a bid.

1.10 *Bureau*: The State of Maine Bureau of General Services, or BGS, in the Department of Administrative and Financial Services.

1.11 *Calendar days*: Consecutive days, as occurring on a calendar, taking into account each day of the week, month, year, and any religious, national or local holidays. Calendar days are used for changes in Contract Time.

1.12 *Certificate of Substantial Completion*: A document developed by the Consultant that describes the final status of the Work and establishes the date that the Owner may use the facility for its intended purpose. The Certificate of Substantial Completion may also include a provisional list of items - a "punch list" - remaining to be completed by the Contractor. The Certificate of Substantial Completion identifies the date from which the project warranty period commences.

1.13 *Certificate of Occupancy*: A document developed by a local jurisdiction such as the Code Enforcement Officer that grants permission to the Owner to occupy a building.

1.14 *Change Order (CO)*: A document that modifies the contract and establishes the basis of a specific adjustment to the Contract Price or the Contract Time, or both. Change Orders may address correction of omissions, errors, and document discrepancies, or additional requirements. Change Orders should include all labor, materials and incidentals required to complete the work described. A Change Order is not valid until signed by the Contractor, Owner and Consultant and approved by the Bureau.

1.15 *Change Order Proposal (COP) (see also Proposal)*: Contract change proposed by the Contractor regarding the contract amount, requirements, or time. The Contractor implements the work of a COP after it is accepted by all parties. Accepted COPs are incorporated into the contract by Change Order.

1.16 *Clerk of the Works*: The authorized representative of the Consultant on the job site. Clerk of the Works is sometimes called the Architect's representative.

1.17 *Construction Change Directive (CCD)*: A written order prepared by the Consultant and signed by the Owner and Consultant, directing a change in the Work prior to final agreement with the Contractor on adjustment, if any, in the Contract Price or Contract Time, or both.

1.18 *Contract*: A written agreement between the Owner and the successful bidder which obligates the Contractor to perform the work specified in the Contract Documents and obligates the Owner to compensate the Contractor at the mutually accepted sum, rates or prices.

1.19 *Contract Bonds (also known as Payment and Performance Bonds)*: The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.

1.20 *Contract Documents*: The drawings and written specifications (including all addenda), Standard General Conditions, and the contract (including all Change Orders subsequently incorporated in the documents).

1.21 *Contract Expiration Date*: Date determined by the Owner as a deadline for internal management of contract accounts. This allows time after the Contract Final Completion Date for processing the final Requisition for Payment. The Contract Expiration Date does not directly relate to any contract obligation of the Contractor.

1.22 *Contract Final Completion Date*: Point of time when the Work is fully completed in compliance with the Contract Documents, as certified by the Consultant. Final payment to the Contractor is due upon Final Completion of the Project.

1.23 *Contract Price*: The dollar amount of the construction contract, also called *Contract Sum*.

1.24 *Contract Time*: The designated duration of time to execute the Work of the contract, with a specific date for completion.

1.25 *Contractor*: Also called the "General Contractor" or "GC" the individual or entity undertaking the execution of the general contract work under the terms of the contract with the Owner, acting directly or through a duly authorized representative. The Contractor is responsible for the means, methods and materials utilized in the execution and completion of the Work.

1.26 *Consultant*: The Architect or Engineer acting as Professional-of-Record for the Project. The Consultant is responsible for the design of the Project.

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

1.28 *Engineer*: A Consultant acting as, or supporting, the Professional-of-Record who is responsible for the design of the Project. Equivalent to “Consultant” in State of Maine contract forms.

1.29 *Filed Sub-bid*: The designated major Subcontractor's (or, in some cases, Contractor’s) written offer of a specified dollar amount or amounts, submitted on a form included in the Bid Documents, for the performance of a particular portion of the Work. A Filed Sub-bid may include bonds or other requirements.

1.30 *General Requirements*: The on-site overhead expense items the Contractor provides for the Project, typically including, but not limited to, building permits, construction supervision, Contract Bonds, insurance, field office, temporary utilities, rubbish removal, and site fencing. Overhead expenses of the Contractor's general operation are not included. Sometimes referred to as the Contractor's General Conditions.

1.31 *Owner*: The State agency which is represented by duly authorized individuals. The Owner is responsible for defining the scope of the Project and compensation to the Consultant and Contractor.

1.32 *Owner’s Representative*: The individual or entity contracted by the Owner to be an advisor and information conduit regarding the Project.

1.33 *Overhead*: General and administrative expenses of the Contractor’s principal and branch offices, including payroll costs and other compensation of Contractor employees, deductibles paid on any insurance policy, charges against the Contractor for delinquent payments, and costs related to the correction of defective work, and the Contractor’s capital expenses, including interest on capital used for the work.

1.34 *Performance and Payment Bonds (also known as Contract Bonds)*: The approved forms of security, furnished by the Contractor and their surety, which guarantee the faithful performance of all the terms of the contract and the payment of all bills for labor, materials and equipment by the Contractor.

1.35 *Post-Bid Addendum*: Document issued by the Consultant that defines a potential Change Order prior to signing of the construction contract. The Post-Bid Addendum allows the Owner to negotiate

contract changes with the Bidder submitting the lowest valid bid, only if the negotiated changes to the Bid Documents result in no change or no increase in the bid price.

A Post-Bid Addendum may also be issued after a competitive construction Bid opening to those Bidders who submitted a Bid initially, for the purpose of rebidding the Project work without re-advertising.

1.36 *Project*: The construction project proposed by the Owner to be constructed according to the Contract Documents. The Project, a public improvement, may be tied logistically to other public improvements and other activities conducted by the Owner or other contractors.

1.37 *Proposal (see also Change Order Proposal)*: The Contractor's written offer submitted to the Owner for consideration containing a specified dollar amount or rate, for a specific scope of work, and including a schedule impact, if any. A proposal shall include all costs for overhead and profit. The Contractor implements the work of a Proposal after it is accepted by all parties. Accepted Proposals are incorporated into the contract by Change Order.

1.38 *Proposal Request (PR)*: An Owner's written request to the Contractor for a Change Order Proposal.

1.39 *Punch List*: A document that identifies the items of work remaining to be done by the Contractor at the Close Out of a Project. The Punch List is created as a result of a final inspection of the work only after the Contractor attests that all of the Work is in its complete and permanent status.

1.40 *Request For Information (RFI)*: A Contractor's written request to the Consultant for clarification, definition or description of the Work. RFIs shall be presented by the Contractor in a timely manner to avoid any negative impact on the Schedule of the Work.

1.41 *Request For Proposal (RFP)*: An Owner's written request to the Contractor for a Change Order Proposal.

1.42 *Requisition for Payment*: The document in which the Contractor certifies that the Work described is, to the best of the Contractor's knowledge, information and belief, complete and that all previous payments have been paid by the Contractor to Subcontractors and suppliers, and that the current requested payment is now due. See *Schedule of Values.*

1.43 *Responsive and Responsible Bidder*: A bidder who complies, when submitting a bid on a given project, with the following *responsive* standards, as required by the Bid Documents:
- submits specific qualifications to bid the project, if required;
- attends mandatory pre-bid conferences, if required;
- submits a bid prior to the close of the bid period;
- submits a complete bid form;
- submits a bid without indications of intent contrary to the stated requirements;
- submits other materials and information, such as bid security, as required;

and, meets the following minimums regarding these *responsible* standards:
- sustains a satisfactory record of project performance;
- maintains a permanent place of business in a known physical location;
- possesses the financial means for short- and long-term operations;
- possesses the appropriate technical experience and capabilities;
- employs adequate personnel and subcontractor resources;

maintains the equipment needed to perform the work;
complies with the proposed implementation schedule;
complies with the insurance and bonding requirements;
provides post-construction warranty coverage;
and other criteria which can be considered relevant to the contract.

1.44 *Retainage*: The amount, calculated at five percent (5%) of the contract value or a scheduled value, that the Owner shall withhold from the Contractor until the work or portion of work is declared substantially complete or otherwise accepted by the Owner. The Owner may, if requested, reduce the amount withheld if the Owner deems it desirable and prudent to do so. (See Title 5 M.R.S.A., Section 1746.)

1.45 *Sample*: A physical example provided by the Contractor which illustrates materials, equipment or workmanship and establishes standards by which the Work will be judged.

1.46 *Schedule of the Work*: The document prepared by the Contractor and approved by the Owner that specifies the dates on which the Contractor plans to begin and complete various parts of the Work, including dates on which information and approvals are required from the Owner.

1.47 *Schedule of Values*: The document prepared by the Contractor and approved by the Owner before the commencement of the Work that specifies the dollar values of discrete portions of the Work equal in sum to the contract amount. The Schedule of Values is used to document progress payments of the Work in regular (usually monthly) requisitions for payment. See *Requisition for Payment*.

1.48 *Shop Drawings*: The drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

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

1.50 *Subcontractor*: An individual or entity undertaking the execution of any part of the Work by virtue of a written agreement with the Contractor or any other Subcontractor. Also, an individual or entity retained by the Contractor or any other Subcontractor as an independent contractor to provide the labor, materials, equipment or services necessary to complete a specific portion of the Work.

1.51 *Substantial Completion Date*: Point of time when the Work or a designated portion of the Work is sufficiently complete in compliance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended purpose without unscheduled disruption. Substantial Completion is documented by the date of the Certificate of Substantial Completion signed by the Owner and the Contractor.

1.52 *Superintendent*: The representative of the Contractor on the job site, authorized by the Contractor to receive and fulfill instructions from the Consultant.

1.53 *Surety*: The individual or entity that is legally bound with the Contractor and Subcontractor to insure the faithful performance of the contract and for the payment of the bills for labor, materials and equipment by the Contractor and Subcontractors.

1.54 *Work*: The construction and services, whether completed or partially completed, including all labor, materials, equipment and services provided or to be provided by the Contractor and Subcontractors to fulfill the requirements of the Project as described in the Contract Documents.

00 72 13
General Conditions

Table of Contents of this General Conditions Section

1. Preconstruction Conference

1.1 The Contractor shall, upon acceptance of a contract and prior to commencing work, schedule a preconstruction conference with the Owner and Consultant. The purpose of this conference is as follows.

1.1.1 Introduce all parties who have a significant role in the Project, including:
Owner (State agency or other contracting entity)
Owner's Representative
Consultant (Architect or Engineer)
Subconsultants
Clerk-of-the-works
Contractor (GC)
Superintendent
Subcontractors
Other State agencies
Construction testing company
Commissioning agent
Special Inspections agent
Bureau of General Services (BGS);

1.1.2 Review the responsibilities of each party;

1.1.3 Review any previously-identified special provisions of the Project;

1.1.4 Review the Schedule of the Work calendar submitted by the Contractor to be approved by the Owner and Consultant;

1.1.5 Review the Schedule of Values form submitted by the Contractor to be approved by the Owner and Consultant;

1.1.6 Establish routines for Shop Drawing approval, contract changes, requisitions, et cetera;

1.1.7 discuss jobsite issues;

1.1.8 Discuss Project close-out procedures;

1.1.9 Provide an opportunity for clarification of Contract Documents before work begins; and

1.1.10 Schedule regular meetings at appropriate intervals for the review of the progress of the Work.

2. Intent and Correlation of Contract Documents

2.1 The intent of the Contract Documents is to describe the complete Project. The Contract Documents consist of various components; each component complements the others. What is shown as a requirement by any one component shall be inferred as a requirement on all corresponding components.

2.2 The Contractor shall furnish all labor, equipment and materials, tools, transportation, insurance, services, supplies, operations and methods necessary for, and reasonably incidental to, the construction and completion of the Project. Any work that deviates from the Contract Documents which appears to be required by the exigencies of construction or by inconsistencies in the Contract Documents, will be determined by the Consultant and authorized in writing by the Consultant, Owner and the Bureau prior to execution. The Contractor shall be responsible for requesting clarifying information where the intent of the Contract Documents is uncertain.

2.3 The Contractor shall not utilize any apparent error or omission in the Contract Documents to the disadvantage of the Owner. The Contractor shall promptly notify the Consultant in writing of such errors or omissions. The Consultant shall make any corrections or clarifications necessary in such a situation to document the true intent of the Contract Documents.

3. Additional Drawings and Specifications

3.1 Upon the written request of the Contractor, the Owner shall provide, at no expense to the Contractor, up to five sets of printed Drawings and Specifications for the execution of the Work.

3.2 The Consultant shall promptly furnish to the Contractor revised Drawings and Specifications, for the area of the documents where those revisions apply, when corrections or clarifications are made by the Consultant. All such information shall be consistent with, and reasonably inferred from, the Contract Documents. The Contractor shall do no work without the proper Drawings and Specifications.

4. Ownership of Contract Documents

4.1 The designs represented on the Contract Documents are the property of the Consultant. The Drawings and Specifications shall not be used on other work without consent of the Consultant.

5. Permits, Laws, and Regulations

5.1 The Owner is responsible for obtaining any zoning approvals or other similar local project approvals necessary to complete the Work, unless otherwise specified in the Contract Documents.

5.2 The Owner is responsible for obtaining Maine Department of Environmental Protection, Maine Department of Transportation, or other similar state government project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.

5.3 The Owner is responsible for obtaining any federal agency project approvals necessary to complete the Work, unless otherwise indicated in the Contract Documents.

5.4 The Owner is responsible for obtaining all easements for permanent structures or permanent changes in existing facilities.

5.5 The Contractor is responsible for obtaining and paying for all permits and licenses necessary for the implementation of the Work. The Contractor shall notify the Owner of any delays, variance or restrictions that may result from the issuing of permits and licenses.

5.6 The Contractor shall comply with all ordinances, laws, rules and regulations and make all required notices bearing on the implementation of the Work. In the event the Contractor observes disagreement between the Drawings and Specifications and any ordinances, laws, rules and regulations, the Contractor shall promptly notify the Consultant in writing. Any necessary changes shall be made as provided in the contract for changes in the work. The Contractor shall not perform any work knowing it to be contrary to such ordinances, laws, rules and regulations.

5.7 The Contractor shall comply with local, state and federal regulations regarding construction safety and all other aspects of the Work.

5.8 The Contractor shall comply with the Maine Code of Fair Practices and Affirmative Action, 5 M.R.S. §784 (2).

6. Taxes

6.1 The Owner is exempt from the payment of Maine State sales and use taxes as provided in 36 M.R.S. §1760 (1). The Contractor and Subcontractors shall not include taxes on exempt items in the construction contract.

6.2 Section 1760 further provides in subsection 61 that sales to a construction contractor or its subcontractor of tangible personal property that is to be physically incorporated in, and become a permanent part of, real property for sale to or owned by the Owner, are exempt from Maine State sales and use taxes. Tangible personal property is defined in 36 M.R.S. §1752 (17).

6.3 The Contractor may contact Maine Revenue Services, 24 State House Station, Augusta, Maine 04333 for guidance on tax exempt regulations authorized by 36 M.R.S. §1760 and detailed in Rule 302 (18-125 CMR 302).

7. Labor and Wages

7.1 The Contractor shall conform to the labor laws of the State of Maine, and all other laws, ordinances, and legal requirements affecting the work in Maine.

7.2 The Consultant shall include a wage determination document prepared by the Maine Department of Labor in the Contract Documents for state-funded contracts in excess of $50,000. The document shows the minimum wages required to be paid to each category of labor employed on the project.

7.3 On projects requiring a Maine wage determination, the Contractor shall submit monthly payroll records to the Owner ("the contracting agency") showing the name and occupation of all workers and all independent contractors employed on the project. The monthly submission must also include the Contractor's company name, the title of the project, hours worked, hourly rate or other method of remuneration, and the actual wages or other compensation paid to each person.

7.4 The Contractor shall not reveal, in the payroll records submitted to the Owner, personal information regarding workers and independent contractors, other than the information described above. Such information shall not include Social Security number, employee identification number, or employee address or phone number, for example.

7.5 The Contractor shall conform to Maine statute (39-A M.R.S. §105-A (6)) by providing to the Workers' Compensation Board a list of all subcontractors and independent contractors on the job site and a record of the entity to whom that subcontractor or independent contractor is directly contracted and by whom that subcontractor or independent contractor is insured for workers' compensation purposes.

7.6 The Contractor shall enforce strict discipline and good order among their employees at all times, and shall not employ any person unfit or unskilled to do the work assigned to them.

7.7 The Contractor shall promptly pay all employees when their compensation is due, shall promptly pay all others who have billed and are due for materials, supplies and services used in the Work, and shall promptly pay all others who have billed and are due for insurance, workers compensation coverage, federal and state unemployment compensation, and Social Security

charges pertaining to this Project. Before final payments are made, the Contractor shall furnish to the Owner affidavits that all such payments described above have been made.

7.8 The Contractor may contact the Maine Department of Labor, 54 State House Station, Augusta, Maine 04333 for guidance on labor issues.

7.9 The Contractor may contact the Maine Workers' Compensation Board, 27 State House Station, Augusta, Maine 04333 for guidance on workers' compensation issues.

8. Indemnification

8.1 The Contractor shall indemnify and hold harmless the Owner and its officers and employees from and against any and all damages, liabilities, and costs, including reasonable attorney's fees, and defense costs, for any and all injuries to persons or property, including claims for violation of intellectual property rights, to the extent caused by the negligent acts or omissions of the Contractor, its employees, agents, officers or subcontractors in the performance of work under this Agreement. The Contractor shall not be liable for claims to the extent caused by the negligent acts or omissions of the Owner or for actions taken in reasonable reliance on written instructions of the Owner.

8.2 The Contractor shall notify the Owner promptly of all claims arising out of the performance of work under this Agreement by the Contractor, its employees or agents, officers or subcontractors.

8.3 This indemnity provision shall survive the termination of the Agreement, completion of the project or the expiration of the term of the Agreement.

9. Insurance Requirements

9.1 The Contractor shall provide, with each original of the signed Contract, an insurance certificate or certificates acceptable to the Owner and BGS. The Contractor shall submit insurance certificates to the Owner and BGS at the commencement of this Contract and at policy renewal or revision dates. The certificates shall identify the project name and BGS project number, and shall name the Owner as certificate holder and as additional insured for general liability and automobile liability coverages. The submitted forms shall contain a provision that coverage afforded under the insurance policies will not be canceled or materially changed unless at least ten days prior written notice by registered letter has been given to the Owner and BGS.

9.2 The Owner does not warrant or represent that the insurance required herein constitutes an insurance portfolio which adequately addresses all risks faced by the Contractor or its Subcontractors. The Contractor is responsible for the existence, extent and adequacy of insurance prior to commencement of work. The Contractor shall not allow any Subcontractor to commence work until all similar insurance required of the Subcontractor has been confirmed by the Contractor.

9.3 The Contractor shall procure and maintain primary insurance for the duration of the Project and, if written on a Claims-Made basis, shall also procure and maintain Extended Reporting Period (ERP) insurance for the period of time that any claims could be brought. The Contractor shall ensure that all Subcontractors they engage or employ will procure and maintain similar insurance

in form and amount acceptable to the Owner and BGS. At a minimum, the insurance shall be of the types and limits set forth herein protecting the Contractor from claims which may result from the Contractor's execution of the Work, whether such execution be by the Contractor or by those employed by the Contractor or by those for whose acts they may be liable. All required insurance coverages shall be placed with carriers authorized to conduct business in the State of Maine by the Maine Bureau of Insurance.

9.3.1 The Contractor shall have Workers' Compensation insurance for all employees on the Project site in accordance with the requirements of the Workers' Compensation law of the State of Maine. Minimum acceptable limits for Employer's Liability are:

Bodily Injury by Accident.....$500,000
Bodily Injury by Disease.....$500,000 Each Employee
Bodily Injury by Disease.....$500,000 Policy Limit

9.3.2 The Contractor shall have Commercial General Liability insurance providing coverage for bodily injury and property damage liability for all hazards of the Project including premise and operations, products and completed operations, contractual, and personal injury liabilities. The policy shall include collapse and underground coverage as well as explosion coverage if explosion hazards exist. Aggregate limits shall apply on a location or project basis. Minimum acceptable limits are:

General aggregate limit.....$2,000,000
Products and completed operations aggregate $1,000,000
Each occurrence limit.....$1,000,000
Personal injury aggregate.....$1,000,000

9.3.3 The Contractor shall have Automobile Liability insurance against claims for bodily injury, death or property damage resulting from the maintenance, ownership or use of all owned, non-owned and hired automobiles, trucks and trailers. Minimum acceptable limit is:

Any one accident or loss $500,000

9.3.4 For the portion of a project which is new construction, the Contractor shall procure and maintain Builder's Risk insurance naming the Owner, Contractor, and any Subcontractor as insureds as their interest may appear. Covered causes of loss form shall be all Risks of Direct Physical Loss, endorsed to include flood, earthquake, transit and sprinkler leakage where sprinkler coverage is applicable. Unless specifically authorized in writing by the Owner, the limit of insurance shall not be less than the initial contract amount, for the portion of the project which is new construction, and coverage shall apply during the entire contract period and until the work is accepted by the Owner.

9.3.5 The Contractor shall have Owner's Protective Liability insurance for contract values $50,000 and above, naming the Owner as the Named Insured. Minimum acceptable limits are:

General aggregate limit.....$2,000,000
Each occurrence limit.....$1,000,000

10. Contract Bonds

10.1 When noted as required in the Bid Documents, the Contractor shall provide to the Owner a Performance Bond and a Payment Bond, or "contract bonds", upon execution of the contract. Each bond value shall be for the full amount of the contract and issued by a surety company authorized to do business in the State of Maine as approved by the Owner. The bonds shall be

executed on the forms furnished in the Bid Documents. The bonds shall allow for any subsequent additions or deductions of the contract.

10.2 The contract bonds shall continue in effect for one year after final acceptance of the contract to protect the Owner's interest in connection with the one year guarantee of workmanship and materials and to assure settlement of claims for the payment of all bills for labor, materials and equipment by the Contractor.

11. Patents and Royalties

11.1 The Contractor shall, for all time, secure for the Owner the free and undisputed right to the use of any patented articles or methods used in the Work. The expense of defending any suits for infringement or alleged infringement of such patents shall be borne by the Contractor. Awards made regarding patent suits shall be paid by the Contractor. The Contractor shall hold the Owner harmless regarding patent suits that may arise due to installations made by the Contractor, and to any awards made as a result of such suits.

11.2 Any royalty payments related to the work done by the Contractor for the Project shall be borne by the Contractor. The Contractor shall hold the Owner harmless regarding any royalty payments that may arise due to installations made by the Contractor.

12. Surveys, Layout of Work

12.1 The Owner shall furnish all property surveys unless otherwise specified.

12.2 The Contractor is responsible for correctly staking out the Work on the site. The Contractor shall employ a competent surveyor to position all construction on the site. The surveyor shall run the axis lines, establish correct datum points and check each line and point on the site to insure their accuracy. All such lines and points shall be carefully preserved throughout the construction.

12.3 The Contractor shall lay out all work from dimensions given on the Drawings. The Contractor shall take measurements and verify dimensions of any existing work that affects the Work or to which the Work is to be fitted. The Contractor is solely responsible for the accuracy of all measurements. The Contractor shall verify all grades, lines, levels, elevations and dimensions shown on the Drawings and report any errors or inconsistencies to the Consultant prior to commencing work.

13. Record of Documents

13.1 The Contractor shall maintain one complete set of Contract Documents on the jobsite, in good order and current status, for access by the Owner and Consultant.

13.2 The Contractor shall maintain, continuously updated, complete records of Requests for Information, Architectural Supplemental Instructions (or equivalent), Information Bulletins, supplemental sketches, Change Order Proposals, Change Orders, Shop Drawings, testing reports, et cetera, for access by the Owner and Consultant.

14. Allowances

14.1 The Contract Price shall include all allowances described in the Contract Documents. The Contractor shall include all overhead and profit necessary to implement each allowance in their Contract Price.

14.2 The Contractor shall not be required to employ parties for allowance work against whom the Contractor has a reasonable objection. In such a case, the Contractor shall notify the Owner in writing of their position and shall propose an alternative party to complete the work of the allowance.

15. Shop Drawings

15.1 The Contractor shall administer Shop Drawings prepared by the Contractor, Subcontractors, suppliers or others to conform to the approved Schedule of the Work. The Contractor shall verify all field measurements, check and authorize all Shop Drawings and schedules required by the Work. The Contractor is the responsible party and contact for the Contractor's work as well as that of Subcontractors, suppliers or others who provide Shop Drawings.

15.2 The Consultant shall review and acknowledge Shop Drawings, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents.

15.3 The Contractor shall provide monthly updated logs containing: requests for information, information bulletins, supplemental instructions, supplemental sketches, change order proposals, change orders, submittals, testing and deficiencies.

15.4 The Contractor shall make any corrections required by the Consultant, and shall submit a quantity of corrected copies as may be needed. The acceptance of Shop Drawings or schedules by the Consultant shall not relieve the Contractor from responsibility for deviations from Drawings and Specifications, unless the Contractor has called such deviations to the attention of the Consultant at the time of submission and secured the Consultant’s written approval. The acceptance of Shop Drawings or schedules by the Consultant does not relieve the Contractor from responsibility for errors in Shop Drawings or schedules.

16. Samples

16.1 The Contractor shall furnish for approval, with reasonable promptness, all samples as directed by the Consultant. The Consultant shall review and approve such samples, with reasonable promptness, for general conformity with the design concept of the project and compliance with the information provided in the Contract Documents. The subsequent work shall be in accord with the approved samples.

17. Substitutions

17.1 The Contractor shall furnish items and materials described in the Contract Documents. If the item or material specified describes a proprietary product, or uses the name of a manufacturer, the term “or approved equal” shall be implied, if it is not included in the text. The specific item or material specified establishes a minimum standard for the general design, level of quality, type, function, durability, efficiency, reliability, compatibility, warranty coverage, installation factors

and required maintenance. The Drawing or written Specification shall not be construed to exclude other manufacturers products of comparable design, quality, and efficiency.

17.2 The Contractor may submit detailed information about a proposed substitution to the Consultant for consideration. Particular models of items and particular materials which the Contractor asserts to be equal to the items and materials identified in the Contract Documents shall be allowed only with written approval by the Consultant. The request for substitution shall include a cost comparison and a reason or reasons for the substitution.

17.3 The Consultant may request additional information about the proposed substitution. The approval or rejection of a proposed substitution may be based on timeliness of the request, source of the information, the considerations of minimum standards described above, or other considerations. The Consultant should briefly state the rationale for the decision. The decision shall be considered final.

17.4 The duration of a substitution review process can not be the basis for a claim for delay in the Schedule of the Work.

18. Assignment of Contract

18.1 The Contractor shall not assign or sublet the contract as a whole without the written consent of the Owner. The Contractor shall not assign any money due to the Contractor without the written consent of the Owner.

19. Separate Contracts

19.1 The Owner reserves the right to create other contracts in connection with this Project using similar General Conditions. The Contractor shall allow the Owner's other contractors reasonable opportunity for the delivery and storage of materials and the execution of their work. The Contractor shall coordinate and properly connect the Work of all contractors.

19.2 The Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in work of the Owner's other contractors that impacts the proper execution or results of the Contractor. The Contractor’s failure to observe or report any deficiencies constitutes an acceptance of the Owner's other contractors work as suitable for the interface of the Contractor’s work, except for latent deficiencies in the Owner's other contractors work.

19.3 Similarly, the Contractor shall promptly report to the Consultant and Owner any apparent deficiencies in their own work that would impact the proper execution or results of the Owner's other contractors.

19.4 The Contractor shall report to the Consultant and Owner any conflicts or claims for damages with the Owner's other contractors and settle such conflicts or claims for damages by mutual agreement or arbitration, if necessary, at no expense to the Owner.

19.5 In the event the Owner's other contractors sue the Owner regarding any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor's expense. The Contractor shall pay or satisfy any judgment that may arise against the Owner, and pay all other costs incurred.

20. Subcontracts

20.1 The Contractor shall not subcontract any part of this contract without the written permission of the Owner.

20.2 The Contractor shall submit a complete list of named Subcontractors and material suppliers to the Consultant and Owner for approval by the Owner prior to commencing work. The Subcontractors named shall be reputable companies of recognized standing with a record of satisfactory work.

20.3 The Contractor shall not employ any Subcontractor or use any material until they have been approved, or where there is reason to believe the resulting work will not comply with the Contract Documents.

20.4 The Contractor, not the Owner, is as fully responsible for the acts and omissions of Subcontractors and of persons employed by them, as the Contractor is for the acts and omissions of persons directly or indirectly employed by the Contractor.

20.5 Neither the Contract Documents nor any Contractor-Subcontractor contract shall indicate, infer or create any direct contractual relationship between any Subcontractor and the Owner.

21. Contractor-Subcontractor Relationship

21.1 The Contractor shall be bound to the Subcontractor by all the obligations in the Contract Documents that bind the Contractor to the Owner.

21.2 The Contractor shall pay the Subcontractor, in proportion to the dollar value of the work completed and requisitioned by the Subcontractor, the approved dollar amount allowed to the Contractor no more than seven days after receipt of payment from the Owner.

21.3 The Contractor shall pay the Subcontractor accordingly if the Contract Documents or the subcontract provide for earlier or larger payments than described in the provision above.

21.4 The Contractor shall pay the Subcontractor for completed and requisitioned subcontract work, less retainage, no more than seven days after receipt of payment from the Owner for the Contractor's approved Requisition for Payment, even if the Consultant fails to certify a portion of the Requisition for Payment for a cause not the fault of the Subcontractor.

21.5 The Contractor shall not make a claim for liquidated damages or penalty for delay in any amount in excess of amounts that are specified by the subcontract.

21.6 The Contractor shall not make a claim for services rendered or materials furnished by the Subcontractor unless written notice is given by the Contractor to the Subcontractor within ten calendar days of the day in which the claim originated.

21.7 The Contractor shall give the Subcontractor an opportunity to present and to submit evidence in any progress conference or disputes involving subcontract work.

21.8 The Contractor shall pay the Subcontractor a just share of any fire insurance payment received by the Contractor.

21.9 The Subcontractor shall be bound to the Contractor by the terms of the Contract Documents and assumes toward the Contractor all the obligations and responsibilities that the Contractor, by those documents, assumes toward the Owner.

21.10 The Subcontractor shall submit applications for payment to the Contractor in such reasonable time as to enable the Contractor to apply for payment as specified.

21.11 The Subcontractor shall make any claims for extra cost, extensions of time or damages, to the Contractor in the manner provided in these General Conditions for like claims by the Contractor to the Owner, except that the time for the Subcontractor to make claims for extra cost is seven calendar days after the receipt of Consultant's instructions.

22. Supervision of the Work

22.1 During all stages of the Work the Contractor shall have a competent superintendent, with any necessary assistant superintendents, overseeing the project. The superintendent shall not be reassigned without the consent of the Owner unless a superintendent ceases to be employed by the Contractor due to unsatisfactory performance.

22.2 The superintendent represents the Contractor on the jobsite. Directives given by the Consultant or Owner to the superintendent shall be as binding as if given directly to the Contractor's main office. All important directives shall be confirmed in writing to the Contractor. The Consultant and Owner are not responsible for the acts or omissions of the superintendent or assistant superintendents.

22.3 The Contractor shall provide supervision of the Work equal to the industry's highest standard of care. The superintendent shall carefully study and compare all Contract Documents and promptly report any error, inconsistency or omission discovered to the Consultant. The Contractor may not necessarily be held liable for damages resulting directly from any error, inconsistency or omission in the Contract Documents or other instructions by the Consultant that was not revealed by the superintendent in a timely way.

23. Observation of the Work

23.1 The Contractor shall allow the Owner, the Consultant and the Bureau continuous access to the site for the purpose of observation of the progress of the work. All necessary safeguards and accommodations for such observations shall be provided by the Contractor.

23.2 The Contractor shall coordinate all required testing, approval or demonstration of the Work. The Contractor shall give sufficient notice to the appropriate parties of readiness for testing, inspection or examination.

23.3 The Contractor shall schedule inspections and obtain all required certificates of inspection for inspections by a party other than the Consultant.

23.4 The Consultant shall make all scheduled observations promptly, prior to the work being concealed or buried by the Contractor. If approval of the Work is required of the Consultant, the Contractor shall notify the Consultant of the construction schedule in this regard. Work concealed or buried prior to the Consultant's approval may need to be uncovered at the Contractor's expense.

23.5 The Consultant may order reexamination of questioned work, and, if so ordered, the work must be uncovered by the Contractor. If the work is found to conform to the Contract Documents, the Owner shall pay the expense of the reexamination and remedial work. If the work is found to not conform to the Contract Documents, the Contractor shall pay the expense, unless the defect in the work was caused by the Owner's Contractor, whose responsibility the reexamination expense becomes.

23.6 The Bureau shall periodically observe the Work during the course of construction and make recommendations to the Contractor or Consultant as necessary. Such recommendations shall be considered and implemented through the usual means for changes to the Work.

24. Consultant's Status

24.1 The Consultant represents the Owner during the construction period, and observes the work in progress on behalf of the Owner. The Consultant has authority to act on behalf of the Owner only to the extent expressly provided by the Contract Documents or otherwise demonstrated to the Contractor. The Consultant has authority to stop the work whenever such an action is necessary, in the Consultant's reasonable opinion, to ensure the proper execution of the contract.

24.2 The Consultant is the interpreter of the conditions of the contract and the judge of its performance. The Consultant shall favor neither the Owner nor the Contractor, but shall use the Consultant's powers under the contract to enforce faithful performance by both parties.

24.3 In the event of the termination of the Consultant's employment on the project prior to completion of the work, the Owner shall appoint a capable and reputable replacement. The status of the new Consultant relative to this contract shall be that of the former Consultant.

25. Management of the Premises

25.1 The Contractor shall place equipment and materials, and conduct activities on the premises in a manner that does not unreasonably hinder site circulation, environmental stability, or any long term effect. Likewise, the Consultant's directions shall not cause the use of premises to be impeded for the Contractor or Owner.

25.2 The Contractor shall not use the premises for any purpose other than that which is directly related to the scope of work. The Owner shall not use the premises for any purpose incompatible with the proposed work simultaneous to the work of the Contractor.

25.3 The Contractor shall enforce the Consultant's instructions regarding information posted on the premises such as signage and advertisements, as well as activities conducted on the premises such as fires, and smoking.

25.4 The Owner may occupy any part of the Project that is completed with the written consent of the Contractor, and without prejudice to any of the rights of the Owner or Contractor. Such use or occupancy shall not, in and of itself, be construed as a final acceptance of any work or materials.

26. Safety and Security of the Premises

26.1 The Contractor shall designate, and make known to the Consultant and the Owner, a safety officer whose duty is the prevention of accidents on the site.

26.2 The Contractor shall continuously maintain security on the premises and protect from unreasonable occasion of injury all people authorized to be on the job site. The Contractor shall also effectively protect the property and adjacent properties from damage or loss.

26.3 The Contractor shall take all necessary precautions to ensure the safety of workers and others on and adjacent to the site, abiding by applicable local, state and federal safety regulations. The Contractor shall erect and continuously maintain safeguards for the protection of workers and others, and shall post signs and other warnings regarding hazards associated with the construction process, such as protruding fasteners, moving equipment, trenches and holes, scaffolding, window, door or stair openings, and falling materials.

26.4 The Contractor shall restore the premises to conditions that existed prior to the start of the project at areas not intended to be altered according to the Contract Documents.

26.5 The Contractor shall protect existing utilities and exercise care working in the vicinity of utilities shown in the Drawings and Specifications or otherwise located by the Contractor.

26.6 The Contractor shall protect from damage existing trees and other significant plantings and landscape features of the site which will remain a permanent part of the site. If necessary or indicated in the Contract Documents, tree trunks shall be boxed and barriers erected to prevent damage to tree branches or roots.

26.7 The Contractor shall repair or replace damage to the Work caused by the Contractor's or Subcontractor's forces, including that which is reasonably protected, at the expense of the responsible party.

26.8 The Contractor shall not load, or allow to be loaded, any part of the Project with a force which imperils personal or structural safety. The Consultant may consult with the Contractor on such means and methods of construction, however, the ultimate responsibility lies with the Contractor.

26.9 The Contractor shall not jeopardize any work in place with subsequent construction activities such as blasting, drilling, excavating, cutting, patching or altering work. The Consultant must approve altering any structural components of the project. The Contractor shall supervise all construction activities carried out by others on site to ensure that the work is neatly done and in a manner that will not endanger the structure or the component parts.

26.10 The Contractor may act with their sole discretion in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Contractor may negotiate with the Owner for compensation for expenses due to such emergency work.

26.11 The Contractor and Subcontractors shall have no responsibility for the identification, discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials in any form at the project site. The Contractor shall avoid disruption of any hazardous materials or toxic substances at the project site and promptly notify the Owner in writing on the occasion of such a discovery.

26.12 The Contractor shall keep the premises free of any unsafe accumulation of waste materials caused by the work. The Contractor shall regularly keep the spaces "broom clean". See the Close-out of the Work provisions of this section regarding cleaning at the completion of the project.

27. Changes in the Work

27.1 The Contractor shall not proceed with extra work without an approved Change Order or Construction Change Directive. A Change Order which has been properly signed by all parties shall become a part of the contract.

27.2 A Change Order is the usual document for directing changes in the Work. In certain circumstances, however, the Owner may utilize a Construction Change Directive to direct the Contractor to perform changes in the Work that are generally consistent with the scope of the project. The Owner shall use a Construction Change Directive only when the normal process for approving changes to the Work has failed to the detriment of the Project, or when agreement on the terms of a Change Order cannot be met, or when an urgent situation requires, in the Owner's judgment, prompt action by the Contractor.

27.3 The Consultant shall prepare the Construction Change Directive representing a complete scope of work, with proposed Contract Price and Contract Time revisions, if any, clearly stated.

27.4 The Contractor shall promptly carry out a Construction Change Directive which has been signed by the Owner and the Consultant. Work thus completed by the Contractor constitutes the basis for a Change Order. Changes in the Contract Price and Contract Time shall be as defined in the Construction Change Directive unless subsequently negotiated with some other terms.

27.5 The method of determining the dollar value of extra work shall be by:
- .1 an estimate of the Contractor accepted by Owner as a lump sum, or
- .2 unit prices named in the contract or subsequently agreed upon, or
- .3 cost plus a designated percentage, or
- .4 cost plus a fixed fee.

27.6 The Contractor shall determine the dollar value of the extra work for both the lump sum and cost plus designated percentage methods so as not to exceed the following rates. The rates include all overhead and profit expenses.
- .1 Contractor - for any work performed by the Contractor's own forces, up to 20% of the cost;
- .2 Subcontractor - for work performed by Subcontractor's own forces, up to 20% of the cost;
- .3 Contractor - for work performed by Contractor's Subcontractor, up to 10% of the amount due the Subcontractor.

27.7 The Contractor shall keep and provide records as needed or directed for the cost plus designated percentage method. The Consultant shall review and certify the appropriate amount which

includes the Contractor's overhead and profit. The Owner shall make payments based on the Consultant's certificate.

27.8 Cost reflected in Change Orders shall be limited to the following: cost of materials, cost of delivery, cost of labor (including Social Security, pension, Workers' Compensation insurance, and unemployment insurance), and cost of rental of power tools and equipment. Labor cost may include a pro-ratio share of a foreman's time only in the case of an extension of contract time granted due to the Change Order.

27.9 Overhead reflected in Change Orders shall be limited to the following: bond premium, supervision, wages of clerks, time keepers, and watchmen, small tools, incidental expenses, general office expenses, and all other overhead expenses directly related to the Change Order.

27.10 The Contractor shall provide credit to the Owner for labor, materials, equipment and other costs but not overhead and profit expenses for those Change Order items that result in a net value of credit to the contract.

27.11 The Owner may change the scope of work of the Project without invalidating the contract. The Owner shall notify the Contractor of a change of the scope of work for the Owner's Contractors, which may affect the work of this Contractor, without invalidating the contract. Change Orders for extension of the time caused by such changes shall be developed at the time of directing the change in scope of work.

27.12 The Consultant may order minor changes in the Work, not involving extra cost, which is consistent with the intent of the design or project.

27.13 The Contractor shall immediately give written notification to the Consultant of latent conditions discovered at the site which materially differ from those represented in the Drawings or Specifications, and which may eventually result in a change in the scope of work. The Contractor shall suspend work until receiving direction from the Consultant. The Consultant shall promptly investigate the conditions and respond to the Contractor's notice with direction that avoids any unnecessary delay of the Work. The Consultant shall determine if the discovered conditions warrant a Change Order.

27.14 The Contractor shall, within ten calendar days of receipt of the information, give written notification to the Consultant if the Contractor claims that instructions by the Consultant will constitute extra cost not accounted for by Change Order or otherwise under the contract. The Consultant shall promptly respond to the Contractor's notice with direction that avoids any unnecessary delay of the Work. The Consultant shall determine if the Contractor's claim warrants a Change Order.

28. Correction of the Work

28.1 The Contractor shall promptly remove from the premises all work the Consultant declares is non-conforming to the contract. The Contractor shall replace the work properly at no expense to the Owner. The Contractor is also responsible for the expenses of others whose work was damaged or destroyed by such remedial work.

28.2 The Owner may elect to remove non-conforming work if it is not removed by the Contractor within a reasonable time, that time defined in a written notice from the Consultant. The Owner may elect to store removed non-conforming work not removed by the Contractor at the Contractor's expense. The Owner may, with ten days written notice, dispose of materials which the Contractor does not remove. The Owner may sell the materials and apply the net proceeds, after deducting all expenses, to the costs that should have been borne by the Contractor.

28.3 The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any related damage to other work which appears within a period of one year from the date of substantial completion, and in accord with the terms of any guarantees provided in the contract. The Owner shall promptly give notice of observed defects to the Contractor and Consultant. The Consultant shall determine the status of all claimed defects. The Contractor shall perform all remedial work without unjustifiable delay in either the initial response or the corrective action.

28.4 The Consultant may authorize, after a reasonable notification to the Contractor, an equitable deduction from the contract amount in lieu of the Contractor correcting non-conforming or defective work.

29. Owner's Right to do Work

29.1 The Owner may, using other contractors, correct deficiencies attributable to the Contractor, or complete unfinished work. Such action shall take place only after giving the Contractor three days written notice, and provided the Consultant approves of the proposed course of action as an appropriate remedy. The Owner may then deduct the cost of the remedial work from the amount due the Contractor.

29.2 The Owner may act with their sole discretion when the Contractor is unable to take action in emergency situations that potentially effect health, life or serious damage to the premises or adjacent properties, to prevent such potential loss or injury. The Owner shall inform the Contractor of the emergency work performed, particularly where it may affect the work of the Contractor.

30. Termination of Contract and Stop Work Action

30.1 The Owner may, owing to a certificate of the Consultant indicating that sufficient cause exists to justify such action, without prejudice to any other right or remedy and after giving the Contractor and the Contractor’s surety seven days written notice, terminate the employment of the Contractor. At that time the Owner may take possession of the premises and of all materials,

tools and appliances on the premises and finish the work by whatever method the Owner may deem expedient. Cause for such action by the Owner includes:

.1 the contractor is adjudged bankrupt, or makes a general assignment for the benefit of its creditors, or

.2 a receiver is appointed due to the Contractor's insolvency, or

.3 the Contractor persistently or repeatedly refuses or fails to provide enough properly skilled workers or proper materials, or

.4 the Contractor fails to make prompt payment to Subcontractors or suppliers of materials or labor, or

.5 the Contractor persistently disregards laws, ordinances or the instructions of the Consultant, or is otherwise found guilty of a substantial violation of a provision of the Contract Documents.

30.2 The Contractor is not entitled, as a consequence of the termination of the employment of the Contractor as described above, to receive any further payment until the Work is finished. If the unpaid balance of the contract amount exceeds the expense of finishing the Work, including compensation for additional architectural, managerial and administrative services, such balance shall be paid to the Contractor. If the expense of finishing the Work exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. The Consultant shall certify the expense incurred by the Contractor's default. This obligation for payment shall continue to exist after termination of the contract.

30.3 The Contractor may, if the Work is stopped by order of any court or other public authority for a period of thirty consecutive days, and through no act or fault of the Contractor or of anyone employed by the Contractor, with seven days written notice to the Owner and the Consultant, terminate this contract. The Contractor may then recover from the Owner payment for all work executed, any proven loss and reasonable profit and damage.

30.4 The Contractor may, if the Consultant fails to issue a certificate for payment within seven days after the Contractor's formal request for payment, through no fault of the Contractor, or if the Owner fails to pay to the Contractor within 30 days after submission of any sum certified by the Consultant, with seven days written notice to the Owner and the Consultant, stop the Work or terminate this Contract.

31. Delays and Extension of Time

31.1 The completion date of the contract shall be extended if the work is delayed by changes ordered in the work which have approved time extensions, or by an act or neglect of the Owner, the Consultant, or the Owner's Contractor, or by strikes, lockouts, fire, flooding, unusual delay in transportation, unavoidable casualties, or by other causes beyond the Contractor's control. The Consultant shall determine the status of all claimed causes.

31.2 The contract shall not be extended for delay occurring more than seven calendar days before the Contractor's claim made in writing to the Consultant. In case of a continuing cause of delay, only one claim is necessary.

31.3 The contract shall not be extended due to failure of the Consultant to furnish drawings if no schedule or agreement is made between the Contractor and the Consultant indicating the dates

which drawings shall be furnished and fourteen calendar days has passed after said date for such drawings.

31.4 This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Document.

32. Payments to the Contractor

32.1 As noted under *Preconstruction Conference* in this section, the Contractor shall submit a Schedule of Values form, before the first application for payment, for approval by the Owner and Consultant. The Consultant may direct the Contractor to provide evidence that supports the correctness of the form. The approved Schedule of Values shall be used as a basis for payments.

32.2 The Contractor shall submit an application for each payment ("Requisition for Payment") on a form approved by the Owner and Consultant. The Consultant may require receipts or other documents showing the Contractor's payments for materials and labor, including payments to Subcontractors.

32.3 The Contractor shall submit Requisitions for Payment as the work progresses not more frequently than once each month, unless the Owner approves a more frequent interval due to unusual circumstances. The Requisition for Payment is based on the proportionate quantities of the various classes of work completed or incorporated in the Work, in agreement with the actual progress of the Work and the dollar value indicated in the Schedule of Values.

32.4 The Consultant shall verify and certify each Requisition for Payment which appears to be complete and correct prior to payment being made by the Owner. The Consultant may certify an appropriate amount for materials not incorporated in the Work which have been delivered and suitably stored at the site. The Contractor shall submit bills of sale, insurance certificates, or other such documents that will adequately protect the Owner's interests prior to payments being certified.

32.5 In the event any materials delivered but not yet incorporated in the Work have been included in a certified Requisition for Payment with payment made, and said materials thereafter are damaged, deteriorated or destroyed, or for any reason whatsoever become unsuitable or unavailable for use in the Work, the full amount previously allowed shall be deducted from subsequent payments unless the Contractor satisfactorily replaces said material.

32.6 The Contractor may request certification of an appropriate dollar amount for materials not incorporated in the Work which have been delivered and suitably stored away from the site. The Contractor shall submit bills of sale, insurance certificates, right-of-entry documents or other such documents that will adequately protect the Owner's interests. The Consultant shall determine if the Contractor's documentation for the materials is complete and specifically designated for the Project. The Owner may allow certification of such payments.

32.7 Subcontractors may request, and shall receive from the Consultant, copies of approved Requisitions for Payment showing the amounts certified in the Schedule of Values.

32.8 Certified Requisitions for Payment, payments made to the Contractor, or partial or entire occupancy of the project by the Owner shall not constitute an acceptance of any work that does

not conform to the Contract Documents. The making and acceptance of the final payment constitutes a waiver of all claims by the Owner, other than those arising from unsettled liens, from faulty work or materials appearing within one year from final payment or from requirements of the Drawings and Specifications, and of all claims by the Contractor, except those previously made and still unsettled.

33. Payments Withheld

33.1 The Owner shall retain five percent of each payment due the Contractor as part security for the fulfillment of the contract by the Contractor. The Owner may make payment of a portion of this "retainage" to the Contractor temporarily or permanently during the progress of the Work. The Owner may thereafter withhold further payments until the full amount of the five percent is reestablished. The Contractor may deposit with the Maine State Treasurer certain securities in place of retainage amounts due according to Maine Statute (5 M.R.S. §1746).

33.2 The Consultant may withhold or nullify the whole or a portion of any Requisitions for Payment submitted by the Contractor in the amount that may be necessary, in his reasonable opinion, to protect the Owner from loss due to any of the following:

.1 defective work not remedied;
.2 claims filed or reasonable evidence indicating probable filing of claims;
.3 failure to make payments properly to Subcontractors or suppliers;
.4 a reasonable doubt that the contract can be completed for the balance then unpaid;
.5 liability for damage to another contractor.

The Owner shall make payment to the Contractor, in the amount withheld, when the above circumstances are removed.

34. Liens

34.1 The Contractor shall deliver to the Owner a complete release of all liens arising out of this contract before the final payment or any part of the retainage payment is released. The Contractor shall provide with the release of liens an affidavit asserting each release includes all labor and materials for which a lien could be filed. Alternately, the Contractor, in the event any Subcontractor or supplier refuses to furnish a release of lien in full, may furnish a bond satisfactory to the Owner, to indemnify the Owner against any lien.

34.2 In the event any lien remains unsatisfied after all payments to the Contractor are made by the Owner, the Contractor shall refund to the Owner all money that the latter may be compelled to pay in discharging such lien, including all cost and reasonable attorney's fees.

35. Workmanship

35.1 The Contractor shall provide materials, equipment, and installed work equal to or better than the quality specified in the Contract Documents and approved in submittal and sample. The installation methods shall be of the highest standards, and the best obtainable from the respective trades. The Consultant's decision on the quality of work shall be final.

35.2 The Contractor shall know local labor conditions for skilled and unskilled labor in order to apply the labor appropriately to the Work. All labor shall be performed by individuals well skilled in their respective trades.

35.3 The Contractor shall perform all cutting, fitting, patching and placing of work in such a manner to allow subsequent work to fit properly, whether that be by the Contractor, the Owner's Contractors or others. The Owner and Consultant may advise the Contractor regarding such subsequent work. Notwithstanding the notification or knowledge of such subsequent work, the Contractor may be directed to comply with this standard of compatible construction by the Consultant at the Contractor's expense.

35.4 The Contractor shall request clarification or revision of any design work by the Consultant, prior to commencing that work, in a circumstance where the Contractor believes the work cannot feasibly be completed at the highest quality, or as indicated in the Contract Documents. The Consultant shall respond to such requests in a timely way, providing clarifying information, a feasible revision, or instruction allowing a reduced quality of work. The Contractor shall follow the direction of the Consultant regarding the required request for information.

35.5 The Contractor shall guarantee the Work against any defects in workmanship and materials for a period of one year commencing with the date of the Certificate of Substantial Completion, unless specified otherwise for specific elements of the project. The Work may also be subdivided in mutually agreed upon components, each defined by a separate Certificate of Substantial Completion.

36. Close-out of the Work

36.1 The Contractor shall remove from the premises all waste materials caused by the work. The Contractor shall make the spaces “broom clean” unless a more thorough cleaning is specified. The Contractor shall clean all windows and glass immediately prior to the final inspection, unless otherwise directed.

36.2 The Owner may conduct the cleaning of the premises where the Contractor, duly notified by the Consultant, fails to adequately complete the task. The expense of this cleaning may be deducted from the sum due to the Contractor.

36.3 The Contractor shall participate in all final inspections and acknowledge the documentation of unsatisfactory work, customarily called the "punch list", to be corrected by the Contractor. The Consultant shall document the successful completion of the Work in a dated Certificate of Substantial Completion, to be signed by Owner, Consultant, and Contractor.

36.4 The Contractor shall not call for final inspection of any portion of the Work that is not completely and permanently installed. The Contractor may be found liable for the expenses of individuals called to final inspection meetings prematurely.

36.5 The Contractor and all major Subcontractors shall participate in the end-of-warranty-period conference, typically scheduled close to one year after the Substantial Completion date.

37. Date of Completion and Liquidated Damages

37.1 The Contractor may make a written request to the Owner for an extension or reduction of time, if necessary. The request shall include the reasons the Contractor believes justifies the proposed completion date. The Owner may grant the revision of the contract completion date if the Work was delayed due to conditions beyond the control and the responsibility of the Contractor. The Contractor shall not conduct unauthorized accelerated work or file delay claims to recover alleged damages for unauthorized early completion.

37.2 The Contractor shall vigorously pursue the completion of the Work and notify the Owner of any factors that have, may, or will affect the approved Schedule of the Work. The Contractor may be found responsible for expenses of the Owner or Consultant if the Contractor fails to make notification of project delays.

37.3 The Project is planned to be done in an orderly fashion which allows for an iterative submittal review process, construction administration including minor changes in the Work and some bad weather. The Contractor shall not file delay claims to recover alleged damages on work the Consultant determines has followed the expected rate of progress.

37.4 The Consultant shall prepare the Certificate of Substantial Completion which, when signed by the Owner and the Contractor, documents the date of Substantial Completion of the Work or a designated portion of the Work. The Owner shall not consider the issuance of a Certificate of Occupancy by an outside authority a prerequisite for Substantial Completion if the Certificate of Occupancy cannot be obtained due to factors beyond the Contractor's control.

37.5 Liquidated Damages may be deducted from the sum due to the Contractor for each calendar day that the Work remains uncompleted after the completion date specified in the Contract or an approved amended completion date. The dollar amount per day shall be calculated using the Schedule of Liquidated Damages table shown below.

If the original contract amount is:	The per day Liquidated Damages shall be:
Less than $100,000	$250
$100,000 to less than $2,000,000	$750
$2,000,000 to less than $10,000,000	$1,500
$10,000,000 and greater	$1,500 plus $250 for each $2,000,000 over $10,000,000

38. Dispute Resolution

38.1 Mediation

38.1.1 A dispute between the parties which arises under this Contract which cannot be resolved through informal negotiation, shall be submitted to a neutral mediator jointly selected by the parties.

38.1.2 Either party may file suit before or during mediation if the party, in good faith, deems it to be necessary to avoid losing the right to sue due to a statute of limitations. If suit is filed before good faith mediation efforts are completed, the party filing suit shall agree to stay all proceedings in the lawsuit pending completion of the mediation process, provided such stay is without prejudice.

38.1.3 In any mediation between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.

38.2 Arbitration

38.2.1 If the dispute is not resolved through mediation, the dispute shall be settled by arbitration. The arbitration shall be conducted before a panel of three arbitrators. Each party shall select one arbitrator; the third arbitrator shall be appointed by the arbitrators selected by the parties. The arbitration shall be conducted in accordance with the Maine Uniform Arbitration Act (MUAA), except as otherwise provided in this section.

38.2.2 The decision of the arbitrators shall be final and binding upon all parties. The decision may be entered in court as provided in the MUAA.

38.2.3 The costs of the arbitration, including the arbitrators' fees shall be borne equally by the parties to the arbitration, unless the arbitrator orders otherwise.

38.2.4 In any arbitration between the Owner and the Consultant, the Owner has the right to consolidate related claims between Owner and Contractor.

00 73 46
Wage Determination Schedule

PART 1- GENERAL

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections, apply to this Section.

1.2 Summary

A. This Section includes the wage determination requirements for Contractors as issued by the State of Maine Department of Labor Bureau of Labor Standards or the United States Department of Labor.

1.3 Requirements

A. Conform to the wage determination schedule for this project which is shown on the following page.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION (not used)

00 73 46
Wage Determination Schedule

End of Section 00 73 46

THIS DOCUMENT MUST BE CLEARLY POSTED AT ALL CONSTRUCTION SITES FUNDED IN PART WITH STATE FUNDS

State of Maine Department of Labor - Bureau of Labor Standards
Augusta, Maine 04333-0045 - Telephone (207) 623-7906

Wage Determination - In accordance with 26 MRS §1301 et. seq., this is a determination by the Bureau of Labor Standards, of the fair minimum wage rate to be paid to laborers and workers employed on the below titled project.

2024 Fair Minimum Wage Rates -- Building 2 Kennebec County (other than 1 or 2 family homes)

Occupational Title	Minimum Wage	Minimum Benefit	Total
Brickmasons And Blockmasons	$42.55	$28.02	$70.57
Bulldozer Operator	$31.50	$7.53	$39.03
Carpenter	$29.68	$12.51	$42.19
Cement Masons And Concrete Finisher	$24.13	$4.15	$28.28
Commercial Divers	$30.00	$4.62	$34.62
Construction And Maintenance Painters	$24.00	$0.00	$24.00
Construction Laborer	$22.67	$2.80	$25.47
Crane And Tower Operators	$38.50	$10.43	$48.93
Crushing Grinding And Polishing Machine Operators	$23.00	$4.94	$27.94
Drywall And Ceiling Tile Installers	$26.20	$10.62	$36.82
Earth Drillers - Except Oil And Gas	$21.61	$5.53	$27.14
Electrical Power - Line Installer And Repairers	$38.93	$8.91	$47.84
Electricians	$38.51	$6.00	$44.51
Elevator Installers And Repairers	$68.38	$45.29	$113.67
Excavating And Loading Machine And Dragline Operators	$54.28	$34.31	$88.59
Excavator Operator	$28.00	$1.67	$29.67
Fence Erectors	$26.75	$4.05	$30.80
Flaggers	$20.00	$0.38	$20.38
Floor Layers - Except Carpet/Wood/Hard Tiles	$27.25	$6.59	$33.84
Glaziers	$37.00	$6.60	$43.60
Grader/Scraper Operator	$23.00	$1.99	$24.99
Hazardous Materials Removal Workers	$21.00	$1.99	$22.99
Heating And Air Conditioning And Refrigeration Mechanics And Installers	$32.00	$5.60	$37.60
Heavy And Tractor - Trailer Truck Drivers	$22.75	$1.04	$23.79
Highway Maintenance Workers	$20.00	$0.00	$20.00
Industrial Machinery Mechanics	$31.25	$1.01	$32.26
Industrial Truck And Tractor Operators	$29.25	$4.06	$33.31
Insulation Worker - Mechanical	$23.00	$3.59	$26.59
Ironworker - Ornamental	$30.83	$24.97	$55.80
Light Truck Or Delivery Services Drivers	$23.34	$1.67	$25.01
Millwrights	$33.75	$8.78	$42.53
Mobile Heavy Equipment Mechanics - Except Engines	$27.75	$4.89	$32.64
Operating Engineers And Other Equipment Operators	$24.00	$2.38	$26.38
Paver Operator	$27.03	$6.49	$33.52
Pile-Driver Operators	$32.75	$1.95	$34.70
Pipelayers	$28.50	$4.89	$33.39
Plumbers Pipe Fitters And Steamfitters	$29.50	$5.48	$34.98
Pump Operators - Except Wellhead Pumpers	$31.49	$32.08	$63.57
Radio Cellular And Tower Equipment Installers	$26.00	$3.77	$29.77
Reclaimer Operator	$27.03	$7.68	$34.71
Reinforcing Iron And Rebar Workers	$30.83	$24.97	$55.80
Riggers	$29.25	$7.79	$37.04
Roofers	$23.75	$3.11	$26.86
Screed/Wheelman	$29.25	$4.94	$34.19
Sheet Metal Workers	$25.00	$5.35	$30.35
Structural Iron And Steel Workers	$30.08	$7.61	$37.69
Tapers	$32.63	$0.00	$32.63
Telecommunications Equipment Installers And Repairers - Except Line Installers	$28.00	$6.35	$34.35
Telecommunications Line Installers And Repairers	$31.03	$18.73	$49.76
Tile And Marble Setters	$27.75	$6.73	$34.48

Welders are classified as the trade to which welding is incidental (e.g. welding structural steel is Structural Iron and Steel Worker)

Apprentices – The minimum wage rates for registered apprentices are the rates recognized in the sponsorship agreement for registered apprentices working in the pertinent classification.

For any other specific trade on this project not listed above, contact the Bureau of Labor Standards for further clarification.

Title 26 §1310 requires that a clearly legible statement of all fair minimum wage and benefits rates to be paid the several classes of laborers, workers and mechanics employed on the construction on the public work must be kept posted in a prominent and easily accessible place at the site by each contractor and subcontractor subject to sections 1304 to 1313.

Appeal – Any person affected by the determination of these rates may appeal to the Commissioner of Labor by filing a written notice with the Commissioner stating the specific grounds of the objection within ten (10) days from the filing of these rates.

A true copy

Attest: Scott R. Cotnoir

Scott R. Cotnoir
Wage & Hour Director
Bureau of Labor Standards

Expiration Date: 12-31-2024
Revision Date: 2-1-2024

SUMMARY OF WORK

SECTION 01 10 00

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools, and appliances necessary for the proper completion of the work, as required in the Specifications, in accordance with good construction practice, and as required by the materials manufacturer. The work includes, but is not limited to, the following items:

A. Supply all temporary shoring, lighting, barricades, signage, and protection necessary to protect the building areas, building systems, and building patrons and public. Maintain such protection for the complete duration of the project.

B. Supply all disposal facilities, transportation and labor necessary to dispose of all demolished materials, dirt, and debris off-site in a legal dumping area. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish, and debris.

C. Provide temporary fencing around set-up and storage locations. Set-up and lay down areas should be sufficient for all sub-trades to have adequate area to store materials and equipment. Set-up and lay down areas must be within areas designated by the Owner.

D. Provide shoring of the below grade tunnels adjacent to work areas and as indicated in the Contract Documents.

E. Complete all associated work in accordance with the project specifications and Contract Drawings. Coordinate the work with the Owner.

F. The Contractor shall provide all lifts, cranes, and equipment necessary to access and perform the work.

G. Remove, protect and/or store all materials and assemblies to be reinstalled.

H. Remove and dispose of existing roofing materials, including but not limited, to rolled asphalt roof membrane, flat seam metal roof, and wood plank deck at Roof Area A1.

I. Remove and dispose of existing roofing materials, including but not limited, to rolled asphalt roof membrane and flat seam metal roof down to the existing to remain wood plank deck at Roof Area A2. Prepare surfaces which remain to receive new roofing assembly.

J. Remove and dispose of existing roofing materials, including but not limited to elastomeric roof membrane, insulation, and wood plank deck at locations of demolition at Roof Areas B, C, D, and E1 as indicated in the contract documents.

K. Remove all existing base and rising wall flashings at locations and as indicated in the Contract Documents including, but not limited to, flashings, sheet metals, and associated components.

L. Carefully remove, tag, store, and reinstall existing wood trim components as required to perform the work. Remove and replace deteriorated exterior wood trim as required in a configuration to match existing. There are no known quantities indicated in the Contract Drawings. Review quantities to be replaced with the Owner and Engineer prior to performing the work. The contractor shall carry an allowance for an additional quantity of wood trim to be replaced as part of the base bid contract. Additional quantities to be carried are to be as indicated in the allowance schedule within the Contract Documents. Coordinate with Section 06 10 00 – Rough Carpentry, and Section 01 21 00 – Allowances.

M. Furnish and install a new adhered single-ply elastomeric roofing assembly including, but not limited to, fleece-backed elastomeric membrane and baseboard over existing tongue and grove wood deck at Roof Area A2.

N. Remove and dispose of existing Overhead Walkway walls including, but not limited to, 2-wyth deep mass masonry wall, wood framing lath and plaster, and interior finishes at locations of demolition as indicated in the Contract Documents.

O. Remove existing brick masonry as required to install new throughwall flashing at rising wall locations at designated locations as indicated in the Contract Documents.

P. Remove existing wood windows at locations as indicated in the Contract Document.

Q. Remove and dispose of existing mechanical, electrical, and plumbing equipment located within the overhead walkways. Contractor to confirm all equipment is inactive and abandoned and coordinate disconnection of active mechanical, electrical, and plumbing equipment with the Owner.

R. Cut and remove steel columns at bollard height at designated locations and as indicated in the Contract Documents.

S. Remove mass masonry columns at locations and as indicated in the Contract Documents.

T. Remove and replace existing railing at locations as indicated in the Contract Documents.

U. Remove existing doors at designated locations as indicated in the Contract Documents.

V. Infill mass masonry walls at locations and as indicated in the Contract Documents.

W. Install new structural steel beam at locations and as indicated in the Contract Documents.

X. Repair roof rafters and framing at locations and as indicated in the Contract Documents.

Y. Infill walkway above existing to remain steel lally columns as indicated in the Contract Documents.

Z. Install new sheet metal flashings and trim as shown on the Contract Drawings, and as required to properly terminate the roof membrane. Coordinate with sections 04 50 00 – Masonry, and 07 62 00 – Sheet Metal Flashing and Trim.

AA. Install counter-flashings as shown in the Contract Documents at roof membrane terminations.

BB. Install blind nailers at all vertical roof membrane and sheet metal termination locations and where indicated in the Contract Drawings.

CC. Scrape, prime, and paint one hundred percent (100%) of existing wood trim at roof eaves at Roof Area A1.

DD. Clean and restore one hundred percent (100%) of areas affected by the work, including the site, to the satisfaction of the Owner.

1.2 HAZARDOUS MATERIALS

A. The contractor is hereby made aware that the sealants and glazing putty utilized at the window perimeters, rolled asphalt roofing, roof sealants, and residual interior mastics, have tested positive for asbestos. Existing paint on the overhead walkways and wood trim have been found to contain lead.
   1. If encountered during construction, for asbestos removal, the Contractor shall comply with the National Emission Standard for Hazardous Air Pollutants (NESHAP) regulation published in the Federal Register under 40 CFR part 61, sub-part M. In addition to these regulations, the Contractor shall comply with OSHA Regulations (29 CFR Parts 1910 et. al - Occupational Exposure to Asbestos; Final Rule), and all other State and Local guidelines regarding asbestos-containing material removal and disposal.
   2. If encountered during construction, abatement of the lead-based paint shall be performed by the Contractor in strict accordance with Local, State and Federal Laws. This includes, but is not limited to, OSHA 1926.62 work practices such as respiratory protection, personal sampling, training and medical testing for the lead abatement, and RCRA-TCLP testing requirements for lead waste.

3. The Contractor will be required to notify the Department of Environmental Protection (DEP) of asbestos and lead removal at the site a minimum of ten (10) working days prior to performing the removal operations. Copies of this notification must be submitted to the Owner and Engineer and posted at the site prior to performing any work.

4. The Contractor shall provide approved containers and hauling for disposal of hazardous materials. The Contractor shall properly dispose of hazardous materials in these approved containers.

5. Please refer to Ransom Consulting LLC (Ransom)'s Hazardous Building Materials Inventory Report attached to this Summary of Work section for additional information.

1.3 PROJECT CONDITIONS

A. Contractor to coordinate and strictly follow the Owner's requirements for construction, including interior access and protection requirements. Contractor to obtain a copy from the Owner.

B. The adjacent buildings will be occupied during the construction period. The Contractor shall take all necessary precautions required to minimize disruption to the building, site occupants and users during the course of the work hereunder. No loud noise, loud radios, etc. will be allowed on the job site(s). The Contractor's full agreement and cooperation in this regard are essential elements to the successful performance of the work under this Contract. The Owner shall have the right, at his/her sole discretion to require removal of any of the Contractor's employees, Subcontractors, agents or personnel that are found in violation of standards of conduct.

C. The Contractor will be required to provide their own fall arrest system as required to access and work on the building, as no arrest systems are currently in place.

D. Provide walk through overhead protection where work areas are above doors, walkways, or sidewalks in accordance with OSHA.

E. The Contractor shall comply with all requirements of the Owner regarding temporary protection, staging and use of the site.

F. All existing items including windows, doors, building, plant life and site features, including but not limited to, pavement, lawns, sidewalks, frames, glazing, flashings, sealants, and trim shall be protected from the effects of all new work. Any damages to existing to remain items resulting from construction will be repaired/replaced by the Contractor at no additional cost to the Owner.

G. All temporary protection shall be properly secured and able to withstand all perils of weather and use. The contractor to protect the building and grounds.

H. The Contractor shall supply, install and maintain all barriers; protection or warning lines; lights and lighting; and personnel as required to support the structure, fixtures and facilities affected by the work, and to segregate the work area(s) from pedestrian and/or vehicular traffic, as applicable, as well as to prevent damage to the building, its occupants and the surrounding site elements as required. All applicable OSHA and D.L.I. requirement shall be strictly followed by the Contractor at all times during the performance of the work under this Contract. Refer to Section 01 50 00 - Temporary Facilities for additional information.

I. The Contractor shall schedule and execute all work without exposing the interior of the buildings to the effects of weather. Protect the buildings and their occupants and users against such risks, at all times during the course of the work hereunder. All work/weather related damage shall be repaired/replaced to the satisfaction of the Owner at no additional cost to the Owner.

J. The Contractor shall conform to all requirements of this Specification as well as those of all manufacturers of materials used in performing the work hereunder.

K. All materials and workmanship shall be of the best quality and the highest standard of construction practice. Refer to the requirements of materials manufacturers and the specifications for handling and installation of all materials used in the work under this Contract.

L. Protect the buildings and site and any other areas not included in the scope of work. The Contractor shall replace or repair all damage to the buildings or site elements because of the performance of the work hereunder to the satisfaction of the Owner at no additional cost to the Owner.

M. The contractor shall provide protection for existing to remain roof membrane and other equipment, fenestration, penetrations, and similar items to protect from damage. Items damaged as a result of the work shall be repaired or replaced by the Contractor to the satisfaction of, and at no additional cost to, the Owner.

N. Supply all labor, vacuums, tools, appliances, shoring, supports or other items required to properly support, elevate and protect fixtures, equipment, and facilities affected by the work and to properly install the work.

O. At the end of each workday, the Contractor shall confirm and make the site safe and secure for all public access to the building’s interior.

P. The Contractor shall notify the Owner a minimum of seventy-two hours (72 hrs.) in advance of doing any interior work so that the Owner may provide entry into the required areas.

Q. Remove only as much existing construction as can be completely replaced and made weathertight by the end of each workday including all flashing work. Install temporary barriers during all work breaks as required to protect the public and the work.

R. A disposal plan, materials delivery and storage plan shall be submitted by the Contractor (for Owner and Engineer review and approval) outlining all methods and techniques to be used in the transportation, storage and delivery of debris and materials at the site.

S. Supply all necessary disposal facilities, transportation and labor in connection therewith as necessary to legally dispose of all demolished materials, dirt and debris off-site. The Contractor shall obtain all permits required to transport and dispose of all materials rubbish and debris in strict compliance with all legal requirements.

T. Any open ducts, grills, thermostats, electric boxes or similar fixtures and/or items which could be soiled or adversely affected by the work shall be masked, protected and cleaned as necessary by the Contractor at no additional cost to the Owner.

U. Provide an adequate number of skilled workers who are trained and experienced in the necessary crafts and are completely familiar with the specified requirements and the methods needed for proper performance of the work of each trade.

V. The Contractor shall cooperate, coordinate, and work in harmony with all Contractors working at the site during the course of work hereunder.

W. The Contractor is to obtain the Owners approval to store construction materials on the roof.

X. Upon completion of the work, all temporary protection installed by the Contractor shall be removed and areas shall be cleaned to the satisfaction of the Owner.

1.4 SUBMITTALS

A. Emergency Response Contacts
B. Project Contact Directory
C. Construction Schedule
D. Schedule of Values
E. Safety Plan
F. Material Data Sheets (MDS)
G. Safety Data Sheets (SDS)
H. Refer to technical specification sections for material submittals.
I. Temporary Shoring Plans
J. Temporary Access Control
K. Dust Mitigation Plan
L. Temporary Construction Traffic Pattern Plan

1.5 PRE-CONSTRUCTION CONFERENCE

A. A Pre-Construction Conference will be held with the Owner, Engineer, Contractor and all involved trades to discuss all aspects of the project. The Contractor's foreman or field representative will attend this Conference. The foreman must be

English-speaking. The conference will not be held until all shop drawings and submittals have been received and reviewed by the Owner.

B. The Owner shall reserve the right to require an alternate Superintendent and/or Foreman.

C. Delivery of materials and commencement of construction shall not proceed until the preconstruction conference is held. Delays in obtaining a complete set of submittals shall not extend the Contracted completion date.

1.6 REFERENCES

A. Applicable Publications: Publications listed herein form a part of the Specification to the extent referenced and are indicated in the text by basic designation only. Applicable publications referenced shall be those that were issued and in use at the time of the Bid Submission.

1.7 EMERGENCY RESPONSE

A. The Contractor shall provide the Owner with after-hours (twenty-four hours [24 hrs.]), emergency telephone numbers of the Contractor's Superintendent and Foreman.

B. The Contractor must respond to emergency situations or calls within two hours (2 hrs.).

1.8 CONSTRUCTION SCHEDULE

A. The Contractor shall be responsible for coordinating and scheduling all applicable trades as well as the erection of all staging, delivery of materials and disposal of existing materials scheduled to be removed within the time constraints established in the Contract.

1.	Mobilization Start	April 21, 2024
2.	Substantial Completion	September 28, 2024
3.	Final Completion	October 28, 2024

B. The Contractor's Construction Schedule shall clearly identify the on-site crew foreman and the size of the crew to be utilized. The crew size shall remain consistent, and work shall be continuous throughout the project, from start-up to completion.

C. The Owner shall review the Contractor's Construction Schedule prior to the start of any work. It shall be the responsibility of the Contractor to supply the Owner with written notice, seventy-two hours (72 hrs.) in advance if his work location(s) for a workday is different from the schedule. The Contractor shall update his Construction Schedule weekly and submit a copy to the Owner for review.

1.9 DIMENSIONS AND QUANTITIES

A. The Contractor is solely responsible for compliance with the project specifications, plans and drawings. Make necessary investigations and take necessary precautions to properly supply, fabricate, and install work.

1.10 SCHEDULE OF VALUES

A. Provide a line-item breakdown of construction labor and materials costs for each Specification Section included in these Contract Documents. Itemize units of work, as they will be shown on the Application for Payment (use AIA Form G703). A value of work shall be itemized for each technical section within the Specification.

B. Utilize AIA Forms G703 and G703A to prepare and submit the Schedule of Values.

C. Schedule of Values to include all unit costs and allowances within the final construction amount.

1.11 WORK RESTRICTIONS

A. Contractor shall maintain public driveway access at all times. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 AM to 6:00 PM, Monday through Friday, except otherwise indicated by the Owner.

B. Contractor shall maintain work areas in an orderly condition and will be responsible for cleanup and removal of debris to the Contractors dumpster on a daily basis. If, in the opinion of the Owner, cleanup is not being performed satisfactorily, the Owner shall, after twenty-four hours (24 hrs.) of having notified the Contractor of the same, have the work performed by others and all charges incurred thereby deducted from the next progress payment of the Contractor.

C. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas where work is directly being performed. Do not disturb portions of the site beyond the areas in which the Work is indicated.

D. Site Enclosure Fence: Required around perimeter of dumpster and storage/staging areas to enclose and prevent the general public from access.

1.12 PROGRESS MEETINGS

A. The Owner shall establish a time and date for reoccurring weekly meetings throughout the duration of the construction period in which the contractor's representative is required to attend. The Owner reserves the right to schedule additional meetings as deemed necessary, and/or change the reoccurring meeting and time.

1.13 MATERIAL SAFETY DATA SHEETS

A. Material safety data sheets (MSDS) shall be submitted in complete sets for all products to be used prior to any work being performed.

1.14 GUARANTEES

A. Refer to specific Sections of this specification for systems and product warranty requirements. Verify with Manufacturer of proposed systems and products that specified warranty requirements are acceptable, without exception, prior to selecting materials for use on this project.

B. Submit a full Contractor Warranty of the Work to be free from defect in materials and workmanship upon Substantial Completion, and prior to final payment. This Warranty shall be for a period of two year (2 yrs.) from the date of Substantial Completion and shall be signed by a Principal of the Contractor's firm and sealed if a Corporation. Warranty shall include all work performed by sub-contractors. Separate two-year (2-yr.) subcontractor warranties shall be provided.

1.15 INDEMNIFICATION AND WAIVER OF LIENS

A. Beginning with the second Application for Payment and thereafter, the Contractor, Sub-Contractor(s) and suppliers shall submit an Indemnification and Waiver of Liens for the construction period covered by the previous application on the form attached as part of the required documentation in any application for payment.

1.16 DUST AND ODOR CONTROL

A. Contractor to coordinate and strictly follow the Owner's requirements for construction and temporary protection to mitigate dust and odor contamination within the interior of the facility.

B. The Contractor shall coordinate with the Owner the shutdown of HVAC intake units in the work areas, which may be affected by construction dust, fumes, odors or air borne debris at minimum of seventy-two (72) hours in advance. If the Owner cannot shut down or cannot permit shut down of the air intakes, it shall be the responsibility of the Contractor to provide control of dusts, odors or fumes as required by the Owner and as necessary to protect the health and safety of the building's occupants.

C. The Contractor will install clear plastic secured with duct tape over all air intake vents at the beginning of each workday to reduce any construction related odors and dust from entering the building. The Contractor will remove the plastic at the end of each workday.

D. During removal operations, the Contractor shall be responsible for the containment of all dust, dirt, debris, overspray and/or run-off resulting from the performance of the work. The Contractor shall collect and contain all materials and repair any resulting damage to adjacent materials, building and/or site elements and personal property. Specific attention is drawn to the use of chemicals and cleaners that must be used responsibly in strict compliance with manufacturer's requirements and all applicable regulatory guidelines.

1.17 WORK INSIDE THE BUILDING

A. Contractor to coordinate and strictly follow the Owner's requirements for construction and temporary protection inside the building.

B. The Contractor shall not leave or store any tools, equipment, materials, debris or other items on or within the building unless permission is given by Owner.

C. Contractor shall not use building's dumpster for debris associated with this project.

D. The Contractor is not to be inside the building unless required to perform work and must provide the Owner minimum seventy-two hours' (72 hrs.) notice.

1.18 CLEANUP

Restore property of the Owner to its original condition prior to the completion of construction. Refer to Section 01 50 00 – Temporary Facilities. General cleanup of the site shall be performed on a daily basis.

A. Clean, restore and/or replace items stained, dirtied, discolored or otherwise damaged due to the Work, as required by the Owner.

B. Clean roof, building (interior and exterior), landscaped and parking areas so they are free of trash, debris and dirt caused by, or associated with the Work.

C. Sweep paved areas clean.

D. Site cleanup shall be performed daily.

1.19 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

B. Separate Contract: The Owner reserves the right to perform construction operations at the site. Those operations may be conducted simultaneously with work under this Contract. No specific projects are planned at this time.

1.20 USE OF PREMISES

A. General: Contractor shall have full use of the project site for construction operations, including limited use of Project site as defined by the Owner, during construction period.

B. The Contractor is responsible for safety on the job site at all times. The Contractor

shall take the appropriate actions to assure the areas of construction are secured from the public. The Contractor shall construct and/or install temporary fencing, signs and barricades as required assuring a safe and secure environment.

C. Contractor's staging/lay down areas is to be coordinated through an Owner representative. Contractor is responsible for repairing any damage to staging/lay down area. Contractor shall not place trailers, equipment, lay down, storage facilities outside of project site after normal working hours. Contractor shall have no vehicles, trailers, storage containers in any fire lanes or prohibited areas.

D. Contractor shall not restrict the owner's access to the building's entrances area. If, the Contractor should need to temporarily restrict the owner's access to any areas, the Contractor shall submit a written notice to the Owner seventy-two hours (72 hrs.) in advance of access restriction.

E. Contractor to supply temporary facilities (toilets).

F. The Contractor must provide safe assisted means to access the roof from the exterior. Access must be maintained and secure at all times. The access must be locked or restricted during off work hours.
   1. Accessing the work areas by climbing or scaling existing obstacles or structures will not be allowed.
   2. Accessing the work areas through the interior of the building will not be allowed, there will be exterior access only.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

I:\840090\02 Design\specs\840090 01 10 00 Summary of Work.docx

THIS PAGE INTENTIONALLY LEFT BLANK.

400 Commercial Street, Suite 404
Portland, ME 04101
207.772.2891

April 19, 2023

Project 211.06085.007

Mr. Alan Pinciaro, Assoc. AIA
Gale Associates Inc.
6 Bedford Farms Drive, Suite 101
Bedford, New Hampshire 03110

RE: Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

Dear Mr. Pinciaro:

Ransom Consulting, LLC (Ransom) has prepared this letter report presenting the results of the Hazardous Building Materials Inventory (HBMI) performed for the overhead walkways associated with the former Maine State Hospital located at 67 Independence Drive in Augusta, Maine (the Site). The Site is a portion of the former Maine State Hospital (later Augusta Mental Health Institute) campus, which is owned by the State of Maine. The work was authorized by Gale Associates Inc. (Gale) and performed as described in our proposed Scope of Work and Cost Estimate dated January 31, 2023. The HBMI included sampling for asbestos-containing materials (ACM), a survey of lead-based paint (LBP), an assessment of polychlorinated biphenyls (PCBs) in building materials, and an evaluation of other hazardous and potentially hazardous building components associated with the elevated walkways.

A Site plan is included as Figure 1. A roof plan showing the roof sample locations is included as Figure 2. A plan showing interior elevated walkway sample locations is provided as Figure 3. A plan showing exterior elevated walkway sample locations is provided as Figure 4. A Photograph Log documenting our key findings is included as Attachment A.

Please note that the sampling performed for this assessment occurred during three different sampling events which included sampling in buildings other than the elevated walkways. Therefore, the laboratory analytical reports included in this report may identify sample results that are not included in the current scope of work. Project areas and sample results associated with the current scope of work are shown on the figures and tables included with this report.

EXECUTIVE SUMMARY

Ransom understands that the State is currently evaluating the elevated walkways located between the Central Building and the Elkins building for potential demolition. Given the age and construction of the elevated walkways, there is potential for ACM, LBP, and PCBs in building materials to be present. To address these concerns, Ransom conducted an inspection for the presence of these materials as well as an inventory of other potentially hazardous building components at the Site during HBMIs conducted on September 26, 2022, December 21, 2022, and March 10, 2023. Based on the results of this inspection, Ransom draws the following conclusions:

1. ACM was identified at the Site. Materials identified as ACM that may be impacted by the proposed redevelopment should be properly removed prior to demolition or renovation activities. ACM identified in connection with the elevated walkways includes window caulk, rolled asphalt roofing, three types of caulking associated with the roof, and residual interior mastic. Materials that have not been sampled must be presumed to contain asbestos unless future sampling and analysis determines otherwise.

2. Some painted surfaces evaluated as part of this inspection contained lead at high enough concentrations to delineate the materials as "lead-based" according to U.S. Housing and Urban Development (HUD) guidelines. These guidelines apply to federal housing projects and are referenced for comparison purposes only. Facility maintenance staff or redevelopment contractors may perform maintenance, renovation, or demolition on surfaces coated with LBP or lead-containing coatings, provided that the handling of components coated with paint containing lead at any concentration (referred to as lead-containing paint) complies with the Occupational Safety and Health Administration's (OSHA) lead standards.

3. Caulk samples AREA E and PCB-02, collected from the exterior of the elevated walkways, each contained a PCB concentration of less than 50 milligrams per kilogram (mg/kg). At this concentration, the caulking is not considered PCB Bulk Product Waste under the Toxic Substances Control Act (TSCA) (i.e., building materials containing PCBs at concentrations equal to or greater than 50 mg/kg). Therefore, these materials can be handled and disposed of as general construction and demolition waste.

4. Ransom inventoried items at the Site during the course of this investigation that may contain mercury, heavy metals, and other potentially hazardous materials. Disposal of each of these items is also subject to hazardous and/or universal waste disposal requirements.

FACILITY DESCRIPTION

The Site is located at 67 Independence Drive in Augusta, Maine. The Site is currently developed with elevated walkways which connect several buildings on the former Maine State Hospital campus. Ransom understands that the elevated walkways are currently being evaluated for demolition. An overall plan depicting the layout of the elevated walkways and their location on the campus is shown on the attached Figure 1.

LIMITATIONS

This HBMI is subject to certain limitations, which must be considered when interpreting the results. Only a fully destructive survey, in which the inspector has complete access to all areas of the Site, will be able to identify most potentially hazardous materials associated with a facility. Circuit boxes, wire sheathing,

and other electrical components may have insulators that contain asbestos. These materials were not evaluated due to the risk of electrical shock.

The information presented in this report is based upon work undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. Conclusions represent the professional judgment of Ransom based on the data obtained from the work and the site conditions encountered at the time the work was performed and are not to be construed as legal advice.

In addition to these general stipulations, additional site-specific limitations are as follows:

1. Our survey was conducted utilizing destructive inspection and sampling techniques, using hand tools only. Limited additional suspect materials may be present in concealed or inaccessible spaces, including wall and ceiling cavities, subflooring layers, inside machinery/mechanical units, etc., which may be disturbed as part of the future renovations.

2. The scope of our inspection was limited to accessible interior and exterior portions of the elevated walkways.

HISTORICAL DOCUMENTATION

Ransom was not provided with information regarding previous abatement of hazardous materials at the Site.

ASBESTOS-CONTAINING MATERIALS

Ransom conducted an inspection of the Site for the presence of ACM on September 26, 2022, December 21, 2022, and March 9, 2023. The scope of the ACM inspection included the identification, quantification, and sampling of accessible suspect building materials associated with the elevated walkways. The inspection was conducted by Eriksen Phenix and Wesley Harden of Ransom, both of whom are certified by the State of Maine and accredited by the United States Environmental Protection Agency (U.S. EPA) as asbestos inspectors. Copies of Mr. Phenix's and Mr. Harden's most recent training certificates and state asbestos inspector certifications are provided as Attachment B.

In the State of Maine, OSHA, the U.S. EPA, and the Maine Department of Environmental Protection (MEDEP) are responsible for regulating the release of asbestos into the environment and protecting workers from exposure to airborne asbestos fibers. OSHA defines ACM as "any material containing more than one percent asbestos." MEDEP defines ACM as "any material containing asbestos in quantities greater than or equal to one percent by volume as determined by weight, visual evaluation, and/or point count analysis." Bulk samples of friable miscellaneous materials (e.g., drywall, joint compound, fiber ceiling tile) were analyzed using the *Method for the Determination of Asbestos in Bulk Building Materials*, EPA/600/R-93/116 (1993) via polarized light microscopy (PLM) visual estimation.

Non-friable organically bound (NOB) materials (e.g., floor tiles, roofing materials, mastics) were analyzed using PLM NOB–EPA/600/R-93/116 using the gravimetric reduction method (GRM).

Samples were analyzed by Optimum Analytical and Consulting, LLC (Optimum) of Salem, New Hampshire. Optimum is a Maine-licensed asbestos analytical laboratory and is also certified to perform bulk sample analysis by the National Voluntary Laboratory Accreditation Program (NVLAP). Copies of Optimum's relevant accreditations/certifications are provided as Attachment B. Laboratory analysis of bulk samples identified ACM on site.

The following is a brief discussion of the ACM identified. Refer to Figure 2 for a roof plan depicting roof sampling locations. Refer to Figure 3 for a floor plan showing interior sampling locations.

Identified Asbestos-Containing Materials

1. **Rolled asphalt roofing (sample set EW-01):** An estimated 400 square feet of ACM rolled asphalt roofing was identified on Roof Area D2.

2. **Caulk type 1 (sample set EW-02):** An estimated 90 linear feet of ACM caulking was identified along the perimeter of Roof Area D2.

3. **Caulk type 2 (sample set EW-03):** An estimated 16 linear feet of ACM caulking was identified at the intersection of the elevated walkway and the Elkins Building.

4. **Caulk type 3 (sample set EW-04):** An estimated 10 linear feet of ACM caulking was identified at the flashing/building interface of Roof Area D2.

5. **Residual mastic, black (sample set EW-05):** An estimated 320-square feet of ACM mastic was observed on the interior of the north branch of the elevated walkways.

6. **Window caulk (sample set SKY-04):** An estimated 430 linear feet of ACM caulk was identified on the elevated walkway windows. Window glazing tested negative for ACM.

The MEDEP requires consultants to advise the building owner or owner's agent whenever the asbestos analytical laboratory has reported suspect ACM below ten percent asbestos. The owner or owner's agent may either elect to treat these materials as positive for asbestos or have the samples re-analyzed using an alternate method as listed below:

1. PLM EPA/600R-93/116 – Point Count (friable ACM); or

2. Transmission Electron Microscopy (TEM)

    a. U.S. EPA NOB EPA/600/R-93/116b §2.5; or
    b. TEM Chatfield Method.

Re-analysis of samples testing negative for asbestos is not required. All materials identified during Ransom's investigation fall within this range. Based on the nature of the materials identified and the concentrations of asbestos fiber detected, re-analysis is not recommended at this time.

A listing of all samples collected, analytical results, and estimated quantities of confirmed ACM can be found in Table 1.

Copies of the laboratory analytical reports can be found as Attachment C.

Asbestos fibers present potential health hazards when they become airborne. Federal regulations suggest that ACM may be managed in place as long as it remains intact, undamaged, and in good condition. Current regulations require that asbestos-containing building materials be removed if they will be disturbed by demolition, renovation, or other building maintenance activities. ACM identified at the Site that will be impacted by proposed renovation will require removal prior to the initiation of these activities. ACM abatement should be performed using approved methods in accordance with applicable federal and state regulations. ACM should be removed by a licensed asbestos abatement contractor and in accordance with a project design prepared by a certified asbestos abatement project designer.

Building materials containing trace amounts of asbestos (less than one percent) are not regulated by the U.S. EPA or the State of Maine; however, removal of building materials with less than one percent asbestos is considered by OSHA as "unclassified asbestos work" and certain OSHA requirements under the Asbestos in Construction standard (29 CFR 1926.1101) are applicable. General demolition contractors may remove these materials provided that applicable OSHA requirements are employed, which include notification of workers of the presence of ACM, wet removal methods, prompt clean-up and disposal in leak-tight containers, and personal exposure monitoring.

Asbestos-containing roof materials are exempt from MEDEP asbestos abatement regulations, provided that these materials are removed wholly intact and are not sawed, sanded, grinded, cut, or drilled during demolition or renovation. OSHA regulations still apply, and it is recommended that State of Maine-licensed asbestos abatement contractors conduct the removal of ACM roofing materials. Asbestos-containing waste generated from this project would be considered a "special waste" and require disposal in a landfill permitted to accept asbestos.

LEAD-BASED PAINT

A limited inspection for the presence of LBP was conducted. Ransom collected six paint chip samples from representative surfaces on the interior and exterior of the elevated walkways. Paint chip samples were collected from walls on substrates including metal, plaster, and wood. The samples were submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts for laboratory analysis for the presence of lead by U.S. EPA Method 6010D.

Laboratory results ranged from 0.00384 to 6.67 percent by weight. Paint samples collected from the exterior windows, underside and support columns of the elevated walkways, and metal roofing (under rolled asphalt roofing) contained concentrations of lead above the HUD standard for LBP of 0.5 percent

by weight for paint chips. Remaining results were below the 0.5 percent by weight standard. Sample results are provided in Table 2. A copy of the laboratory analytical report can be found in Attachment C.

Please note that the LBP sampling conducted during this HBMI does not constitute a U.S. EPA/HUD-compliant lead survey.

HUD has established a standard for characterizing LBP as any paint containing 1.0 milligram per square centimeter (mg/cm^2) lead as tested using an x-ray fluorescence (XRF) analyzer, or 0.5 percent lead by weight for paint chips. These materials are considered to be "lead-based paint" according to Section 1017 of the *Residential Lead-Based Paint Hazard Reduction Act of 1992* (also referred to as Title X). HUD LBP guidelines only apply to housing funded by the federal government. While they are not regulatory considerations in commercial applications, these guidelines are a useful reference for assessing hazards associated with lead in paint in non-residential settings. When paint contains lead in concentrations greater than 1.0 mg/cm^2 or 0.5 percent by weight, special care should be taken when conducting activities that impact this paint.

Handling of components coated with lead-containing paint *at any concentration* requires compliance with the OSHA lead standard (*Lead in Construction*, 29 CFR 1926.62). When surfaces covered in paint containing lead are impacted by abrasive blasting, torch burning, or similar activities that generate significant dust or fumes, hazardous airborne concentrations can be generated even if the lead content is below the HUD standard. Under the existing conditions, facility maintenance staff or contractors may perform demolition, renovation, abatement, stabilization, cleanup, and daily operations in buildings that have lead-based paint or lead-containing paint, provided that the requirements in the OSHA lead standard are met.

Please note that the receiving facility for renovation/demolition wastes from the Site may require representative sampling of the debris to determine the quantity of lead that would be expected to leach into the environment, if the debris were disposed of in a landfill. The representative sample(s) would be analyzed by Toxicity Characteristic Leaching Procedure (TCLP), and if concentrations are 5 milligrams per liter (mg/l) or greater, the debris must be disposed of as hazardous waste. If concentrations are less than 5 mg/l, the debris is not regulated, and materials may be disposed of as general construction debris.

POLYCHLORINATED BIPHENYLS IN BUILDING MATERIALS

PCBs may be present in building materials (including caulking, glazing, adhesives, and paints) in buildings constructed between 1950 and 1978, particularly in schools and other institutional buildings. Buildings constructed prior to 1950 may also have PCB-containing building products as a result of renovation projects that may have occurred between 1950 and 1978. PCB-containing building products are considered *PCB bulk product waste* by the U.S. EPA under the TSCA if the concentration of PCBs in the material is greater than or equal to 50 mg/kg. Building materials with PCB concentrations $\geq$ 50 mg/kg are not authorized for use under *Part 761—Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions* and must be managed accordingly.

The definition of PCB bulk product waste also includes building materials that have been coated or serviced with PCBs. Masonry, wood, metals, and other building materials that are purposely coated with PCB-containing products are regulated as PCB bulk product waste if the product coating the building materials contains PCBs at concentrations ≥ 50 mg/kg *and* subsequently the building materials have concentrations ≥ 50 mg/kg as a result of PCBs leaching into the substrate.

To evaluate the potential presence of PCBs in building materials, Ransom collected two bulk samples of caulking materials for laboratory analysis including:

1. AREA E: Caulking observed where Roof Area A meets the central building (previously identified as Area E, refer to Figure 2); and

2. PCB-02: Caulking observed at the interface of the brick walls and wooden window casings on the elevated walkways (refer to Figure 3).

The bulk PCB samples were placed in laboratory-supplied glassware, placed in a cooler with ice, and delivered under chain-of-custody to Alpha for PCB analysis via U.S. EPA Method 8082A using the Soxhlet extraction method, U.S. EPA Method 3540C.

Samples AREA E and PCB-02 exhibited PCB concentrations below the laboratory reporting limit to 1.11 mg/kg. These concentrations are below the TSCA guideline of 50 mg/kg and are therefore exempt from regulation under TSCA. Laboratory results from PCB testing are provided in Table 3, and the analytical data sheets are provided as Attachment C.

OTHER HAZARDOUS AND POTENTIALLY HAZARDOUS MATERIALS

An inventory of all other hazardous and potentially hazardous materials identified at the Site can be found in Table 4.

Mercury-Containing Components

Mercury-containing components such as fluorescent light tubes and thermostat switches are classified as Universal Waste and are regulated by the U.S. EPA under 40 CFR Parts 260–273. The Universal Waste Rule provides streamlined management requirements tailored to several different kinds of waste. The types of waste covered by the Universal Waste Rule are frequently thrown in the trash by unregulated households and small businesses. Classifying an item as a Universal Waste provides flexibility for its proper management and can prevent the item from entering municipal waste streams. Instead, it can be readily collected and disposed of at a hazardous waste facility. Ransom observed approximately two mercury containing thermostat switches within the elevated walkways.

Components presumed to contain mercury should be removed and recycled in accordance with Universal Waste regulations prior to proposed redevelopment activities that may impact them.

Heavy Metals

Ransom identified five emergency lights that are typically powered by batteries containing various heavy metals. Components presumed to contain heavy metals should be removed and recycled in accordance with Universal Waste regulations prior to proposed redevelopment activities that may impact them.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this HBMI, Ransom makes the following conclusions and recommendations.

ACM were identified at the Site. Materials identified as ACM that may be impacted by any future renovation should be properly abated and removed prior to demolition or renovation activities.

White paint on the exterior of the elevated walkway, yellow paint on the exterior windows and wood trim, and silver paint on metal roofing were all determined to contain lead at high enough concentrations to delineate the paint as "lead-based" according to HUD guidelines. These guidelines apply to federal housing projects and are referenced for comparison purposes only. It should be noted that handling of components coated with paint containing lead at any concentration (referred to as lead-containing paint) requires compliance with OSHA's lead standards.

The two caulk samples collected during this investigation (AREA E and PCB-02) did not contain concentrations of PCBs which would require management as PCB Bulk Waste Product as defined in 40 CFR 761. Therefore, these materials can be handled and disposed of as general construction and demolition waste.

Ransom inventoried items at the Site during the course of this investigation that may contain mercury, heavy metals, and other potentially hazardous materials. Any of these items that may be impacted by future renovations should be removed from the Site and properly recycled or disposed of in accordance with applicable federal and state regulations prior to renovation or demolition activities.

Mr. Alan Pinciaro
Gale Associates Inc.

If you have any questions regarding the information in this report, please do not hesitate to contact any of the undersigned.

Sincerely,

RANSOM CONSULTING, LLC

Wesley E. Harden, L.G.
Project Scientist II

Eriksen P. Phenix, L.G.
Project Manager

Nicholas O. Sabatine, P.G.
Vice President/Principal

WEH/EPP/NOS:jar
Attachments

TABLE 1: SUMMARY OF ASBESTOS TESTING RESULTS
Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

Material	Location	Sample Number	Asbestos Quantity and Type[2,4]	Estimated Quantity[3]
SEPTEMBER 2022 SAMPLING EVENT				
Plaster rough coat, gray	Interior - throughout	SKY-01A through SKY-01G	NAD	
Plaster skim coat, white	Interior - throughout	SKY-02A through SKY-02G	NAD	
Window glazing, white	Exterior windows	SKY-03A through SKY-03C	NAD	
Window caulk, beige/gray	**Exterior windows**	**SKY-04A**	**5.82% Chrysotile**	**430 LF**
		SKY-04B and SKY-04C	**NA/PS**	
DECEMBER 2022 SAMPLING EVENT				
Flashing caulk, gray	Roof areas A, B, C, and D1	013A through 013C	NAD	
Rubber roof membrane, black	Roof areas A, B, C, and D1	018A through 018C	NAD	
Foam insulation, yellow	Roof areas A, B, C, and D1	019A through 019C	NAD	
Insulation paper	Roof areas A, B, C, and D1	020A through 020C	NAD	
Roof sealant, black	Roof areas A, B, C, and D1	021A through 021C	NAD	
MARCH 2023 SAMPLING EVENT				
Rolled asphalt roofing, black	**Roof area D2**	**EW-01A**	**9.68% Chrysotile**	**400 SF**
		EW-01B and EW-01C	**NA/PS**	
Caulk type 1, gray	**Roof area D2**	**EW-02A**	**3.4% Chrysotile**	**90 LF**
		EW-02B and EW-02C	**NA/PS**	
Caulk type 2, dark gray	**Roof area D2**	**EW-03A**	**1.4% Chrysotile**	**16 LF**
		EW-03B and EW-03C	**NA/PS**	
Caulk type 3, white	**Roof area D2**	**EW-04A**	**3.8% Chrysotile**	**10 LF**
		EW-04B and EW-04C	**NA/PS**	
Residual mastic, black	**Interior**	**EW-05A**	**3.8% Chrysotile**	**320 SF**
		EW-05B and EW-05C	**NA/PS**	
Residual mastic, tan	Interior	EW-06A through EW-06C	NAD	

NOTES:
1. Samples were collected on September 26 and December 21, 2022, and March 10, 2023 by Ransom and were analyzed by Optimum Analytical and Consulting, LLC of Salem, NH.
2. NA/PS = not analyzed/positive stop. Sample sets are analyzed until asbestos is identified in an amount greater than one percent.
3. CF = Cubic Feet. SF = Square Feet. LF = Linear Feet. EA = Each. NA = Not Applicable.
4. NAD = No asbestos detected; ACM = Asbestos Containing Material; *PACM = Presumed ACM.*
5. Samples shown in bold are ACM, samples shown in bold and italics are PACM.
6. Sample locations are shown on Figures 2 and 3.

TABLE 2: LEAD-BASED PAINT LABORATORY RESULTS
Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

Sample ID	Color/Substrate/Component	Location	Lead Concentration (mg/kg)	Lead Concentration (% by weight)
LBP-01	White/metal/column	Exterior	66,700	**6.67**
LBP-02	Yellow/wood/window trim	Exterior	63,100	**6.31**
LBP-03	Silver/metal/roof	Exterior	8,780	**0.878**
LBP-04	Dark brown/wood/baseboard	Interior	331	0.0331
LBP-05	White/wood/window trim	Interior	38.40	0.00384
LBP-SKY01	White/Plaster/Wall	Interior	2,840	0.28400

1. Suspect LBP samples were submitted to Alpha Analytical, Inc. for analysis.
2. ND ( ) = not detected (laboratory reporting limit); mg/kg = milligrams per kilogram
3. Values in **boldface** type indicate lead concentrations in excess of the HUD threshold value of 0.5 % by weight. HUD guidance is not a regulatory consideration in this scenario, and is provided for reference only.

TABLE 3: SUMMARY OF PCB TESTING RESULTS
Limited Hazardous Building Materials Inventory
Former Maine State Hospital: Central Building Roof
6 Elkins Lane
Augusta, Maine

Sample Identification	Sample Description	Sample Location	Sample Matrix	Total PCBs (milligrams per kilogram [mg/kg])
AREA E	Caulk	Roof Area A	Caulk	BRL (0.160)
PCB-02	Caulk	Windows - Elevated Walkway	Caulk	1.11

Notes:
1. Samples were collected on September 29 and December 21, 2022 by Ransom and were analyzed by Alpha Analytical of Westborough, Massachusetts.
2. BRL ( ) = below reporting limit indicated in parentheses.
3. Values in **boldface** type indicate PCB concentrations which exceed a concentration of 50 mg/kg, constituting an "unauthorized use" of PCBs and would be considered PCB Bulk Product Waste if removed.
4. Caulk sample collected from Roof Area E also present on Roof Area A.

TABLE 4: INVENTORY OF OTHER HAZARDOUS/POTENTIALLY HAZARDOUS MATERIALS

Hazardous Building Materials Inventory

Former Maine State Hospital: Elevated Walkways

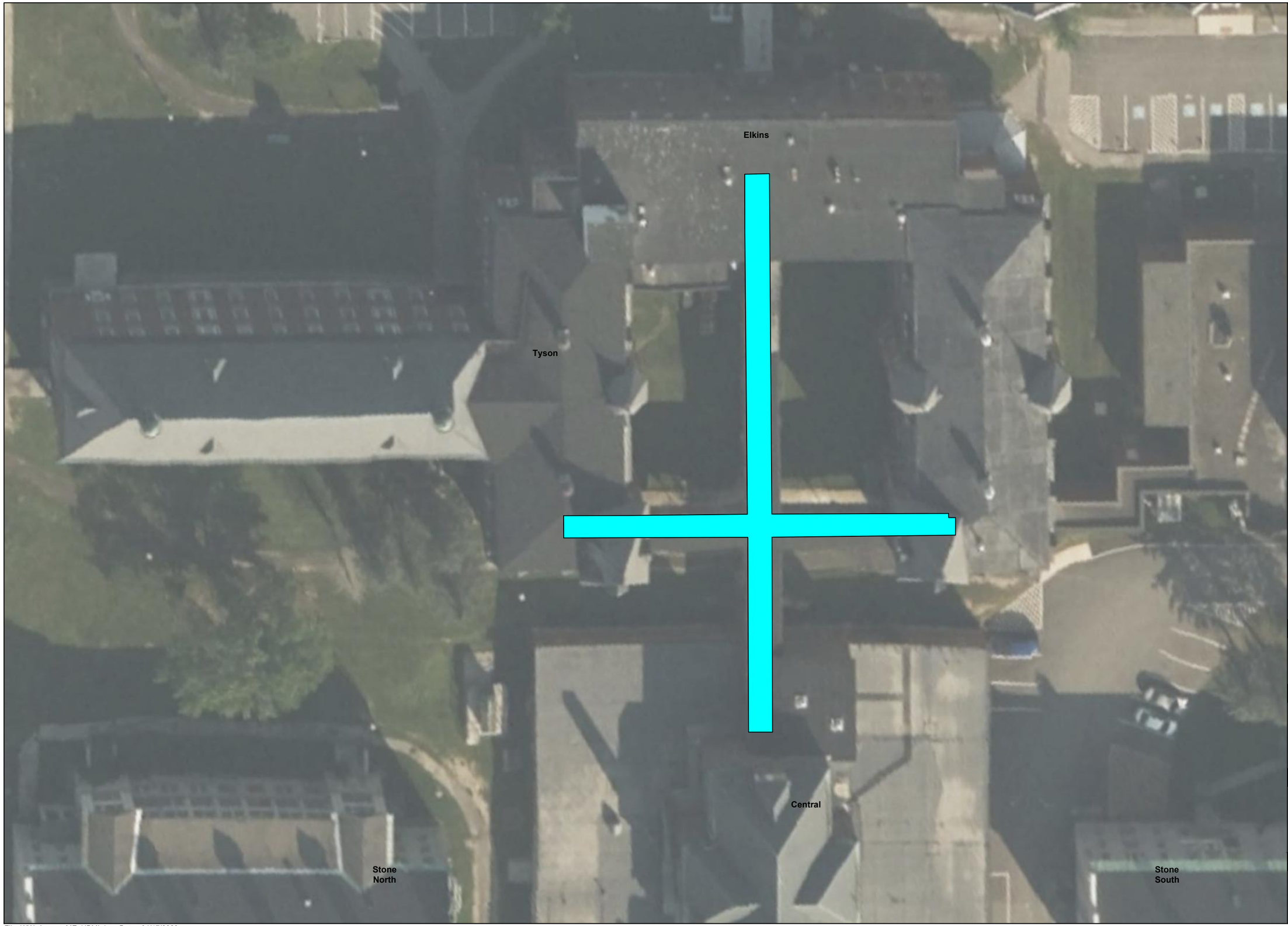
67 Independence Drive

Augusta, Maine

Component	Hazard	Location	Total Quantity	Units
Emergency exit lights/signs	Heavy Metals	Throughout	5	EA
Thermostats	Mercury	Throughout	2	EA

Notes:

1. Quantities presented are based on a cursory visual inspection. Quantities should be field-verified prior to removal/abatement work.
2. Lighting fixtures were not dismantled to observe labels regarding PCB content. Ballasts should be assumed to be PCB-containing and inspected during demolition/redevelopment to determine appropriate disposal.
3. EA = each.



RANSOM
Consulting, LLC

Legend & Notes

Elevated Walkway

Notes:

1. Plan based on measurements and observations made by Ransom Consulting, LLC.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Gale Associates Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

Scale and Orientation

0 15 30

1 inch = 30 feet

Prepared For

Gale Associates Inc.
6 Bedford Farms Drive
Suite 101
Bedford, New Hampshire

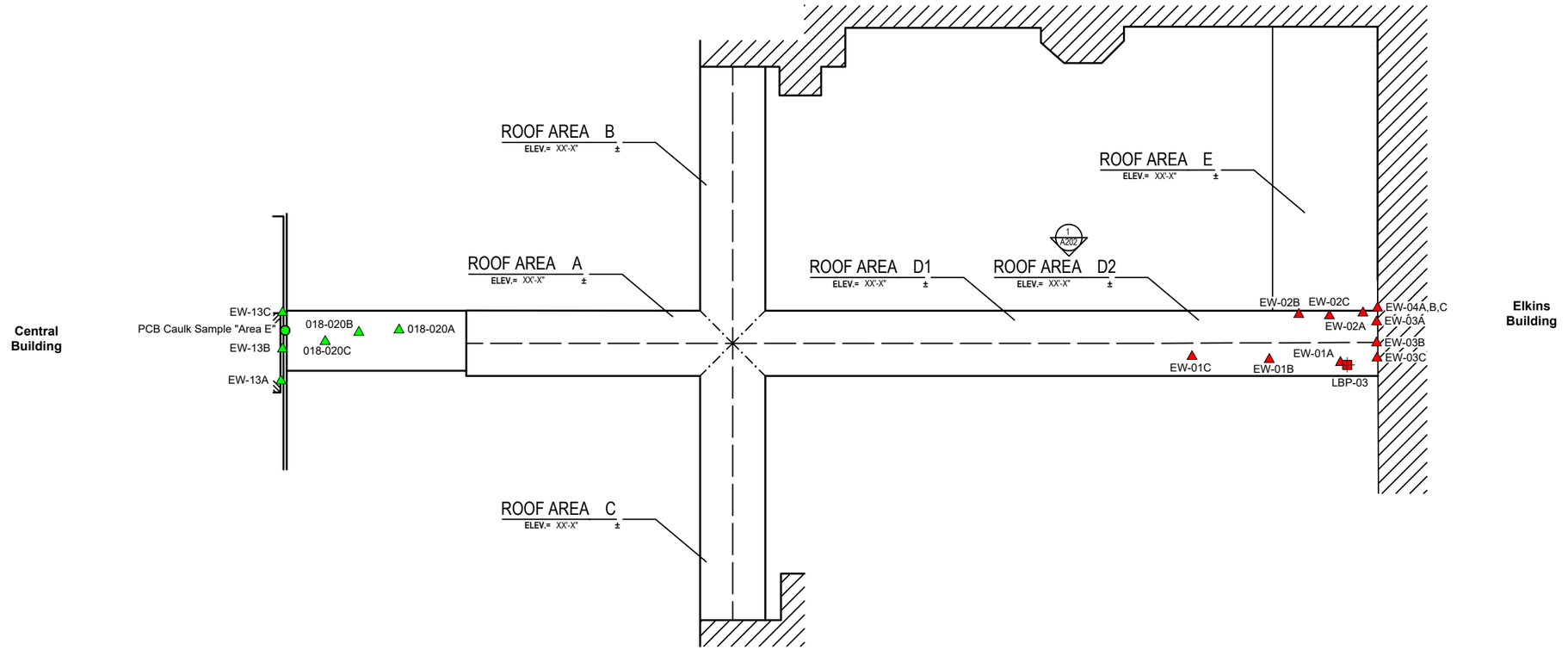
Site Address

Former Maine State Hospital:
Elevated Walkways
67 Independence Drive
Augusta, Maine

211.06085 | April 2023

Figure 1
Site Plan

File: WW_AugustaME_HBMI.dwg Date: 04/17/2023



Legend & Notes

- Negative Asbestos Sample Location
- Positive Asbestos Sample Location
- Negative PCB Sample Location
- Positive Lead Sample Location

Notes:

1. Plan based on measurements and observations made by Ransom Consulting, LLC.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Gale Associates Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

Scale and Orientation

0 10 20

1 inch = 20 feet

Prepared For

Gale Associates Inc.
6 Bedford Farms Drive
Bedford, New Hampshire

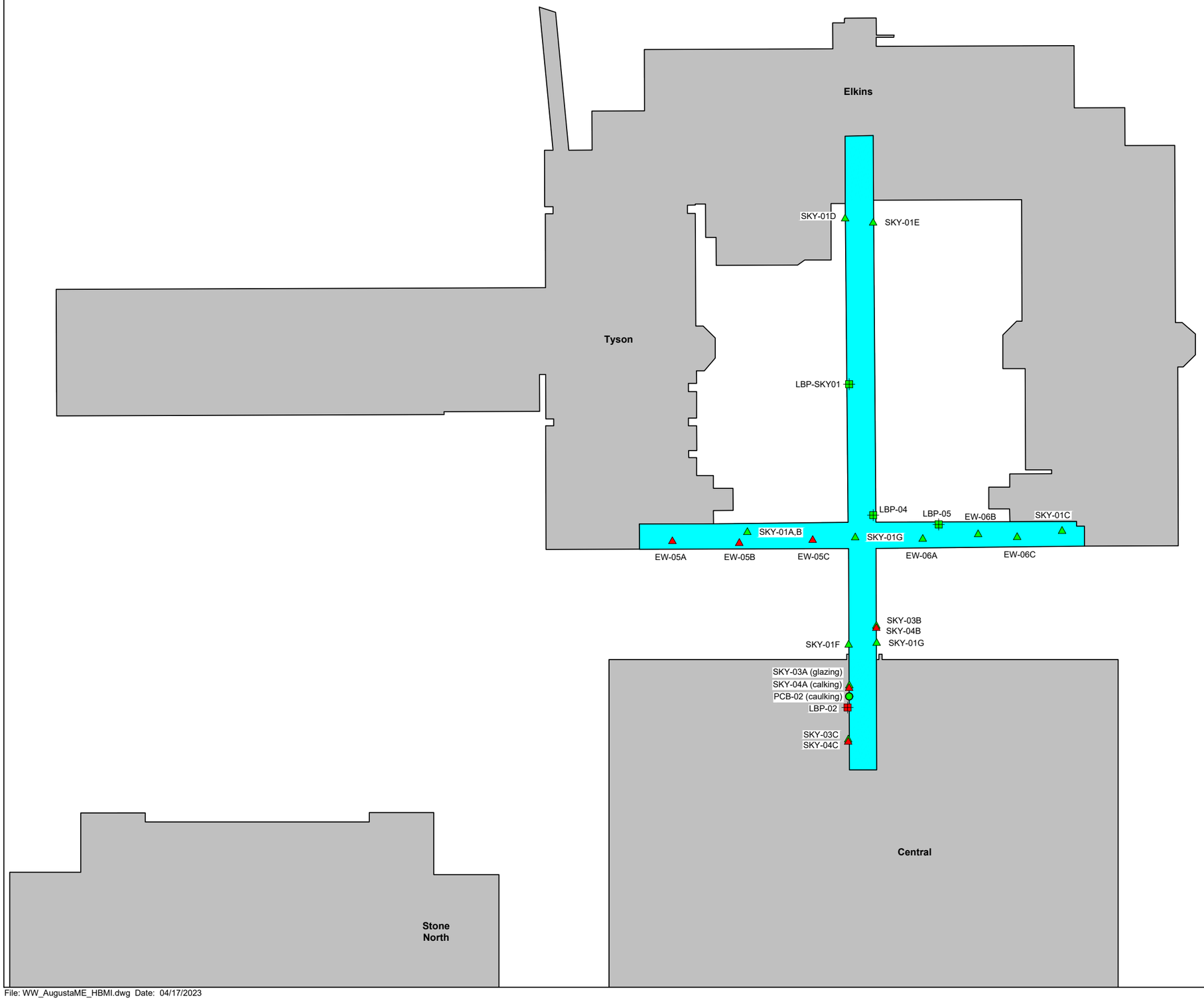
Site Address

Former Maine State Hospital:
Elevated Walkways
67 Independence Drive
Augusta, Maine

211.06085 | April 2023

Figure 2
Elevated Walkway
Roof Sample Locations

File: WW_AugustaME_HBMI.dwg Date: 04/17/2023



RANSOM Consulting, LLC

Legend & Notes

- Negative Asbestos Sample Location
- Positive Asbestos Sample Location
- Negative PCB Sample Location
- Negative Lead Sample Location
- Positive Lead Sample Location

Notes:

1. Plan based on measurements and observations made by Ransom Consulting, LLC.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Gale Associates Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

Scale and Orientation

0 15 30

1 inch = 30 feet

Prepared For

Gale Associates Inc.
6 Bedford Farms Drive
Bedford, New Hampshire

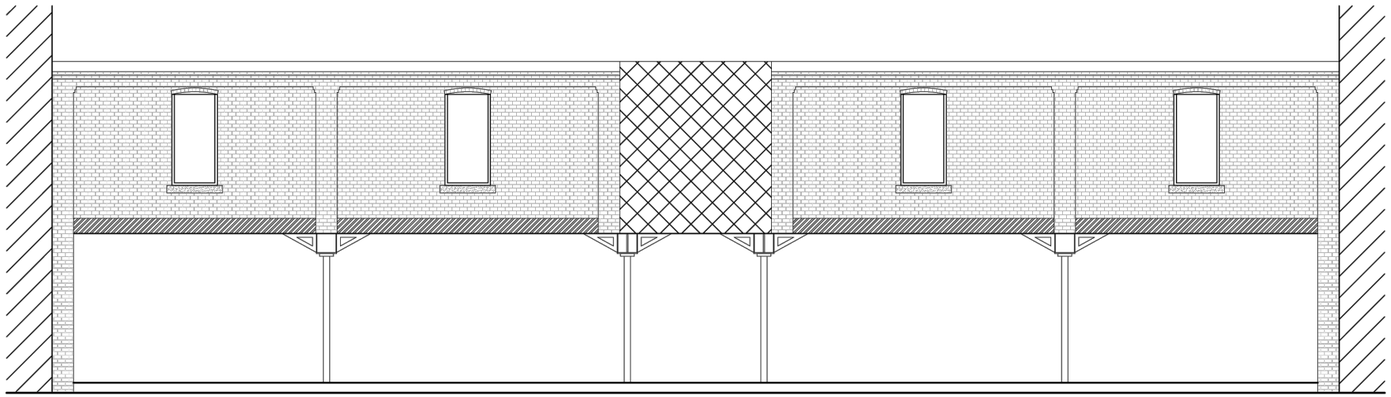
Site Address

Former Maine State Hospital:
Elevated Walkways
67 Independence Drive
Augusta, Maine

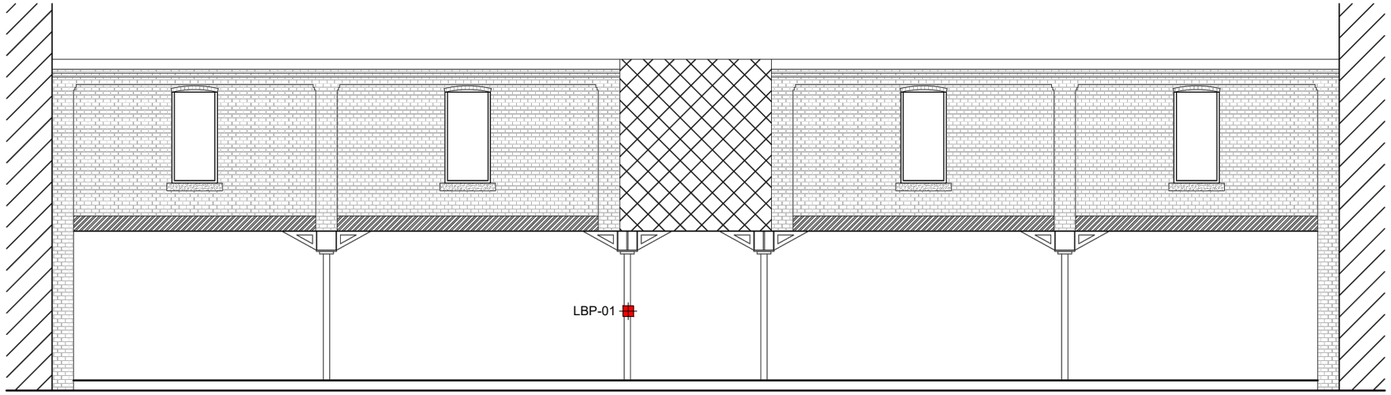
211.06085 | April 2023

Figure 3
Elevated Walkway
Interior Sample Locations

File: WW_AugustaME_HBMI.dwg Date: 04/17/2023



1 A201 WEST ELEVATION
SCALE: 1/4"=1'-0"



2 A201 EAST ELEVATION
SCALE: 1/4"=1'-0"

RANSOM Consulting, LLC

Legend & Notes

Positive Lead Sample Location

Notes:

1. Plan based on measurements and observations made by Ransom Consulting, LLC.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Gale Associates Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, LLC.

Scale and Orientation

0 5 10
1 inch = 10 feet

Prepared For

Gale Associates Inc.
6 Bedford Farms Drive
Bedford, New Hampshire

Site Address

Former Maine State Hospital:
Elevated Walkways
67 Independence Drive
Augusta, Maine

211.06085 | April 2023

Figure 4
Elevated Walkway
Exterior Sample Locations

File: WW_AugustaME_HBMI.dwg Date: 04/17/2023

ATTACHMENT A

Photograph Log

Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

Photograph Log

Photo 1 (March 9, 2023): ACM rolled asphalt roofing (sample set EW-01) present on Roof Area D2.

Photo 2 (March 9, 2023): ACM caulking (sample set EW-02) present between the wood trim and brick wall along the perimeter of Roof Area D2.

Photo 3 (March 9, 2023): ACM caulking (sample set EW-03) present at the interface of the elevated walkway and the Elkins Building.

Photo 4 (March 9, 2023): ACM caulking (sample set EW-04) located at the flashing/building interface.

Photo 5 (March 9, 2023): ACM window caulk (sample set SKY-04) located between window casings and brick wall on the elevated walkways.

Photo 6 (March 9, 2023): ACM mastic (sample set EW-05) located on the interior of the north branch of the elevated walkways.

ATTACHMENT B

Certifications/Accreditations

Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

R.J. ENTERPRISES, INC.

This is to certify that:

Erik Phenix

has completed the requisite 4-hour training, and has passed an examination for the

Asbestos Inspector Refresher

course pursuant Title II Toxic Substance Control Act, 15 U.S.C. 2646 and Maine State Regulations 06-096 CMR 425.5 (E)

6/10/2022	6/10/2023
DATE(S) OF TRAINING	*EXPIRATION DATE*

ELIZABETH STORER, DIRECTOR OF TRAINING

6/10/2022	100%
EXAM DATE	*EXAM SCORE*

ELIZABETH STORER, TRAINING INSTRUCTOR

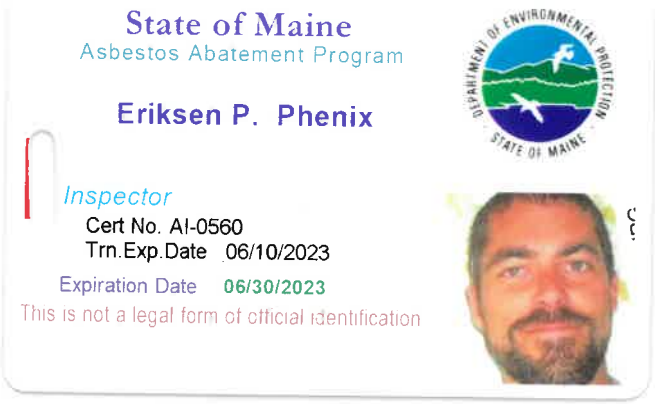
AIR-22-6-1-2	TP-0031
CERTIFICATE NUMBER	*TRAINING PROVIDER ID #*

51 River Road, Brunswick, ME 04011 • Phone (207) 373-0344 • Fax (207) 373-1344

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER



July 19, 2022

Ransom Consulting, LLC
400 Commercial Street, Suite 404
Portland, Maine 04101

Dear Licensee:

Asbestos application(s) for individual certification of the **one** employee(s) listed below have been received and **approved**. Individual certification numbers are listed below and wallet card(s) are enclosed. Card(s) are property of the individual to whom each is issued. Your responsibility as a licensee is to ensure delivery of the cards to persons in your employment. This letter should be retained for your company files as record of certification. Please attach 1 updated passport size photo with every application.

Remember, in Maine all **certified employees** working on an asbestos abatement project, whether conducting removal/repair, air monitoring, design, inspection, or analysis functions, **must work for a State of Maine licensed asbestos firm** and carry his/her wallet card(s) on the job site.

As a reminder, prior to renewing your asbestos certification, the State of Maine **requires** an annual refresher course to be taken before submitting a renewal application. A certificate shall expire one year from the last day of the month from the date of issuance, **or on the last day of the month that the training certificate expires**, whichever is sooner.

All our asbestos forms can be found at https://www.maine.gov/dep/waste/asbestos/forms.html
Thank you for your cooperation and your completed application(s).

Name	Category	Certification #	Exp. Date
Eriksen P. Phenix	Inspector	AI-0560	06/30/2023

Sincerely,

Sandra J. Moody

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

website: www.maine.gov/dep

R.J. ENTERPRISES, INC.

This is to certify that:

Wesley Harden

has completed the requisite 4-hour training, and has passed an examination for the

Asbestos Inspector Refresher

course pursuant Title II Toxic Substance Control Act, 15 U.S.C. 2646 and Maine State Regulations 06-096 CMR 425.5 (E)

1/27/2023	1/27/2024
DATE(S) OF TRAINING	*EXPIRATION DATE*

ELIZABETH STORER, DIRECTOR OF TRAINING

1/27/2023	96%
EXAM DATE	*EXAM SCORE*

ELIZABETH STORER, TRAINING INSTRUCTOR

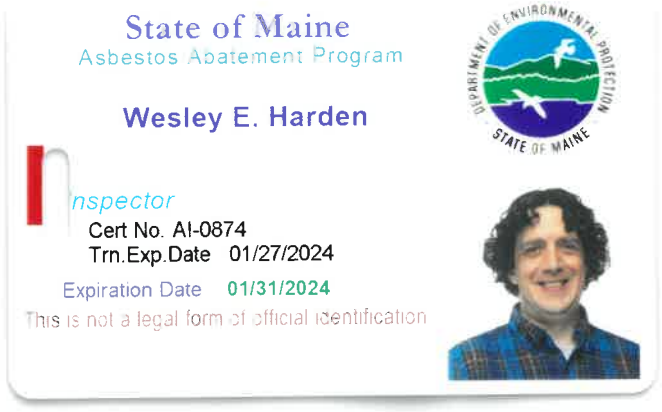
AIR-23-1-1-17	TP-0031
CERTIFICATE NUMBER	*TRAINING PROVIDER ID #*

51 River Road, Brunswick, ME 04011 • Phone (207) 373-0344 • Fax (207) 373-1344

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER



February 12, 2023

Ransom Consulting, LLC
400 Commercial Street, Suite 404
Portland, Maine 04101

Dear Licensee:

Asbestos application(s) for individual certification of the **one** employee(s) listed below have been received and **approved**. Individual certification numbers are listed below and wallet card(s) are enclosed. Card(s) are property of the individual to whom each is issued. Your responsibility as a licensee is to ensure delivery of the cards to persons in your employment. This letter should be retained for your company files as record of certification. Please attach 1 updated passport size photo with every application.

Remember, in Maine all **certified employees** working on an asbestos abatement project, whether conducting removal/repair, air monitoring, design, inspection, or analysis functions, **must work for a State of Maine licensed asbestos firm** and carry his/her wallet card(s) on the job site.

As a reminder, prior to renewing your asbestos certification, the State of Maine **requires** an annual refresher course to be taken before submitting a renewal application. A certificate shall expire one year from the last day of the month from the date of issuance, **or on the last day of the month that the training certificate expires**, whichever is sooner.

All our asbestos forms can be found at https://www.maine.gov/dep/waste/asbestos/forms.html
Thank you for your cooperation and your completed application(s).

Name	Category	Certification #	Exp. Date
Wesley E. Harden	Inspector	AI-0874	01/31/2024

Sincerely,

Sandra J. Moody

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

website: www.maine.gov/dep

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

March 21, 2023

Attn.: Jamie Noel, Lab Director
Optimum Analytical
85 Stiles Road, Suite 201
Salem, NH 03079

Dear Ms. Noel:

This letter is in reference to your renewal application for licensure as an **Asbestos Analytical Laboratory (Bulk).**

This office has received and completed the review of your application and finds it to be in accordance with the requirements of Maine Asbestos Management Regulations Chapter 425, effective April 3, 2011.

Your application has been approved and your firm is licensed to provide asbestos analytical service(s) as described on the enclosed certificate.

Your renewal license number remains at **LB-0067** which is in effect for one year and will expire on March 31, 2024. A renewal application should be filed not less than thirty (30) days prior to expiration of this licensure. Thank you for your continued service to the people of the State of Maine.

If you have any questions please call me at (207) 242-0877.

Sincerely,

Sandra J. Moody

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

Enclosure

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

MELANIE LOYZIM
COMMISSIONER

March 21, 2023

Attn.: Jamie Noel, Lab Director
Optimum Analytical
85 Stiles Road, Suite 201
Salem, NH 03079

Dear Ms. Noel:

This letter is in reference to your renewal application for licensure as an **Asbestos Analytical Laboratory (Air).**

This office has received and completed the review of your application and finds it to be in accordance with the requirements of Maine Asbestos Management Regulations Chapter 425, effective April 3, 2011.

Your application has been approved and your firm is licensed to provide asbestos analytical service(s) as described on the enclosed certificate.

Your renewal license number remains at **LA-0065** which is in effect for one year and will expire on March 31, 2024. A renewal application should be filed not less than thirty (30) days prior to expiration of this licensure. Thank you for your continued service to the people of the State of Maine.

If you have any questions please call me at (207) 242-0877.

Sincerely,

Sandra J. Moody

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

Enclosure

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769
(207) 764-0477 FAX: (207) 760-3143

website: www.maine.gov/dep

State of Maine
Department of Environmental Protection

LICENSE

Optimum Analytical

Asbestos Analytical Laboratory
(Bulk)

License Number: LB-0067 **Expiration Date: 03/31/2024**

State of Maine
Department of Environmental Protection

LICENSE

Optimum Analytical

Asbestos Analytical Laboratory
(Air)

License Number: LA-0065

Expiration Date: 03/31/2024

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101433-0

Optimum Analytical & Consulting LLC

Salem, NH

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2023-04-01 through 2024-03-31

Effective Dates

For the National Voluntary Laboratory Accreditation Program

ATTACHMENT C

Laboratory Reports

Hazardous Building Materials Inventory
Former Maine State Hospital: Elevated Walkways
67 Independence Drive
Augusta, Maine

OPTIMUM
Analytical and Consulting, LLC

85 Stiles Road, Suite 201
Salem, NH 03079
603-458-5247

Erik Phenix
Ransom Environmental Consultants, Inc.
400 Commercial Street
Portland ME 04101

Project Reference:	211.06085.004
Laboratory Batch #:	2244295
Date Samples Received:	09/28/2022
Date Samples Analyzed:	10/06/2022
Date of Final Report:	10/07/2022

SAMPLE IDENTIFICATION:

Sixty Five (65) samples from AMHI Tunnels, Augusta ME project were submitted by Client on 09/28/2022

This bulk sample(s) was delivered to Optimum Analytical Consulting, LLC (Optimum) located in Salem, New Hampshire for asbestos content determination.

ANALYTICAL METHOD:

Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials). This report relates only to those samples analyzed, and may not be indicative of other similar appearing materials existing at this, or other sites. Quantification of asbestos content was determined by Calibrated Visual Estimation. Optimum is not responsible for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

In any given material, fibers with a small diameter (<0.25µm) may not be detected by the PLM method. Floor tile and other resinous bound materials may yield a false negative if the asbestos fibers are too small to be resolved using PLM. Additionally, there is currently no approved EPA analytical method to reliably confirm vermiculite as non-asbestos containing. Additional analytical methods may be required. Optimum Analytical recommends using Transmission Electron Microscopy (TEM) or other approved methods for a more definitive analysis.

Optimum will retain all samples for a minimum of three months. Further analysis or return of samples must be requested within this three month period to guarantee their availability. This report may not be reproduced except in full, without the written approval of Optimum Analytical and Consulting, LLC.

The client/laboratory shall not use the NVLAP and AIHA Logo or this test report in a way that constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology or the American Industrial Hygiene Association.

Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Point Count = .25%, 1000 Point Count = 0.1%; Present or Absent are observations made during a qualitative analysis.

This report is considered preliminary until signed by both the Laboratory Analyst and Laboratory Director or Supervisor. If you have any questions regarding this report, please do not hesitate to contact us.

Jamie L. Noel
Laboratory Director

Kristina Scaviola
Laboratory Supervisor

NVLAP Lab Code: 101433-0

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-001 SN-01A	Stone North Tunnel 2" Pipe Insulation, Gray	LAYER 1 100%	Amosite	55%	Cellulose Fiber Binder/Filler	3% 42%
2244295-002 SN-01B	Stone North Tunnel 2" Pipe Insulation, Gray Note: Positive Stop	LAYER 1 100%				
2244295-003 SN-01C	Stone North Tunnel 2" Pipe Insulation, Gray Note: Positive Stop	LAYER 1 100%				
2244295-004 CB-01A	Central Building Tunnel 2" Pipe Insulation, White	LAYER 1 100%	Chrysotile Amosite	3% 25%	Cellulose Fiber Binder/Filler	5% 67%
2244295-005 CB-01B	Central Building Tunnel 2" Pipe Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-006 CB-01C	Central Building Tunnel 2" Pipe Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-007 CB-02A	Central Building Tunnel 2" Fitting Insulation, White	LAYER 1 100%	Chrysotile	25%	Cellulose Fiber Binder/Filler	5% 70%
2244295-008 CB-02B	Central Building Tunnel 2" Fitting Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-009 CB-02C	Central Building Tunnel 2" Fitting Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-010 CB-03A	Central Building Tunnel 4" Pipe Insulation, White	LAYER 1 100%	Chrysotile	25%	Cellulose Fiber Binder/Filler	5% 70%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-011 CB-03B	Central Building Tunnel 4" Pipe Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-012 CB-03C	Central Building Tunnel 4" Pipe Insulation, White Note: Positive Stop	LAYER 1 100%				
2244295-013 TY-01A	Tyson Building Tunnels Fitting on Fiberglass Wrapped Pipe, Gray	LAYER 1 100%	Chrysotile	55%	Cellulose Fiber Binder/Filler	15% 30%
2244295-014 TY-01B	Tyson Building Tunnels Fitting on Fiberglass Wrapped Pipe, Gray Note: Positive Stop	LAYER 1 100%				
2244295-015 TY-01C	Tyson Building Tunnels Fitting on Fiberglass Wrapped Pipe, Gray Note: Positive Stop	LAYER 1 100%				
2244295-016 TY-02A	Tyson Building Tunnels Ceiling Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-017 TY-02B	Tyson Building Tunnels Ceiling Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-018 TY-02C	Tyson Building Tunnels Ceiling Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-019 TY-03A	Tyson Building Tunnels Ceiling Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-020 TY-03B	Tyson Building Tunnels Ceiling Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-021 TY-03C	Tyson Building Tunnels Ceiling Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-022 TY-04A	Tyson Building Tunnels Plaster on Steel Beams, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	2% 98%
2244295-023 TY-04B	Tyson Building Tunnels Plaster on Steel Beams, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	2% 98%
2244295-024 TY-04C	Tyson Building Tunnels Plaster on Steel Beams, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	2% 98%
2244295-025 TY-05A	Tyson Building Tunnels Drywall, Gray/Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	10% 90%
2244295-026 TY-05B	Tyson Building Tunnels Drywall, White	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	3% 8% 89%
2244295-027 TY-05C	Tyson Building Tunnels Drywall, Gray/Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	10% 90%
2244295-028 TY-06A	Tyson Building Tunnels Joint Compound, White/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-029 TY-06B	Tyson Building Tunnels Joint Compound, White/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-030 TY-06C	Tyson Building Tunnels Joint Compound, White/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-031 TN-01A	Tyson North Tunnel Cardboard Pipe Insulation, Gray/Brown	LAYER 1 100%	Chrysotile	15%	Cellulose Fiber Binder/Filler	80% 5%
2244295-032 TN-01B	Tyson North Tunnel Cardboard Pipe Insulation, Gray/Brown Note: Positive Stop	LAYER 1 100%				
2244295-033 TN-01C	Tyson North Tunnel Cardboard Pipe Insulation, Gray/Brown Note: Positive Stop	LAYER 1 100%				
2244295-034 SKY-01A	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-035 SKY-01B	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-036 SKY-01C	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-037 SKY-01D	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-038 SKY-01E	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-039 SKY-01F	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-040 SKY-01G	Tyson Sky Bridges Plaster Rough Coat, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	3% 97%
2244295-041 SKY-02A	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-042 SKY-02B	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-043 SKY-02C	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-044 SKY-02D	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-045 SKY-02E	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-046 SKY-02F	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-047 SKY-02G	Tyson Sky Bridges Plaster Skim Coat, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-048 SKY-03A	Tyson Sky Bridges Window Glazing, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-049 SKY-03B	Tyson Sky Bridges Window Glazing, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-050 SKY-03C	Tyson Sky Bridges Window Glazing, White	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-051 SKY-04A	Tyson Sky Bridges Window Caulk, Beige/Gray	LAYER 1 100%	Chrysotile	5.82%	Cellulose Fiber Binder/Filler	1% 93.18%
2244295-052 SKY-04B	Tyson Sky Bridges Window Caulk, Beige/Gray Note: Positive Stop	LAYER 1 100%				
2244295-053 SKY-04C	Tyson Sky Bridges Window Caulk, Beige/Gray Note: Positive Stop	LAYER 1 100%				
2244295-054 EXT-01A	Tyson North Tunnel Exterior Foundation Coating, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 25% 73%
2244295-055 EXT-01B	Tyson North Tunnel Exterior Foundation Coating, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 25% 73%
2244295-056 EXT-01C	Tyson North Tunnel Exterior Foundation Coating, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 25% 73%
2244295-057 EXT-02A	Tyson North Tunnel Exterior Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-058 EXT-02B	Tyson North Tunnel Exterior Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2244295
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.004
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	09/28/2022
LOCATION:	AMHI Tunnels, Augusta ME	**ANALYSIS DATE:**	10/06/2022
		REPORT DATE:	10/07/2022
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2244295-059 EXT-02C	Tyson North Tunnel Exterior Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2244295-060 EXT-03A	Tyson North Tunnel Exterior Crack Sealant, Black	LAYER 1 100%	Chrysotile	13.07%	Cellulose Fiber Binder/Filler	1% 85.93%
2244295-061 EXT-03B	Tyson North Tunnel Exterior Crack Sealant, Black Note: Positive Stop	LAYER 1 100%				
2244295-062 EXT-03C	Tyson North Tunnel Exterior Crack Sealant, Black Note: Positive Stop	LAYER 1 100%				
2244295-063 EXT-04A	Stone North Tunnel Exterior Foundation Coating, Black	LAYER 1 100%	Chrysotile	9.26%	Cellulose Fiber Binder/Filler	2% 88.74%
2244295-064 EXT-04B	Stone North Tunnel Exterior	LAYER 1 100%				
2244295-065 EXT-04C	Stone North Tunnel Exterior	LAYER 1 100%				

Analyst Signatory: _____
Jamie Noel

NVLAP TESTING
NVLAP Lab Code: 101433-0

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.
ADDRESS:	400 Commercial Street
CITY / STATE / ZIP:	Portland ME 04101
CONTACT:	Erik Phenix
DESCRIPTION:	PLM Analysis
LOCATION:	AMHI Tunnels, Augusta ME

ORDER #:	2244295
PROJECT #:	211.06085.004
DATE COLLECTED:	
COLLECTED BY:	Client
DATE RECEIVED:	09/28/2022
ANALYSIS DATE:	10/06/2022
REPORT DATE:	10/07/2022
ANALYST:	Jamie Noel

2244295

Client:	Ransom Consulting, LLC
Contact:	Erik Phenix
Address:	400 Commercial Street, Suite 404, Portland ME 04101
Phone:	207-772-2891 / Cell: 207-272-8673
Fax:	
Email:	ephenix@ransomenv.com wes.harden@ransomenv.com
Project:	AMHI Tunnels
Ransom Project #	211.06085.004
	Augusta, ME
Client Notes:	**Positive Stop Requested** *Please analyze prepare NOB samples via gravimetric reduction, per MEDEP requirements*
P.O. #	6058
Date Submitted:	9/27/2022 0:00
Analysis:	Bulk PLM
TurnAroundTime:	**Standard TAT**

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"

Begin Samples with a "<< "above the first sample

and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

Sample Number	Building/Area	Sample Description
<<		
SN-01A	Stone North Tunnel	Gray 2" Pipe Insulation
SN-01B	Stone North Tunnel	Gray 2" Pipe Insulation
SN-01C	Stone North Tunnel	Gray 2" Pipe Insulation
CB-01A	Central Building Tunnel	White 2" Pipe Insulation
CB-01B	Central Building Tunnel	White 2" Pipe Insulation
CB-01C	Central Building Tunnel	White 2" Pipe Insulation
CB-02A	Central Building Tunnel	2" Fittings associated with CB-01
CB-02B	Central Building Tunnel	2" Fittings associated with CB-01
CB-02C	Central Building Tunnel	2" Fittings associated with CB-01
CB-03A	Central Building Tunnel	White 4" Pipe Insulation
CB-03B	Central Building Tunnel	White 4" Pipe Insulation
CB-03C	Central Building Tunnel	White 4" Pipe Insulation
TY-01A	Tyson Building Tunnels	4" Fittings on fiberglass wrapped pipe
TY-01B	Tyson Building Tunnels	4" Fittings on fiberglass wrapped pipe
TY-01C	Tyson Building Tunnels	4" Fittings on fiberglass wrapped pipe
TY-02A	Tyson Building Tunnels	Ceiling plaster skim coat
TY-02B	Tyson Building Tunnels	Ceiling plaster skim coat
TY-02C	Tyson Building Tunnels	Ceiling plaster skim coat
TY-03A	Tyson Building Tunnels	Ceiling plaster rough coat
TY-03B	Tyson Building Tunnels	Ceiling plaster rough coat
TY-03C	Tyson Building Tunnels	Ceiling plaster rough coat
TY-04A	Tyson Building Tunnels	Plaster on steel beams
TY-04B	Tyson Building Tunnels	Plaster on steel beams
TY-04C	Tyson Building Tunnels	Plaster on steel beams
TY-05A	Tyson Building Tunnels	Drywall
TY-05B	Tyson Building Tunnels	Drywall
TY-05C	Tyson Building Tunnels	Drywall
TY-06A	Tyson Building Tunnels	Joint Compound
TY-06B	Tyson Building Tunnels	Joint Compound
TY-06C	Tyson Building Tunnels	Joint Compound
TN-01A	Tyson North Tunnel	Brown cardboard pipe insulation
TN-01B	Tyson North Tunnel	Brown cardboard pipe insulation
TN-01C	Tyson North Tunnel	Brown cardboard pipe insulation
SKY-01A	Tyson Sky Bridges	Plaster rough coat
SKY-01B	Tyson Sky Bridges	Plaster rough coat
SKY-01C	Tyson Sky Bridges	Plaster rough coat
SKY-01D	Tyson Sky Bridges	Plaster rough coat
SKY-01E	Tyson Sky Bridges	Plaster rough coat
SKY-01F	Tyson Sky Bridges	Plaster rough coat
SKY-01G	Tyson Sky Bridges	Plaster rough coat
SKY-02A	Tyson Sky Bridges	Plaster skim coat
SKY-02B	Tyson Sky Bridges	Plaster skim coat
SKY-02C	Tyson Sky Bridges	Plaster skim coat
SKY-02D	Tyson Sky Bridges	Plaster skim coat
SKY-02E	Tyson Sky Bridges	Plaster skim coat

9/28/2022 18:15

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.
ADDRESS:	400 Commercial Street
CITY / STATE / ZIP:	Portland ME 04101
CONTACT:	Erik Phenix
DESCRIPTION:	PLM Analysis
LOCATION:	AMHI Tunnels, Augusta ME

ORDER #:	2244295
PROJECT #:	211.06085.004
DATE COLLECTED:	
COLLECTED BY:	Client
DATE RECEIVED:	09/28/2022
ANALYSIS DATE:	10/06/2022
REPORT DATE:	10/07/2022
ANALYST:	Jamie Noel

2244295

Client:	Ransom Consulting, LLC
Contact:	Erik Phenix
Address:	400 Commercial Street, Suite 404, Portland ME 04101
Phone:	207-772-2891 / Cell: 207-272-8673
Fax:	
Email:	ephenix@ransomenv.com wes.harden@ransomenv.com
Project:	AMHI Tunnels
Ransom Project #	211.06085.004
	Augusta, ME
Client Notes:	**Positive Stop Requested** *Please analyze prepare NOB samples via gravimetric reduction, per MEDEP requirements*
P.O. #.	
Date Submitted:	9/27/2022 0:00
Analysis:	Bulk PLM
TurnAroundTime:	**Standard TAT**

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"

Begin Samples with a "<< "above the first sample

and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

SKY-02F	Tyson Sky Bridges	Plaster skim coat
SKY-02G	Tyson Sky Bridges	Plaster skim coat
SKY-03A	Tyson Sky Bridges	Window Glazing
SKY-03B	Tyson Sky Bridges	Window Glazing
SKY-03C	Tyson Sky Bridges	Window Glazing
SKY-04A	Tyson Sky Bridges	Window Caulk
SKY-04B	Tyson Sky Bridges	Window Caulk
SKY-04C	Tyson Sky Bridges	Window Caulk
EXT-01A	Tyson North Tunnel Exterior	Foundation Coating
EXT-01B	Tyson North Tunnel Exterior	Foundation Coating
EXT-01C	Tyson North Tunnel Exterior	Foundation Coating
EXT-02A	Tyson North Tunnel Exterior	Gray Caulking
EXT-02B	Tyson North Tunnel Exterior	Gray Caulking
EXT-02C	Tyson North Tunnel Exterior	Gray Caulking
EXT-03A	Tyson North Tunnel Exterior	Black crack sealant
EXT-03B	Tyson North Tunnel Exterior	Black crack sealant
EXT-03C	Tyson North Tunnel Exterior	Black crack sealant
EXT-04A	Stone North Tunnel Exterior	Foundation Coating
EXT-04B	Stone North Tunnel Exterior	Foundation Coating
EXT-04C	Stone North Tunnel Exterior	Foundation Coating
>>>		

Erik Phenix 9/27/2022

9/28/2022 815

ANALYTICAL REPORT

Lab Number:	L2253141
Client:	Ransom Consulting, LLC. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Erik Phenix
Phone:	(207) 772-2891
Project Name:	AMHI TUNNELS
Project Number:	211.06085.003
Report Date:	10/18/22

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: AMHI TUNNELS
Project Number: 211.06085.003

Lab Number: L2253141
Report Date: 10/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2253141-01	LBP-SN01	SOLID	AUGUSTA, ME	09/26/22 09:00	09/27/22
L2253141-02	LBP-TN01	SOLID	AUGUSTA, ME	09/26/22 10:00	09/27/22
L2253141-03	LBP-C01	SOLID	AUGUSTA, ME	09/26/22 11:00	09/27/22
L2253141-04	LBP-FP01	SOLID	AUGUSTA, ME	09/26/22 12:00	09/27/22
L2253141-05	LBP-SKY01	SOLID	AUGUSTA, ME	09/26/22 13:00	09/27/22
L2253141-06	PCB-01	SOLID	AUGUSTA, ME	09/26/22 14:00	09/27/22
L2253141-07	PCB-02	SOLID	AUGUSTA, ME	09/26/22 15:00	09/27/22

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

Case Narrative (continued)

Sample Receipt

The samples were received at the laboratory above the required temperature range and were not on ice.

L2253141-06 and -07: The sample was received in an inappropriate container for the PCBs analysis.

PCBs

L2253141-06D: The sample contains peaks which match the retention times for Aroclor 1254, but do not match the area ratios typical for this aroclor. The result for Aroclor 1254 is reported as "weathered".

L2253141-06D: The surrogate recoveries are below the acceptance criteria for 2,4,5,6-tetrachloro-m-xylene (0%) and decachlorobiphenyl (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Melissa Sturgis Melissa Sturgis

Title: Technical Director/Representative Date: 10/18/22

ORGANICS

PCBS

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-06 D
Client ID: PCB-01
Sample Location: AUGUSTA, ME

Date Collected: 09/26/22 14:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 1,8082A
Analytical Date: 10/06/22 11:17
Analyst: LMR
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 10/04/22 10:20
Cleanup Method: EPA 3630
Cleanup Date: 10/06/22
Cleanup Method: EPA 3665A
Cleanup Date: 10/06/22
Cleanup Method: EPA 3660B
Cleanup Date: 10/06/22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	57300	--	100	A
Aroclor 1221	ND		ug/kg	57300	--	100	A
Aroclor 1232	ND		ug/kg	57300	--	100	A
Aroclor 1242	ND		ug/kg	28600	--	100	A
Aroclor 1248	ND		ug/kg	57300	--	100	A
Aroclor 1254	1100000		ug/kg	57300	--	100	B
Aroclor 1260	ND		ug/kg	57300	--	100	A
Aroclor 1262	ND		ug/kg	57300	--	100	A
Aroclor 1268	ND		ug/kg	28600	--	100	A
PCBs, Total	1100000		ug/kg	28600	--	100	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	A
Decachlorobiphenyl	**0**	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	**0**	Q	30-150	B
Decachlorobiphenyl	**0**	Q	30-150	B

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-07
Client ID: PCB-02
Sample Location: AUGUSTA, ME

Date Collected: 09/26/22 15:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Analytical Method: 1,8082A
Analytical Date: 10/06/22 11:27
Analyst: LMR
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 10/04/22 10:20
Cleanup Method: EPA 3630
Cleanup Date: 10/06/22
Cleanup Method: EPA 3665A
Cleanup Date: 10/06/22
Cleanup Method: EPA 3660B
Cleanup Date: 10/06/22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	576	--	1	A
Aroclor 1221	ND		ug/kg	576	--	1	A
Aroclor 1232	ND		ug/kg	576	--	1	A
Aroclor 1242	ND		ug/kg	288	--	1	A
Aroclor 1248	1110	P	ug/kg	576	--	1	B
Aroclor 1254	ND		ug/kg	576	--	1	B
Aroclor 1260	ND		ug/kg	576	--	1	A
Aroclor 1262	ND		ug/kg	576	--	1	A
Aroclor 1268	ND		ug/kg	288	--	1	A
PCBs, Total	1110		ug/kg	288	--	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	97		30-150	A
Decachlorobiphenyl	102		30-150	A
2,4,5,6-Tetrachloro-m-xylene	128		30-150	B
Decachlorobiphenyl	124		30-150	B

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 10/06/22 08:51
Analyst: LMR

Extraction Method: EPA 3540C
Extraction Date: 10/04/22 10:20
Cleanup Method: EPA 3630
Cleanup Date: 10/06/22
Cleanup Method: EPA 3665A
Cleanup Date: 10/06/22
Cleanup Method: EPA 3660B
Cleanup Date: 10/06/22

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 06-07 Batch: WG1696354-1						
Aroclor 1016	ND		ug/kg	551	--	A
Aroclor 1221	ND		ug/kg	551	--	A
Aroclor 1232	ND		ug/kg	551	--	A
Aroclor 1242	ND		ug/kg	275	--	A
Aroclor 1248	ND		ug/kg	551	--	A
Aroclor 1254	ND		ug/kg	551	--	A
Aroclor 1260	ND		ug/kg	551	--	A
Aroclor 1262	ND		ug/kg	551	--	A
Aroclor 1268	ND		ug/kg	275	--	A
PCBs, Total	ND		ug/kg	275	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	97		30-150	A
2,4,5,6-Tetrachloro-m-xylene	115		30-150	B
Decachlorobiphenyl	113		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: AMHI TUNNELS

Project Number: 211.06085.003

Lab Number: L2253141

Report Date: 10/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 06-07 Batch: WG1696354-2 WG1696354-3									
Aroclor 1016	88		90		40-140	2		50	A
Aroclor 1260	95		95		40-140	0		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		90		30-150	A
Decachlorobiphenyl	100		98		30-150	A
2,4,5,6-Tetrachloro-m-xylene	115		117		30-150	B
Decachlorobiphenyl	117		119		30-150	B

METALS

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-01
Client ID: LBP-SN01
Sample Location: AUGUSTA, ME
Date Collected: 09/26/22 09:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	99.8		mg/kg	1.90	--	1	09/28/22 10:00	10/17/22 16:34	EPA 3050B	1,6010D	MC

Project Name: AMHI TUNNELS
Lab Number: L2253141
Project Number: 211.06085.003
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-02
Client ID: LBP-TN01
Sample Location: AUGUSTA, ME
Date Collected: 09/26/22 10:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	40.8		mg/kg	1.95	--	1	09/28/22 10:00	10/17/22 16:39	EPA 3050B	1,6010D	MC

Project Name: AMHI TUNNELS
Lab Number: L2253141
Project Number: 211.06085.003
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-03
Client ID: LBP-C01
Sample Location: AUGUSTA, ME
Date Collected: 09/26/22 11:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.8		mg/kg	1.95	--	1	09/28/22 10:00	10/17/22 16:45	EPA 3050B	1,6010D	MC

Project Name: AMHI TUNNELS
Lab Number: L2253141
Project Number: 211.06085.003
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-04
Client ID: LBP-FP01
Sample Location: AUGUSTA, ME
Date Collected: 09/26/22 12:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.60		mg/kg	1.92	--	1	09/28/22 10:00	10/17/22 16:50	EPA 3050B	1,6010D	MC

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

SAMPLE RESULTS

Lab ID: L2253141-05
Client ID: LBP-SKY01
Sample Location: AUGUSTA, ME
Date Collected: 09/26/22 13:00
Date Received: 09/27/22
Field Prep: Not Specified

Sample Depth:
Matrix: Solid
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2840		mg/kg	1.96	--	1	09/28/22 10:00	10/17/22 16:56	EPA 3050B	1,6010D	MC

Project Name: AMHI TUNNELS
Project Number: 211.06085.003
Lab Number: L2253141
Report Date: 10/18/22

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG1692884-1										
Lead, Total	ND		mg/kg	2.00	--	1	09/28/22 10:00	10/02/22 11:01	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: AMHI TUNNELS

Project Number: 211.06085.003

Lab Number: L2253141

Report Date: 10/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG1692884-2 SRM Lot Number: D113-540								
Lead, Total	104		-		72-128	-		

Project Name: AMHI TUNNELS
Project Number: 211.06085.003

Lab Number: L2253141
Report Date: 10/18/22

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2253141-01A	Bag	A	NA		18.2	Y	Absent		PB-TI(180)
L2253141-02A	Bag	A	NA		18.2	Y	Absent		PB-TI(180)
L2253141-03A	Bag	A	NA		18.2	Y	Absent		PB-TI(180)
L2253141-04A	Bag	A	NA		18.2	Y	Absent		PB-TI(180)
L2253141-05A	Bag	A	NA		18.2	Y	Absent		PB-TI(180)
L2253141-06A	Bag	A	NA		18.2	Y	Absent		PCB-8082-CAULK(365)
L2253141-07A	Bag	A	NA		18.2	Y	Absent		PCB-8082-CAULK(365)

*Values in parentheses indicate holding time in days

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	AMHI TUNNELS	**Lab Number:**	L2253141
Project Number:	211.06085.003	**Report Date:**	10/18/22

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 9/27/22

ALPHA Job #: L2253141

ALPHA ANALYTICAL
8 Walkup Drive, Westboro, MA 01581, Tel: 508-898-9220
320 Forbes Blvd, Mansfield, MA 02048, Tel: 508-822-9300

Project Information
Project Name: AMHI Tunnels
Project Location: Augusta ME
Project #: 211.06085.004
Project Manager: Erik Phenix
ALPHA Quote #:

Report Information - Data Deliverables
X ADEx X EMAIL

Billing Information
☐ Same as Client info PO #: 6059

Client Information
Client: Ransom Consulting LLC
Address: 400 Commercial St. Portland ME 04101
Phone: 207.772.2891
Email: ephenix@ransomenv.com

Regulatory Requirements & Project Information Requirements
☐ Yes X No MA MCP Analytical Methods ☐ Yes X No CT RCP Analytical Methods
☐ Yes X No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes X No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes X No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Turn-Around Time
X Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Additional Project Information:

ANALYSIS
VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
X PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Total Lead

SAMPLE INFO
Filtration ☐ Field ☐ Lab to do
Preservation ☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Total Lead	PCB	Sample Comments	TOTAL # BOTTLES
J3141-01	LBP-SN01	9/26/22	0900	Paint	EPP	X			
-02	LBP-TN01	9/26/22	10:00	Paint	EPP	X			
-03	LBP-C01	9/26/22	11:00	Paint	EPP	X			
-04	LBP-FP01	9/26/22	12:00	Paint	EPP	X			
-05	LBP-SKY01	9/26/22	13:00	Paint	EPP	X			
-06	PCB-01	9/26/22	14:00	Caulk	EPP		X		
-07	PCB-02	9/26/22	15:00	Caulk	EPP		X		
Container Type						O	O		
Preservative						A	A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H= $Na_2S_2O_3$
I= Ascorbic Acid
J= NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Erik Phenix	9/27/22 11:42	AAL	9/27/22 11:42
AAL Tom Tencell AAL	9/27/22 17:15	Tom Tencell AAL	9/27/22 17:15
Tom Tencell AAL	9/27/22 19:30		9/27/22 19:30

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

OPTIMUM
Analytical and Consulting, LLC

85 Stiles Road, Suite 201
Salem, NH 03079
603-458-5247

Erik Phenix
Ransom Environmental Consultants, Inc.
400 Commercial Street
Portland ME 04101

Project Reference:	211.06085.006
Laboratory Batch #:	2245324
Date Samples Received:	12/23/2022
Date Samples Analyzed:	01/11/2023
Date of Final Report:	01/12/2023

SAMPLE IDENTIFICATION:

Sixty Three (63) samples from AMHI-Central Building Roof, Augusta, ME project were submitted by Client on 12/23/2022

This bulk sample(s) was delivered to Optimum Analytical Consulting, LLC (Optimum) located in Salem, New Hampshire for asbestos content determination.

ANALYTICAL METHOD:

Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials). This report relates only to those samples analyzed, and may not be indicative of other similar appearing materials existing at this, or other sites. Quantification of asbestos content was determined by Calibrated Visual Estimation. Optimum is not responsible for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

In any given material, fibers with a small diameter (<0.25µm) may not be detected by the PLM method. Floor tile and other resinous bound materials may yield a false negative if the asbestos fibers are too small to be resolved using PLM. Additionally, there is currently no approved EPA analytical method to reliably confirm vermiculite as non-asbestos containing. Additional analytical methods may be required. Optimum Analytical recommends using Transmission Electron Microscopy (TEM) or other approved methods for a more definitive analysis.

Optimum will retain all samples for a minimum of three months. Further analysis or return of samples must be requested within this three month period to guarantee their availability. This report may not be reproduced except in full, without the written approval of Optimum Analytical and Consulting, LLC.

The client/laboratory shall not use the NVLAP and AIHA Logo or this test report in a way that constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology or the American Industrial Hygiene Association.

Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Point Count = .25%, 1000 Point Count = 0.1%; Present or Absent are observations made during a qualitative analysis.

This report is considered preliminary until signed by both the Laboratory Analyst and Laboratory Director or Supervisor. If you have any questions regarding this report, please do not hesitate to contact us.

Jamie L. Noel
Laboratory Director

NVLAP Lab Code: 101433-0

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-001 001A	Roof area A Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-002 001B	Roof area A Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-003 001C	Roof area A Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-004 002A	Roof area A Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-005 002B	Roof area A Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-006 002C	Roof area A Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-007 003A	Roof area A Paper on Foam Insulation, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-008 003B	Roof area A Paper on Foam Insulation, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-009 003C	Roof area A Paper on Foam Insulation, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-010 004A	Roof area A Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-011 004B	Roof area A Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-012 004C	Roof area A Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-013 005A	Roof area A Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-014 005B	Roof area A Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-015 005C	Roof area A Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-016 006A	Roof area A Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-017 006B	Roof area A Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-018 006C	Roof area A Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-019 007A	Roof area B Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-020 007B	Roof area B Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-021 007C	Roof area B Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-022 008A	Roof area B Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-023 008B	Roof area B Roof Sealant, Black	LAYER 1 100%	Chrysotile	5.73%	Cellulose Fiber Binder/Filler	1% 93.27%
2245324-024 008C	Roof area B Roof Sealant, Black Note: Positive Stop	LAYER 1 100%				
2245324-025 009A	Roof area B Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-026 009B	Roof area B Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-027 009C	Roof area B Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-028 010A	Roof area B Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-029 010B	Roof area B Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-030 010C	Roof area B Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-031 011A	Roof area B Insulation Paper, Brown/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	98% 2%
2245324-032 011B	Roof area B Insulation Paper, Brown/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	98% 2%
2245324-033 011C	Roof area B Insulation Paper, Brown/Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	98% 2%
2245324-034 012A	Roof area B Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	1% 5% 94%
2245324-035 012B	Roof area B Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	1% 5% 94%
2245324-036 012C	Roof area B Asphalt Coating on Deck, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	1% 5% 94%
2245324-037 013A	Roof area E Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-038 013B	Roof area E Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-039 013C	Roof area E Flashing Caulking, Gray	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-040 014A	Roof area E Asphalt Roofing, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	15% 20% 65%
2245324-041 014B	Roof area E Asphalt Roofing, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	15% 20% 65%
2245324-042 014C	Roof area E Asphalt Roofing, Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	15% 20% 65%
2245324-043 015A	Roof area E Fiber Board, Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	95% 5%
2245324-044 015B	Roof area E Fiber Board, Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	95% 5%
2245324-045 015C	Roof area E Fiber Board, Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	95% 5%
2245324-046 016A	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-047 016B	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-048 016C	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-049 017A	Roof area E Insulation Paper, Gray/Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-050 017B	Roof area E Insulation Paper, Gray/Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-051 017C	Roof area E Insulation Paper, Gray/Brown	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	97% 3%
2245324-052 018A	Roof area E Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-053 018B	Roof area E Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-054 018C	Roof area E Rubber Roof Membrane, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-055 019A	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-056 019B	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-057 019C	Roof area E Foam Insulation, Yellow	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2245324-058 020A	Roof area E Insulation Paper, Tan/Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 95% 3%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.	**ORDER #:**	2245324
ADDRESS:	400 Commercial Street	**PROJECT #:**	211.06085.006
CITY / STATE / ZIP:	Portland ME 04101	**DATE COLLECTED:**	
CONTACT:	Erik Phenix	**COLLECTED BY:**	Client
DESCRIPTION:	PLM Analysis	**DATE RECEIVED:**	12/23/2022
LOCATION:	AMHI-Central Building Roof, Augusta, ME	**ANALYSIS DATE:**	01/11/2023
		REPORT DATE:	01/12/2023
		ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2245324-059 020B	Roof area E Insulation Paper, Tan/Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 95% 3%
2245324-060 020C	Roof area E Insulation Paper, Tan/Black	LAYER 1 100%	None Detected		Cellulose Fiber Fibrous Glass Binder/Filler	2% 95% 3%
2245324-061 021A	Roof area E Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Brucite Binder/Filler	1% 5% 94%
2245324-062 021B	Roof area E Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Brucite Binder/Filler	1% 5% 94%
2245324-063 021C	Roof area E Roof Sealant, Black	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

Analyst Signatory: _____
Jamie Noel

NVLAP TESTING
NVLAP Lab Code: 101433-0

2245324

Client:	Ransom Consulting, LLC
Contact:	Erik Phenix/Wesley Harden
Address:	400 Commercial Street, Suite 404, Portland ME 04101
Phone:	207-772-2891 / Cell: 207-272-8673
Fax:	
Email:	ephenix@ransomenv.com wes.harden@ransomenv.com
Project:	AMHI - Central Buliding Roof
Ransom Project #	211.06085.006
	Augusta, ME
Client Notes:	**Positive Stop Requested** *Please analyze prepare NOB samples via gravimetric reduction, per MEDEP requirements*
P.O. #.	6104
Date Submitted:	12/22/2022 0:00
Analysis:	Bulk PLM
TurnAroundTime:	**Standard TAT**

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"

Begin Samples with a "<< "above the first sample

and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

Sample Number	Building/Area	Sample Description
<<		
001A	Roof area A	Rubber roof membrane
001B	Roof area A	Rubber roof membrane
001C	Roof area A	Rubber roof membrane
002A	Roof area A	Foam insulation
002B	Roof area A	Foam insulation
002C	Roof area A	Foam insulation
003A	Roof area A	Paper on foam insulation
003B	Roof area A	Paper on foam insulation
003C	Roof area A	Paper on foam insulation
004A	Roof area A	Flashing caulking
004B	Roof area A	Flashing caulking
004C	Roof area A	Flashing caulking
005A	Roof area A	Roof sealant
005B	Roof area A	Roof sealant
005C	Roof area A	Roof sealant
006A	Roof area A	Asphalt coating on deck
006B	Roof area A	Asphalt coating on deck
006C	Roof area A	Asphalt coating on deck
007A	Roof area B	Flashing caulking
007B	Roof area B	Flashing caulking
007C	Roof area B	Flashing caulking
008A	Roof area B	Roof sealant
008B	Roof area B	Roof sealant
008C	Roof area B	Roof sealant
009A	Roof area B	Rubber roof membrane
009B	Roof area B	Rubber roof membrane
009C	Roof area B	Rubber roof membrane
010A	Roof area B	Foam insulation
010B	Roof area B	Foam insulation
010C	Roof area B	Foam insulation
011A	Roof area B	Insulation paper
011B	Roof area B	Insulation paper
011C	Roof area B	Insulation paper
012A	Roof area B	Asphalt coating on deck
012B	Roof area B	Asphalt coating on deck
012C	Roof area B	Asphalt coating on deck
013A	Roof area E	Flashing caulking
013B	Roof area E	Flashing caulking
013C	Roof area E	Flashing caulking
014A	Roof area E	Asphalt roofing
014B	Roof area E	Asphalt roofing
014C	Roof area E	Asphalt roofing
015A	Roof area E	Fiber board
015B	Roof area E	Fiber board
015C	Roof area E	Fiber board

45

Eileen 12/23/22 11:30

2245324

Client:	Ransom Consulting, LLC
Contact:	Erik Phenix/Wesley Harden
Address:	400 Commercial Street, Suite 404, Portland ME 04101
Phone:	207-772-2891 / Cell: 207-272-8673
Fax:	
Email:	ephenix@ransomenv.com wes.harden@ransomenv.com
Project:	AMHI - Central Buliding Roof
Ransom Project #	211.06085.006
	Augusta, ME
Client Notes:	**Positive Stop Requested** *Please analyze prepare NOB samples via gravimetric reduction, per MEDEP requirements*
P.O. #.	6104
Date Submitted:	12/22/2022 0:00
Analysis:	Bulk PLM
TurnAroundTime:	**Standard TAT**

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"

Begin Samples with a "<< "above the first sample

and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

016A	Roof area E	Foam insulation
016B	Roof area E	Foam insulation
016C	Roof area E	Foam insulation
017A	Roof area E	Insulation paper
017B	Roof area E	Insulation paper
017C	Roof area E	Insulation paper
018A	Roof area E	Rubber roof membrane
018B	Roof area E	Rubber roof membrane
018C	Roof area E	Rubber roof membrane
019A	Roof area E	Foam insulation
019B	Roof area E	Foam insulation
019C	Roof area E	Foam insulation
020A	Roof area E	Insulation paper
020B	Roof area E	Insulation paper
020C	Roof area E	Insulation paper
021A	Roof area E	Roof sealant
021B	Roof area E	Roof sealant
021C	Roof area E	Roof sealant
>>>		

63

12-22-22

Eileen 12/23/22 11:30

ANALYTICAL REPORT

Lab Number:	L2313457
Client:	Ransom Consulting, LLC. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Erik Phenix
Phone:	(207) 772-2891
Project Name:	AMHI ELEVATED WALKWAYS
Project Number:	211.06085.007
Report Date:	03/21/23

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: AMHI ELEVATED WALKWAYS
Project Number: 211.06085.007

Lab Number: L2313457
Report Date: 03/21/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2313457-01	LBP-01	PAINT CHIPS	AUGUSTA, ME	03/09/23 09:15	03/15/23
L2313457-02	LBP-02	PAINT CHIPS	AUGUSTA, ME	03/09/23 09:30	03/15/23
L2313457-03	LBP-03	PAINT CHIPS	AUGUSTA, ME	03/09/23 12:00	03/15/23
L2313457-04	LBP-04	PAINT CHIPS	AUGUSTA, ME	03/09/23 13:45	03/15/23
L2313457-05	LBP-05	PAINT CHIPS	AUGUSTA, ME	03/09/23 14:30	03/15/23

Project Name:	AMHI ELEVATED WALKWAYS	**Lab Number:**	L2313457
Project Number:	211.06085.007	**Report Date:**	03/21/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly O'Neill

Title: Technical Director/Representative Date: 03/21/23

METALS

Project Name: AMHI ELEVATED WALKWAYS
Lab Number: L2313457
Project Number: 211.06085.007
Report Date: 03/21/23

SAMPLE RESULTS

Lab ID: L2313457-01
Client ID: LBP-01
Sample Location: AUGUSTA, ME
Date Collected: 03/09/23 09:15
Date Received: 03/15/23
Field Prep: Not Specified

Sample Depth:
Matrix: Paint Chips
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	66700		mg/kg	98.4	--	50	03/17/23 10:05	03/20/23 16:06	EPA 3050B	1,6010D	DMB

Project Name: AMHI ELEVATED WALKWAYS
Lab Number: L2313457
Project Number: 211.06085.007
Report Date: 03/21/23

SAMPLE RESULTS

Lab ID: L2313457-02
Client ID: LBP-02
Sample Location: AUGUSTA, ME
Date Collected: 03/09/23 09:30
Date Received: 03/15/23
Field Prep: Not Specified

Sample Depth:
Matrix: Paint Chips
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	63100		mg/kg	95.6	--	50	03/17/23 10:05	03/20/23 16:11	EPA 3050B	1,6010D	DMB

Project Name: AMHI ELEVATED WALKWAYS
Lab Number: L2313457
Project Number: 211.06085.007
Report Date: 03/21/23

SAMPLE RESULTS

Lab ID: L2313457-03
Client ID: LBP-03
Sample Location: AUGUSTA, ME
Date Collected: 03/09/23 12:00
Date Received: 03/15/23
Field Prep: Not Specified

Sample Depth:
Matrix: Paint Chips
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8780		mg/kg	4.76	--	1	03/17/23 10:05	03/17/23 22:24	EPA 3050B	1,6010D	GCL

Project Name: AMHI ELEVATED WALKWAYS
Lab Number: L2313457
Project Number: 211.06085.007
Report Date: 03/21/23

SAMPLE RESULTS

Lab ID: L2313457-04
Client ID: LBP-04
Sample Location: AUGUSTA, ME
Date Collected: 03/09/23 13:45
Date Received: 03/15/23
Field Prep: Not Specified

Sample Depth:
Matrix: Paint Chips
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	331		mg/kg	1.88	--	1	03/17/23 10:05	03/17/23 23:05	EPA 3050B	1,6010D	GCL

Project Name: AMHI ELEVATED WALKWAYS
Lab Number: L2313457
Project Number: 211.06085.007
Report Date: 03/21/23

SAMPLE RESULTS

Lab ID: L2313457-05
Client ID: LBP-05
Sample Location: AUGUSTA, ME
Date Collected: 03/09/23 14:30
Date Received: 03/15/23
Field Prep: Not Specified

Sample Depth:
Matrix: Paint Chips
Percent Solids: Results are reported on an 'AS RECEIVED' basis.

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	38.4		mg/kg	1.98	--	1	03/17/23 10:05	03/17/23 23:10	EPA 3050B	1,6010D	GCL

Project Name: AMHI ELEVATED WALKWAYS **Lab Number:** L2313457

Project Number: 211.06085.007 **Report Date:** 03/21/23

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05 Batch: WG1755682-1										
Lead, Total	ND		mg/kg	2.00	--	1	03/17/23 10:05	03/17/23 22:03	1,6010D	GCL

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: AMHI ELEVATED WALKWAYS

Project Number: 211.06085.007

Lab Number: L2313457

Report Date: 03/21/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05 Batch: WG1755682-2 SRM Lot Number: D116-540								
Lead, Total	96		-		83-117	-		

Project Name: AMHI ELEVATED WALKWAYS
Project Number: 211.06085.007

Lab Number: L2313457
Report Date: 03/21/23

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2313457-01A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2313457-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2313457-03A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2313457-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)
L2313457-05A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		PB-TI(180)

*Values in parentheses indicate holding time in days

Project Name:	AMHI ELEVATED WALKWAYS	**Lab Number:**	L2313457
Project Number:	211.06085.007	**Report Date:**	03/21/23

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	AMHI ELEVATED WALKWAYS	**Lab Number:**	L2313457
Project Number:	211.06085.007	**Report Date:**	03/21/23

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

Project Name:	AMHI ELEVATED WALKWAYS	**Lab Number:**	L2313457
Project Number:	211.06085.007	**Report Date:**	03/21/23

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Report Format: Data Usability Report

Project Name:	AMHI ELEVATED WALKWAYS	**Lab Number:**	L2313457
Project Number:	211.06085.007	**Report Date:**	03/21/23

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 3/15/23

ALPHA Job #: L2313457

ALPHA ANALYTICAL
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Client Information

Client: Ranson
Address: 400 Commercial St #404 Portland, ME
Phone: 2077728891
Fax: wks.harden@ransomenv.com
Email: ephenix@ransomenv.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: AMHC Elevated Walkways
Project Location: Augusta, ME
Project #: 211.06085.007
Project Manager: Erik Phenix
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☒ ADEx ☐ Add'l Deliverables

Billing Information

☒ Same as Client info PO #: 6139

Regulatory Requirements/Report Limits

State /Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS: total lead

SAMPLE HANDLING
Filtration
☐ Done
☐ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	total lead	Sample Specific Comments	TOTAL # BOTTLES
13457-01	LBP-01	3-9-23	0915	Paint Chip	WLH	X		
02	LBP-02		0930		WLH	X		
03	LBP-03		1300		WLH	X		
04	LBP-04		1345		WLH	X		
05	LBP-05		1430		WLH	X		

Container Type	
Preservative	

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	3/15	[signature] AAL	3/15 13:34
[signature] AAL	3/15 18:24	[signature]	3/15 1824

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 14-OCT-07)

OPTIMUM
Analytical and Consulting, LLC

85 Stiles Road, Suite 201
Salem, NH 03079
603-458-5247

Erik Phenix
Ransom Environmental Consultants, Inc.
400 Commercial Street
Portland ME 04101

Project Reference:	211.06085.007
Laboratory Batch #:	2346307
Date Samples Received:	03/14/2023
Date Samples Analyzed:	03/29/2023
Date of Final Report:	03/29/2023

SAMPLE IDENTIFICATION:

Eighteen (18) samples from AMHI Elevated Walkways, Augusta, ME project were submitted by Client on 03/14/2023

This bulk sample(s) was delivered to Optimum Analytical Consulting, LLC (Optimum) located in Salem, New Hampshire for asbestos content determination.

ANALYTICAL METHOD:

Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials). This report relates only to those samples analyzed, and may not be indicative of other similar appearing materials existing at this, or other sites. Quantification of asbestos content was determined by Calibrated Visual Estimation. Optimum is not responsible for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

In any given material, fibers with a small diameter (<0.25µm) may not be detected by the PLM method. Floor tile and other resinous bound materials may yield a false negative if the asbestos fibers are too small to be resolved using PLM. Additionally, there is currently no approved EPA analytical method to reliably confirm vermiculite as non-asbestos containing. Additional analytical methods may be required. Optimum Analytical recommends using Transmission Electron Microscopy (TEM) or other approved methods for a more definitive analysis.

Optimum will retain all samples for a minimum of three months. Further analysis or return of samples must be requested within this three month period to guarantee their availability. This report may not be reproduced except in full, without the written approval of Optimum Analytical and Consulting, LLC.

The client/laboratory shall not use the NVLAP and AIHA Logo or this test report in a way that constitutes or implies product certification, approval, or endorsement by the National Institute of Standards and Technology or the American Industrial Hygiene Association.

Detection Limit <1%, Reporting Limits: CVES = 1%, 400 Point Count = .25%, 1000 Point Count = 0.1%; Present or Absent are observations made during a qualitative analysis.

This report is considered preliminary until signed by both the Laboratory Analyst and Laboratory Director or Supervisor. If you have any questions regarding this report, please do not hesitate to contact us.

Jamie L. Noel
Laboratory Director

NVLAP Lab Code: 101433-0

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.
ADDRESS:	400 Commercial Street
CITY / STATE / ZIP:	Portland ME 04101
CONTACT:	Erik Phenix
DESCRIPTION:	PLM Analysis
LOCATION:	AMHI Elevated Walkways, Augusta, ME

ORDER #:	2346307
PROJECT #:	211.06085.007
DATE COLLECTED:	03/13/2023
COLLECTED BY:	Client
DATE RECEIVED:	03/14/2023
ANALYSIS DATE:	03/29/2023
REPORT DATE:	03/29/2023
ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2346307-001 EW-01A	Roof Area D2 Rolled Asphalt Roofing, Black	LAYER 1 100%	Chrysotile	9.68%	Cellulose Fiber Binder/Filler	25% 65.32%
2346307-002 EW-01B	Roof Area D2 Rolled Asphalt Roofing, Black Note: Positive Stop	LAYER 1 100%				
2346307-003 EW-01C	Roof Area D2 Rolled Asphalt Roofing, Black Note: Positive Stop	LAYER 1 100%				
2346307-004 EW-02A	Roof Area D2 Caulk Type 1, Beige/Gray	LAYER 1 100%	Chrysotile	3.4%	Cellulose Fiber Binder/Filler	1% 95.6%
2346307-005 EW-02B	Roof Area D2 Caulk Type 1, Beige/Gray Note: Positive Stop	LAYER 1 100%				
2346307-006 EW-02C	Roof Area D2 Caulk Type 1, Beige/Gray Note: Positive Stop	LAYER 1 100%				
2346307-007 EW-03A	Roof Area D2 Caulk Type 2, Dark/Light Gray	LAYER 1 100%	Chrysotile	1.4%	Cellulose Fiber Binder/Filler	1% 97.6%
2346307-008 EW-03B	Roof Area D2 Caulk Type 2, Dark/Light Gray Note: Positive Stop	LAYER 1 100%				
2346307-009 EW-03C	Roof Area D2 Caulk Type 2, Dark/Light Gray Note: Positive Stop	LAYER 1 100%				
2346307-010 EW-04A	Roof Area D2 Caulk Type 3, White	LAYER 1 100%	Chrysotile	4.88%	Cellulose Fiber Binder/Filler	1% 94.12%

OPTIMUM
Analytical and Consulting, LLC
85 Stiles Road, Suite 201, Salem, NH 03079 Phone: (603)-458-5247

BULK SAMPLE ANALYSIS REPORT
POLARIZED LIGHT MICROSCOPY

PLM (EPA-40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples, EPA-600/ R-93-116 Method for Determination of Asbestos in Bulk Building Materials) NVLAP Lab Code: 101433-0

CLIENT:	Ransom Environmental Consultants, Inc.
ADDRESS:	400 Commercial Street
CITY / STATE / ZIP:	Portland ME 04101
CONTACT:	Erik Phenix
DESCRIPTION:	PLM Analysis
LOCATION:	AMHI Elevated Walkways, Augusta, ME

ORDER #:	2346307
PROJECT #:	211.06085.007
DATE COLLECTED:	03/13/2023
COLLECTED BY:	Client
DATE RECEIVED:	03/14/2023
ANALYSIS DATE:	03/29/2023
REPORT DATE:	03/29/2023
ANALYST:	Jamie Noel

REPORT OF ANALYSIS

Laboratory ID Sample No.	Sample Location Description	Layer No. Layer %	Asbestos Type	(%)	Non-Asbestos Components	(%)
2346307-011 EW-04B	Roof Area D2 Caulk Type 3, White Note: Positive Stop	LAYER 1 100%				
2346307-012 EW-04C	Roof Area D2 Caulk Type 3, White Note: Positive Stop	LAYER 1 100%				
2346307-013 EW-05A	Interior Residual Mastic, Black	LAYER 1 100%	Chrysotile	3.8%	Cellulose Fiber Binder/Filler	1% 95.2%
2346307-014 EW-05B	Interior Residual Mastic, Black Note: Positive Stop	LAYER 1 100%				
2346307-015 EW-05C	Interior Residual Mastic, Black Note: Positive Stop	LAYER 1 100%				
2346307-016 EW-06A	Interior Residual Mastic, Tan	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2346307-017 EW-06B	Interior Residual Mastic, Tan	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%
2346307-018 EW-06C	Interior Residual Mastic, Tan	LAYER 1 100%	None Detected		Cellulose Fiber Binder/Filler	1% 99%

Gravimetric reduction performed on all NOBs.

Analyst Signatory: _____
Jamie Noel

NVLAP TESTING
NVLAP Lab Code: 101433-0

2346307

Client:	Ransom Consulting, LLC
Contact:	Erik Phenix/Wesley Harden
Address:	400 Commercial Street, Suite 404, Portland ME 04101
Phone:	207-772-2891 / Cell: 207-272-8673
Fax:	
Email:	ephenix@ransomenv.com wes.harden@ransomenv.com
Project:	AMHI - Elevated Walkways
Ransom Project #	211.06085.007
	Augusta, ME
Client Notes:	**Positive Stop Requested** *Please analyze prepare NOB samples via gravimetric reduction, per MEDEP requirements*
P.O. #.	6140
Date Submitted:	3/13/2023 0:00
Analysis:	Bulk PLM
TurnAroundTime:	**Standard TAT**

Instructions:
Use Column "B" for your contact info

To See an Example Click the bottom Example Tab.

Enter samples between "<<" and ">>"

Begin Samples with a "<< "above the first sample

and end with a ">>" below the last sample.
Only Enter your data on the first sheet "Sheet1"

Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.

Sample Number	Building/Area	Sample Description
<<		
EW-01A	Roof area D2	Rolled asphalt roofing
EW-01B	Roof area D2	Rolled asphalt roofing
EW-01C	Roof area D2	Rolled asphalt roofing
EW-02A	Roof area D2	Caulk type 1
EW-02B	Roof area D2	Caulk type 1
EW-02C	Roof area D2	Caulk type 1
EW-03A	Roof area D2	Caulk type 2
EW-03B	Roof area D2	Caulk type 2
EW-03C	Roof area D2	Caulk type 2
EW-04A	Roof area D2	Caulk type 3
EW-04B	Roof area D2	Caulk type 3
EW-04C	Roof area D2	Caulk type 3
EW-05A	Interior	Residual black mastic
EW-05B	Interior	Residual black mastic
EW-05C	Interior	Residual black mastic
EW-06A	Interior	Residual tan mastic
EW-06B	Interior	Residual tan mastic
EW-06C	Interior	Residual tan mastic
>>>		

5-15-23

3/14/23 11:46

ALLOWANCES

SECTION 01 21 00

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 SCOPE OF WORK

A. In general, the Contractor shall supply all labor, equipment, temporary protection, tools, and appliances necessary for the proper completion of the work as required in the Specifications, in accordance with good construction practice, and as required by the materials manufacturer, as amended.

B. The Allowances for items of Work, as set forth in the Schedule of Allowances, shall be included in the Contract Amount when changes in the Work involving said items are made in accordance with the Contract Documents.

C. Materials, methods of installation, and definitions of terms set forth under the various Allowance items in the Schedule of Allowances shall be as indicated in the Contract Documents.

D. The successful Bidder shall coordinate related work and modify or adjust adjacent work as necessary to ensure that work affected by each Allowance Item is complete and fully integrated into the project.

E. The specific quantities of Allowance Work included in the Base Bid are provided herein. This applies to items whose exact quantities are unknown but are anticipated to exist, for example, deteriorated roof decking.

F. The quantities of Allowance Work listed in this Section and the bid and contract forms **are in addition to the quantities shown on the Contract Drawings (if any).**

G. The Contractor is to provide documentation of allowance quantities to the Owner and Engineer for review prior to commencement of the allowance work.

1.3 ALLOWANCE FOR PRODUCTS AND SERVICES

Section contains instructions that relate to an Allowance to be included in the Contract sum. Owner may elect certain aspects of work that cannot be determined at this time.

A. The amount of the allowance includes:
   1. The cost of the product or services to the Contractor, less any applicable trade discount.
   2. Delivery of product to the site.
   3. Labor required under the allowance to perform the work.
   4. Applicable taxes.
   5. Applicable Contractor mark-up.

B. Refer to Part 4.1 – Schedule of Allowances for additional information regarding scope of work to be included within the Contractor's base bid scope of work that is in addition to quantities shown in the Contract Drawings.

1.4 SELECTION OF PRODUCTS UNDER ALLOWANCE

A. Owner's duties:
   1. Consult with Contractor in consideration of work, products and suppliers, or installers.
   2. Make selection designating:
      a. Product, model, finish.
      b. Accessories and attachments.
      c. Supplier and installer, as applicable.
      d. Cost to contractor, delivered to the site or installed, as applicable.
      e. Manufacturer's warranties.
      f. Define scope of additional work.
   3. Transmit decision to Contractor.
   4. Prepare Field Directive and Authorization of Cost Proposal.

B. Contractor's duties:
   1. Assist Owner in determining qualified suppliers or installers.
   2. Obtain proposals from suppliers and installers when requested by Owner.
   3. Make appropriate recommendations for consideration of Owner.
   4. Notify Owner promptly of:
      a. Any reasonable objections Contractor may have against any supplier or party under consideration for installation.
      b. Any effect on the construction schedule anticipated by selections under consideration.

1.5 CONTRACTOR RESPONSIBILITY FOR PURCHASE, DELIVERY, AND INSTALLATION

1. On notification of selection, execute purchase agreement with designated supplier and perform the designated work.
2. Arrange for and process Shop Drawings, product data, and samples, as required.
3. Make all arrangements for delivery.
4. Upon delivery, promptly inspect products for damage or defects.
5. Submit claims for transportation damage.
6. Install, work, and finish products in compliance with requirements of Contract Documents.

1.6 ADJUSTMENT OF COSTS

A. Upon determination of scope of repairs by Owner, submit cost proposal in accordance with Contract Conditions.

B. Should the net cost be more than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.

C. Should the net cost be less than the specific amount of the allowance, the Contract Sum will be adjusted accordingly by the Change Order.

D. Submit documentation for actual additional costs at the site or other expenses caused by the selection under the allowance, within 30 days after completion of execution of the work.

E. Failure to submit claims within the designated time will constitute a waiver of claims for additional costs.

F. At Contract closeout, reflect all approved authorizations of allowance funds in the final statement of accounting.

1.7 UNUSED MATERIALS

A. Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.

B. Where it is not economically feasible to return unused material for credit and when requested by the Architect, prepare unused material for the Owner's storage, and deliver to the Owner's storage space as directed. Otherwise, disposal of excess material is the Contractor's responsibility.

1.8 WARRANTY

A. Manufacturer’s Warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty document executed by authorized company official.

B. See Division 01 Section “Summary of Work” for contractor’s warranty.

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect products covered by an allowance promptly upon delivery for damage or defects.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related construction activities.

PART 4 - SCHEDULES

4.1 SCHEDULE OF ALLOWANCES

A. **Allowance No. 01:** Include $2,500.00 for the removal and replacement of 30 linear feet of deteriorated wood trim. See Section 06 10 00 – Rough Carpentry and Section 09 91 23 – Painting for additional requirements and information.

END OF SECTION

i:\840090\02 design\specs\840090 01 21 00 allowances.docx

SHOP DRAWINGS AND SUBMITTALS

SECTION 01 33 00

PART 1 – GENERAL

1.1 IN GENERAL

This section contains instructions for submittals and shop drawings required at various stages of the project. The following submittals will be required of all construction materials and systems:

A. List of materials stating manufacturer's name and address, as well as material trade name and manufacturer's designation.
B. Shop Drawings.
C. Samples (as specified in the Technical Sections).
D. Manufacturer’s Catalog Data.
E. Material Data Sheets (MDS).
F. Safety Data Sheets (SDS).
G. Manufacturer's Installation Instructions.
H. Construction Photographs.
I. Contractor's Schedule as it affects the contracted completion date and sequence of construction.

1.2 SUBMITTALS

The following submittals are required during the various phases of the Contract. Each submittal item shall have the technical section and paragraph number clearly indicated. All submittal items without the proper designations will be returned and will not be reviewed.

A. Contract Submissions: The Contractor shall provide electronic copies of the following submittals to the Architect/Engineer:
   1. Proposed Construction Schedule for completion of the Work specified in this project manual.
   2. List of Manufacturers for each product proposed. Include manufacturer's literature with system designations and a sample of the product guarantee.
   3. Shop Drawings.
   4. Cataloging of the stone pieces to be removed.
   5. Scaffolding plans.
   6. Complete Materials List.
   7. Manufacturer's Technical Literature as selected.
   8. Manufacturer's Instructions.
   9. Catalog Data ("SPEC-DATA" Sheets).
   10. Material Safety Data Sheets (MDS).
   11. Safety Data Sheets (SDS).
   12. Samples of materials of construction.

13. Certificates as approved Applicator by Manufacturer.
14. List of proposed storage facilities and their location(s).
15. Proposed location(s) of dumpsters.
16. Schedule of Values.
17. Emergency Response Contacts.
18. Disposal Plan and Methods of removal of materials.
19. Temporary protection procedures.
20. Staging/set-up procedures.

B. Weekly Submissions: At the end of each weekly period during construction, the Contractor shall submit an updated construction schedule which will show the status of the work with respect to the schedule, anticipated completion date, and a list of all completed work.

C. Resubmittals: All resubmittals required from the Contractor shall be submitted within five (5) working days of return of original submittals.

D. Permits: Prior to start of construction, the Contractor is to provide the Owner with copies of all building permits, licenses, and other documents required by the General Conditions.

E. Close-Out Submission: See Section 01 70 00 – Project Closeout for required Submittals.

F. OSHA Requirements: All employees to be employed at the worksite must have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration at the time the employee begins work.

1.3 SHOP DRAWINGS

A. Original Submittal: An electronic copy of all shop drawings shall be submitted for approval within five (5) days of Award of Contract.

B. Shop drawings for all aspects of this project shall be submitted. The shop drawings shall include existing conditions, all applicable dimensions, new products to be installed, locations, etc.

C. Resubmittal: When a resubmittal is required, the original transparency so indicating will be returned to the Contractor. After revision of the original, one (1) new reproducible and one (1) print shall be submitted for review.

D. Review: The above procedure shall be repeated until approval is obtained. The original reproducible copy of the reviewed shop drawing will be returned to the Contractor, at which time the Contractor shall make prints in sufficient numbers for the Engineer (four copies), as well as sufficient copies for his use.

E. Shop drawings of an engineering nature shall be sent directly to the Engineer for review, with a copy of the transmittal and one (1) print sent to the Owner.

F. Transmittal: All reproducibles shall be transmitted rolled in mailing tubes and not folded.

G. Changes on the submitted shop drawings that deviate from the Design Drawings must be brought to the Owners and Designers attention in writing prior to review. Changes must be clearly visible on the shop drawings in the form of written notation, ballooning or highlighting the intended change. A written description for the proposed change must also be included and submitted on company letterhead. Changes to drawings and details not submitted in accordance with these requirements will not be recognized as an approved deviation from the Design of Record. Construction repairs, renovations or replacements required as a result of shop drawing and submittal deviations that are not documented in accordance with these requirements are subject to removal and/or replacement by the Contractor, at the sole cost of the Contractor.

1.4 RECORD DRAWINGS

A. The Contractor shall provide a copy of all Contract Drawings showing as-built conditions and any Contract changes to the Owner at the completion of the project.

1.5 SAMPLES

A. Original Submittal: Four (4) samples, unless otherwise specified, of each item for which samples are required shall be furnished for approval. Approval shall be obtained prior to delivery of the materials to the project site. Such samples shall be representative of the actual material proposed for use in the project and of sufficient size to demonstrate design, color, texture and finish when these attributes will be exposed to view in the finished work.

B. Resubmittal: All rejected samples will be returned upon request, and any or all resubmittals shall consist of four (4) new samples.

C. Review: Upon approval by the Engineer, one sample so noted will be returned and the remainder will be retained by the Engineer until completion of the work. When requested, all approved samples will be returned for installation, provided their identity is maintained in an approved manner until final acceptance of the project.

D. Important specific samples are specified in Technical Sections of the Specifications. The Contractor is cautioned to quickly provide specified samples.

E. Each submittal item shall have the technical section and paragraph number clearly indicated. All submittal items without the proper designations will be returned and will not be reviewed.

1.6 CATALOG DATA

A. Submittals: Four (4) copies of catalog data are required for the original submittal and each subsequent resubmittal along with shop drawings. Following review, one (1) copy will be returned with its status noted. If approved, such additional copies may be requested by the Engineer and shall be furnished without additional cost.

B. Data: Each submittal shall have all pertinent data contained therein that is applicable to the item submitted for review, adequately and permanently designated.

1.7 CERTIFICATES AND GUARANTEES

A. Certificates of performance, treatment and conformance to specified standards (four [4] printed copies) shall be submitted prior to initiating work on the project.

B. Copies of all guarantees (four [4] printed copies) required on the project shall be submitted for review and acceptance as to form.

1.8 IDENTIFICATION

A. Data: All submittals for review shall have the following identification data, as applicable, contained thereon or permanently adhered thereto:
1. Project name and location.
2. Engineer's name.
3. Subcontractor's, Vendor's and/or Manufacturer's name and address.
4. Product Identification. (It is important that the specific product intended for use is indicated on manufacturer's literature).
5. Shop drawing title, drawing number, revision number and date of drawing and revision.
6. Applicable Contract Drawings and Specification Section numbers.

B. Catalog Data: Each separate catalog, brochure or single page submitted shall have the identification required hereinbefore.
1. Catalogs or brochures submitted containing multiple items for approval need the identification on the exterior and on each specific item clearly circled, flagged or otherwise identified.
2. In the event that one (1) or more of the multiple items are not approved in any submittal, the additional copies required will not be requested until all items are approved.
3. Do not commence work until every submittal is accepted.

C. Space: Vacant space approximately two- and one-half inches wide (2½” W) by four inches high (4” H) shall be provided adjacent to the identification data to receive the Engineer's status stamp.

1.9 CONTRACTOR'S RESPONSIBILITY

A. Representation: By his submittal of any shop drawing or catalog data, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, or will do so, and that he has checked and coordinated each item with other applicable approved shop drawings and the Contract requirements. Certification shall appear on each shop drawing stating that the Contractor has made this check. All drawings without this certification will be returned without examination.

B. Deviations: Changes on the submitted shop drawings that deviate from the Design Drawings must be brought to the Owners and Designers attention in writing prior to review. Changes must be clearly visible on the shop drawings in the form of written notation, ballooning or highlighting the intended change. A written description for the proposed change must also be included and submitted on company letterhead. Changes to drawings and details not submitted in accordance with these requirements will not be recognized as an approved deviation from the Design of Record. Construction repairs, renovations, or replacements required as a result of shop drawing and submittal deviations that are not documented in accordance with these requirements are subject to removal and/or replacement by the Contractor, at the sole cost of the Contractor.

C. Prohibitions: No portion of the work requiring a shop drawing, sample or catalog data shall be started, nor shall any materials be fabricated or installed, prior to the approval of such item.

D. Review: Project work, materials, fabrication and installation shall conform with approved shop drawings, applicable samples and catalog data.

E. Failure to submit shop drawings in ample time for review, approval and resubmission (if required) prior to the commencement of construction shall not affect the completion date of the Contract.

F. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Designer's receipt of submittal.
   1. Initial Review: Allow **ten** (**10)** workdays for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Engineer will advise the Contractor when a submittal being processed must be delayed for coordination.
   2. Concurrent Review: Where concurrent review of submittals by the Engineer's consultants, or other parties is required, allow **ten** (**10)** workdays for initial review of each submittal.
   3. Direct Transmittal to Consultant: Where the Contract Documents indicate that submittals may be transmitted directly to Engineer's consultants, provide duplicate copy of the transmittal to the Engineer. The submittal will be returned to Engineer before being returned to Contractor.

4. If intermediate submittal is necessary, process it in same manner as initial submittal.
5. Allow **ten (10)** workdays for processing each re-submittal.
6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
7. The engineer will schedule one working day for submittal review for this project, typically on a Wednesday of each week. Unless a time critical submittal requires immediate attention, all individual, or partial submittal packages will be retained, and not reviewed until multiple items are provided until said designated day. The contractor shall take this into account when scheduling and coordinating submittal and construction activities to prevent delays in their work activities.
8. Multiple individual submittal reviews or incomplete packages are subject to potential back charges to the contractor due to unreasonable review times which may be required. The contractor is to provide complete submittal packages for technical section.

1.10 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Procedures: Comply with procedures required by the Owner.

B. Time Frame: Extend schedule from date established for commencement of the Work or the Notice to proceed to date of Final Completion.
1. Contractor shall indicate specific dates which may require the Designer’s attention to proceed on a critical path.

C. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than sixty (60) days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

D. Submittal Review Time: Include review and resubmittal times and coordinate with Contractor's Construction Schedule with Submittals Schedule.

E. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner, OPM, Designer’s and administrative procedures necessary for certification of Substantial Completion.

F. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, interim milestones**,** Substantial Completion, and Final Completion.

G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

1.11 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Within twenty (20) days of written notice to proceed or contract award, submit preliminary horizontal bar-chart-type construction schedule prior to the Preconstruction conference.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for the duration of construction.

1.12 CONTRACTOR'S CONSTRUCTION SCHEDULE, GANTT CHART

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within twenty (20) days of the Preconstruction meeting. Base schedule on the Preliminary Construction Schedule and any updates and feedback received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
   1. For construction activities that require three months (3 mo.) or longer to complete, indicate an estimated completion percentage in twenty percent (20%) increments within time bar.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 01 33 00 Shop Drawings & Submittals.docx

THIS PAGE INTENTIONALLY LEFT BLANK.

TEMPORARY FACILITIES

SECTION 01 50 00

PART 1 – GENERAL

1.1 IN GENERAL

This Section contains instructions and requirements for the provision and utilization of temporary facilities to protect the Owner's property, the site and construction materials; and daily maintenance and cleanup of the site during the project.

1.2 STORAGE FACILITIES

A. See Section 01 63 00 – Weather Protection and Materials Storage

1.3 CONTRACTOR'S USE OF EXISTING FACILITIES

A. The Contractor shall provide all protection, guards and barriers necessary to segregate the work area and adjacent or below areas from pedestrian and vehicular traffic. Protect existing building, building finishes, landscaping and paved areas from damage.

B. Limit use of the premises to the work indicated, so as to allow for the Owner's uninterrupted occupancy and use. Confine operations to the areas indicated under the Contract. Conformance to the regulations set forth by the Owner, regarding use of existing facilities is mandatory.

C. Take precautions necessary and provide equipment, materials and labor to adequately protect previous construction, the building, its contents and occupants, and surrounding landscaped areas from damage due to construction as well as from inclement weather during construction.

D. Clean interior and exterior areas affected by the construction on a daily basis. Do not allow construction debris, waste materials, tools, excess packaging materials or other construction related materials to accumulate on the roof, in the facility, or at the exterior grounds and pavements.

E. Coordinate with the Owner for additional interior cleaning and protections required for the work.

F. See Section 01 63 00 – Weather Protection and Materials Storage for product storage facilities and requirements.

1.4 SANITARY FACILITIES

A. The Contractor will furnish portable toilets. Temporary toilets shall be kept in a sanitary condition at all times and properly supplied at appropriate locations by the

Owner until completion of the project. Use of the sanitary facilities within the building is not permitted.

1.5 BARRIERS

A. The Contractor shall install temporary fencing, warning lines, barriers and the like, as required, to segregate the construction areas from existing facilities, occupants and the public.

B. Silt mesh shall be placed in roof drains during masonry cutting, pointing, and rebuilding operations.

B. All Contractors are required to conform to OSHA requirements and all local, state and federal safety regulations.

C. The Contractor shall provide guard lights on all barriers and all lighting necessary to prevent vandalism of work and storage areas. The Owner is not responsible for Contractor's losses due to damage or theft by vandals.

1.6 CRANES AND HOISTING EQUIPMENT

A. All hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated and maintained in a safe condition by the Contractor. All costs for hoisting operating services shall be borne by the Contractor including street permits and police details.

1.7 ACCESS

A. Provide ladders, scaffolding, staging and hoists as required to access the project area(s) in accordance with OSHA and D.L.W.D. guidelines. Should damage to the building and/or grounds occur, restore damaged areas to the original condition and clean up debris.

B. Where scaffolding and staging is required for the proper installation of the work it shall be erected to provide a minimal impact on the site.

C. All barriers and warning lines shall be installed at the base of any scaffolding or staging and around ground areas below elevated staging.

D. Provide walk through overhead protection where work areas are above doors, walkways, or sidewalks in accordance with OSHA.

E. All scaffolding and staging shall be erected in conformance with all applicable state, federal and local codes. The Contractor shall follow all applicable local, state, and federal requirements regarding the construction of scaffolding and staging and the protection of public safety. Specific reference shall be made to the OSHA Construction Safety Regulations and all requirements of the State of Maine Department of Labor.

1.8 SETUP AREAS AND USE OF THE SITE

A. The Owner shall determine the locations of the Contractor's designated setup areas. The Contractor may not utilize any other locations unless permission is obtained from the Owner.

B. The Contractor shall permit the Owner and Engineer access to the staging, work areas and test areas at any time, as required to perform inspections and review mock-ups. The Contractor shall not move or remove staging or access to the work areas until instructed by the Owner and Engineer to do so. Any staging or access to the work areas removed by the Contractor without approval of Owner and Engineer, shall be reinstalled and setup at the request of the Owner and/or Engineer at no additional cost to the Owner.

C. Other specific requirements of the Owner will be addressed and outlined at the Pre-Construction meeting to be held prior to the start of work.

D. Take precautions necessary and provide equipment, materials and labor to adequately protect previous construction, the building, its contents and occupants, and surrounding landscaped areas from damage due to construction as well as from inclement weather during construction.

1.9 UTILITIES

A. The building is currently abandoned and vacant. Most utilities have been shut-off, removed, capped or are no longer in service. The Contractor should anticipate providing their own utilities assuming what is there is not working.

B. The Owner, through exterior electrical outlets, if operable, will provide electrical service to the Contractor free of charge. Use shall be limited to construction hours. The Contractor and/or subcontractors shall provide their own electrical generator for welding equipment, HEPA vacuum, and grinding equipment. The Owner reserves the right to charge the Contractor(s) for excessive electrical service usage (i.e., wasteful usage). Should charges be considered, the Owner will notify the Contractor in writing of his intent forty-eight hours (48 hrs.) in advance.

C. Owner will provide water for construction purposes free of charge through exterior water spigots, if operable. The Owner reserves the right to charge the Contractor for excessive or wasteful use. Should charges be considered, the Owner will notify the Contractor in writing of his intent forty-eight hours (48 hrs.) in advance. The Contractor shall provide drinking water.

D. Contractor shall provide all other utilities required by the work.

E. Ensure proper and safe operation and maintenance of utility systems within the construction limits, whether these are supplied by the Owner's distribution system or otherwise, until the Owner accepts the work. Maintain and operate appurtenances within the construction area that serve the distribution system, subject to periodic inspection by the Owner's operating personnel. Inspection by any representative or

personnel of the Owner shall not relieve the Contractor of his responsibilities in connection with operation and maintenance of these facilities and equipment.

1.10 TEMPORARY PROTECTION

A. Provide suitable Owner-approved temporary protection to prevent the entrance of debris, obstructions, and water infiltration into the building. Provide warning signs to reroute personnel around areas of dangerous work. Place warning barriers at roof perimeters and at deck openings. Clearly label temporary covers over deck openings. Do not permit openings to remain unprotected overnight. Use special care to avoid damaging existing roofing and flashing when working on the roof of the building.

B. Avoid traffic on completed roof areas. Coordinate work to prevent this situation. Should temporary access be required, provide temporary substrate protection for trafficked areas.

C. Protect materials scheduled for reuse from damage by placing them in labeled containers or wrappings stored in a weathertight trailer.

D. Provide temporary protection such as plywood and tarps for streets, drives, curbs, sidewalks, landscaping and existing exterior improvements during all phases of the project.

1.11 DEBRIS REMOVAL

A. The Owner shall designate crane and refuse container locations. This area shall be sectioned off with proper warning lines.

B. Removed materials shall not be thrown freely from the roof but shall be discarded in an enclosed chute, in order to reduce the spread of dust and other debris.

C. Supply adequate covered receptacles for waste, debris and rubbish. One (1) receptacle will be allowed on site at a time, and must be immediately removed from the site when full. Clean the project area daily and prior to moving the receptacle to another location on the site. Locations shall be as permitted by the Owner. Disposal shall be off-site in a legal dump authorized to accept construction demolition solid wastes. The Contractor shall be responsible for receptacle-related damage to site grounds.

D. Receptacles shall be removed from the site daily. Should, for any reason, receptacle removal is not possible on any given day, the Contractor shall move the receptacle a minimum of fifty feet (50') from the building or as required by local fire officials.

1.12 ACCESS TO THE WORK

A. The Contractor is responsible for providing access to all roof areas included within the project's scope of work. Contractor is required to maintain, clean and keep clear all exterior pathways utilized to access roof. Tools, materials or equipment will not be permitted within the building unless it is specifically required to complete the work.

Failure to comply with Owner's requirements will result in the Contractor providing their own access to the roof at no additional cost to the Owner. A Contractor's staging and/ or laydown area will be designated by the Owner adjacent to the building.

1.13 ACCESS TO THE INTERIOR

A. The Contractor must secure and coordinate access with the Owner prior to entering building or performing work at the building interior. All access to the roof shall be provided by the Contractor from the exterior of the facility. All roof access locations/methods shall be located at an Owner approved location for this purpose, and shall be made secure at the end of each workday to prevent un-authorized access onto the unit. As an alternative, an extension ladder erected and removed daily will be permitted.

B. The Owner will designate which portions of the site the Contractor may utilize and access for the performances of the work. The Contractor must submit a site plan indicating his locations of set up, material storage, and parking. Parking at other locations throughout the lot, without prior authorization, is subject to vehicle removal at no cost to the Owner.

C. All hoisting of equipment and materials must be done on the exterior of the building. No tools will be permitted inside the building unless they are specific to perform the required work.

D. The Contractors will be required to provide a clean change of clothes, and shall be responsible for any damages or stained interior components should access to the interior be required.

E. The Contractor will be required to provide access to the designer and manufacturer's representatives at no additional cost, to review the work operations, and to perform final observations.

1.14 VEHICLES

A. Contractor to park vehicles in the designated storage/laydown location or at locations designated by the Owner.

1.15 TRAFFIC CONTROL

A. The Contractor shall arrange and pay for all police details required to control traffic affected by any part of the work, if required.

1.16 CLEANUP

A. Site cleanup shall be complete and to the satisfaction of the Owner. Site cleanup shall be performed daily.

B. All building (interior and exterior), landscape and parking areas shall be cleaned of all trash, debris, and dirt caused by or associated with the work.

C. All landscape areas damaged or littered due to the work shall be raked clean and reseeded if required.

D. All paved areas shall be swept clean of debris daily. All paved areas shall be washed clean at the completion of work.

E. All areas stained, dirtied, discolored or otherwise damaged due to the work shall be cleaned, restored or replaced as required.

1.17 SIGNS

A. If requested by Owner, the Contractor shall conspicuously post a project sign at ground level. This sign shall designate the project entrance. Only one (1) entry may be used by the Contractor. The entry location shall be as directed by the Owner.

B. The Contractor shall install adequate signage to inform facility users of any changes to existing conditions or construction areas.

C. The Contractor shall also construct a project sign must be at least four feet (4') tall by eight feet (8') wide or as designated by the Owner. Contractor to provide small scale graphic illustration of the sign for review and approval prior to final construction.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 01 50 00 Temporary Facilities.docx

WEATHER PROTECTION AND MATERIALS STORAGE

SECTION 01 63 00

PART 1 – GENERAL

1.1 GENERAL

A. The Contractor shall take the necessary precautions and provide all equipment, materials and labor necessary to adequately protect the Contract Area, previous construction, the building and its contents and occupants, and surrounding landscape areas from damage due to the construction or inclement weather during construction.

B. No storage on or within the building will be allowed without prior authorization from the Owner and Engineer.

C. The Contractor shall provide all access to the work. Staging and other access shall be provided until new work has been accepted by the Owner.

D. Refer to the “Roofing Superintendent’s Workbook” by the National Roofing Contractors Association and the Brick Industry Association (BIA) manual for additional information.

1.2 WEATHER PROTECTION

A. Weather protection shall mean the temporary protection of that work adversely affected by moisture, wind, heat and cold by covering, patching, sealing, enclosing, ventilating, cooling and/or heating. This protection shall be provided for all work areas, the building and its contents, trafficked adjacent areas, and all construction materials and accessories.

B. The Contractor shall be responsible for protecting the Work form moisture in order to prevent the growth of fungus, bacteria, and other biological contaminates. Remove and replace work that has been wet for twenty-four hours (24 hrs.) or more, or that shows evidence of biological growth due to the presence of moisture.

C. The cost of heat, fuel and power necessary for proper weather protection shall be the responsibility of the Contractor.

D. Installation of weather protection shall comply with all safety regulations, including provisions for adequate ventilation and fire protection devices.

1.3 FIRE PROTECTION

A. The Contractor shall provide all necessary temporary fire protection for the building, building contents and materials during construction. The Contractor shall provide incombustible protective blankets where necessary to protect surfaces or building contents from damage.

B. At no time shall any combustibles be stored inside the building. All adhesives, caulks and cleaning solvents shall be stored well away from the building in a method approved by local fire officials.

C. Should any cutting, burning or welding be necessary, the Contractor shall provide a fire watch. This watch will continue during the operations and for four hours minimum after completion.

D. At no time shall open flames be present around adhesives, caulks or cleaning solvents as they will readily ignite. Rags soaked with cleaning solvents shall not be discarded in the dumpsters but shall be stored in a metal receptacle and removed from the site daily.

E. The Contractor shall be required to comply with all local fire codes and shall obtain all permits necessary from the local fire department and provide one (1) copy to the Engineer.

F. The Contractor shall provide recently tested, fully charged fire extinguishers around the storage area, rubbish receptacle, and two (2) within one hundred feet (100') of the work area or as specifically required by local fire officials.

G. Provide necessary temporary fire protection for the buildings, their contents and materials during construction. Do not store combustibles inside the buildings or on the roofs. Store adhesives, caulks and cleaning solvents away from the building using a method approved by local fire officials. Should cutting, burning or welding be necessary, provide a fire watch during operations and for four hours (4 hrs.) minimum after completion of the operations.

H. Comply with local fire codes and obtain permits necessary from the local fire department. Provide a copy to the Owner. Provide recently tested, fully charged fire extinguishers around the storage area, rubbish receptacle and two (2) fire extinguishers on the roof within fifty feet (50') of the Work.

1.4 MATERIALS STORAGE

A. In the event that materials are exposed to the elements, they shall be marked as unacceptable and immediately removed from the site. They may not be used.

B. On-site storage of materials is the responsibility of the Contractor. The Owner is not responsible for Contractor's losses due to damage or vandalism.

1.5 ROOF PROTECTION

A. The existing roof systems shall be totally protected in the work areas by installation of a layer of rigid insulation followed by a layer of plywood. Plywood shall be adequately ballasted to prevent wind blow off of the plywood and roof system.

B. All existing roof areas, trafficked during construction, shall be protected as noted above.

C. The Contractor and all Sub-Contractors are responsible for the prompt repair of any damage to the existing roof systems resulting from the work at the project.

1.6 NOTIFICATION

A. If, during the Contract period, the Contractor is notified of insufficient weather protection, he shall, immediately, properly restore the weather protection and repair or replace any damaged unprotected materials and systems. Should the Contractor not effect immediate repair or replacement when notified, the Owner shall have the proper protection installed at the Contractor's expense.

1.7 MANUFACTURER'S INFORMATION

A. The manufacturers of all the materials shall supply written instructions concerning the storage and handling of all supplied materials, including sealants, and accessories. The manufacturer shall also provide information concerning storage and handling of flammable or volatile materials.

B. Storage facilities shall be acceptable to the manufacturer and conform to his written requirements concerning temperature, humidity, ventilation and the like.

C. The "shelf-life" of materials shall be provided with the date of manufacture of all perishables, including volatiles, caulkings, and mastics.

D. The Contractor shall supply a copy of all manufacturer's written instructions to the Owner and the Engineer as outlined in Section 01 33 00 - Shop Drawings and Submittals. The Contractor shall comply with all storage and handling requests and instructions of the manufacturer.

1.8 VOLATILE MATERIALS

A. The Contractor is reminded that the adhesives, solvents, bitumens, etc., are highly volatile and flammable materials. Do not store these materials, contaminated tools, applicators or rags, on or within the buildings. No overnight storage on the roofs will be allowed. Do not transport materials through the building. Take precautions and closely follow the Specification requirements for fire protection on site during construction.

B. Locate and use flame-heated equipment so as not to endanger the structure, other materials on site, or adjacent property. Do not place flame-heated equipment on the

roof. Locate and use flame-heated equipment in specific areas approved by the Owner. Do not relocate flame-heated equipment without prior approval from the Owner.

C. The use of flame-heated equipment or torches on the roof is prohibited unless specifically approved in writing by the Owner.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 01 63 00 Weather Protection and Materials Storage.docx

PROJECT CLOSEOUT

SECTION 01 70 00

PART 1 – GENERAL

1.1 GENERAL

A. When the project is established to be substantially complete, preparations will be made to close out the project prior to Owner's final acceptance. The preparations are as follows:

1.2 SUBSTANTIAL COMPLETION

A. Substantial completion for this project is defined as the date when the Owner and Owner's Representative mutually agree and certify that all project related work has been properly installed and completed in a manner conforming to the Contract Documents. Work specified within the Contract Documents which has not been performed or has been performed in a manner which does not conform with the Contract Documents shall be deemed as not achieving substantial completion.

1.3 PUNCH LIST

A. After the project is determined to be substantially complete the Engineer and a representative of the Owner will tour the project and compile a "punch list" of minor unsatisfactory conditions. A copy of this list will be sent to the Contractor and will be used by the Contractor. He shall then correct the unsatisfactory conditions. When all items on the list have been corrected, the Contractor shall notify the Engineer and the Owner representative, and a reinspection will be made by that representative.

B. Minor "punch list" items shall be only those items, which have been installed and are functional, requiring cosmetic repair or cleaning which does not affect the integrity of the system. Any work specified within the Contract Documents, which has not been performed or has been performed in a non-conforming manner to the Contract Documents shall not be defined as minor "punch-list" items, and must be performed or corrected as appropriate in order to achieve substantial completion.

C. Should additional re-inspections be required due to punch list items which are reported to be complete but are not completed or improperly completed, the costs of these re-inspections will be assessed to the General Contractor.

1.4 PUNCH LIST RE-INSPECTIONS

A. After providing written notification to Owner and the Engineer that the punch list work has been completed, the Owner and the Engineer will perform one final inspection.

B. Should additional re-inspections be required due to punch list items which are not completed or improperly completed, the costs of these re-inspections will be assessed to the Contractor as liquidated damages.

1.5 MANUFACTURER'S INSPECTION

A. After the re-inspection by the Owner's representative, the Materials Manufacturer's representative will be required to tour the site. The representative shall determine if the materials have been installed as required by the Manufacturer.

B. Any items the representative determines were not so installed shall be reinstalled so as to comply with the Manufacturer's intended use. The Manufacturer shall forward a copy of the list of all items determined to be not installed as intended by the Manufacturer to the Engineer.

C. Costs associated with all manufacturer inspections shall be the responsibility of the General Contractor.

1.6 GUARANTEES

A. When both the Owner's representative and the Manufacturer's representative agree that the Contractor has performed according to the Specifications and has installed the materials to the satisfaction of the Manufacturer, the Contractor shall petition the Manufacturer for the materials guarantee. He shall forward this guarantee to the Owner and provide a copy for the Engineer.

B. The Contractor will be required to provide lien releases for their work. The Contractor shall then forward his guarantee covering the construction to the Owner and provide one (1) copy for the Engineer.

1.7 RETAINAGE RELEASE

A. When all guarantees, certifications, close out documents and requested lien releases have been received, the Owner shall release to the Contractor the project retainage and any other monies retained by the Owner to guarantee project completion. Except with the Owner's prior approval, payments to the Contractor shall be subject to retention of ten percent (10%).

1.8 DOCUMENTS REQUIRED FROM THE CONTRACTOR PRIOR TO FINAL PAYMENT

A. Documents will be submitted to the Engineer in triplicate, each set-in individual binders for submission to the Owner. These items include, but are not limited to, the following:
   1. All applicable manufacturer's warranties.
   2. Contractor and Sub-Contractor's two-year (2-yr.) guarantee.
   3. Manufacturer's roof system warranties.
   4. Executed Punch List Inspection letter(s).
   5. Consent of Surety Company to Final Payment (AIA Form G707).

6. Lien Releases from Contractor, subcontractor and suppliers (AIA Forms G706, G706A).
7. Contractor's Affidavit of Payment of Debts and Claims.
8. Final Application and Certificate for Payment.
9. Completed waste shipment records and dumping manifests.
10. As Built Drawings.
11. Other documents which may be specifically required by the Owner or the Engineer.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 01 70 00 Project Closeout.docx

THIS PAGE INTENTIONALLY LEFT BLANK.

SELECTIVE BUILDING DEMOLITION

SECTION 02 41 19

PART 1 - GENERAL

1.1 IN GENERAL

A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to Division 1 for additional information.

1.2 RELATED DOCUMENTS AND SECTIONS

A. Masonry – Section 04 20 00
B. Structural Steel – Section 05 01 20
C. Cold Formed Metal Framing – Section 05 40 00
D. Rough Carpentry - 06 10 00
E. Elastomeric Roofing and Flashing – Section 07 53 00

1.3 SUMMARY OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this section, as required in the specifications and in accordance with good construction practice. The work under this Section includes, but is not limited to, the following:

A. Demolition and removal of existing overhead pedestrian walkway walls and roof systems as indicated in the Contract Documents. Salvage brick masonry units for re-use. Coordinate with Section 04 50 00 – Masonry.

B. Remove and dispose of existing masonry wall sealants and embedded masonry wall flashings.

C. Remove and dispose of existing window units in pedestrian walkway walls at locations and as indicated in the Contract Documents.

D. Remove and dispose of existing roof materials, wood blocking, and associated components at areas indicated in the Contract Documents.

E. Remove and dispose of existing mass masonry columns at locations and as indicated in the Contract Documents. Salvage brick masonry units for re-use. Coordinate with Section 04 50 00 – Masonry.

F. Remove and dispose of existing steel channel at locations and as indicated in the Contract Documents.

G. Refer to Part 3.4 for specific items.

1.4 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.5 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.

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

C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
   1. Comply with submittal requirements in Division 01 Section "Construction Waste Management "

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications (where applicable): Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site with Architect/Engineer and Owner.

1.7 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: It is not expected that hazardous materials, other than what is noted, will be encountered in the Work.
   1. If additional materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

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

PART 2 - PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, adjacent rooms/interior spaces and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Section 01 50 00 - Temporary Facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.3 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Do not leave the interior of the building exposed at anytime. The building interior at envelope removal locations shall be completely protected during demolition operations.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting

operations. Maintain portable fire-suppression devices during flame-cutting operations.

5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
6. Dispose of demolished items and materials promptly.
7. **Items to be removed and disposed of include, but may not be limited to, the following:**
   a. Existing wall plaster and lathe interior finishes.
   b. Existing windows frames, sashes, glass, flashings, fasteners and associated sealants from the window openings once new windows are installed.
   c. Existing roof system including, but not limited to, rolled asphalt or single-ply roof membrane, fascia, strip flashing and wood blocking.
   d. Existing roof to wall sheet metal flashings, wood blocking, base flashings. Cut insulation back as required to install new wood blocking.
   e. Existing exterior brick masonry veneer including header bricks, wall ties and helical ties. Sawcut to provide a straight line at the limit of scope.
   f. Remove sections of Concrete Masonry Unit back-up walls where required.
   g. Existing sheet metal embedded masonry wall flashings.
   h. Existing masonry wall sealants.
   i. Existing lally columns designated for removal. Cut designated lally columns at bollard height.
   j. Existing doors designated for removal.
   k. Existing lights, mechanical, electrical, and plumbing utilities designated for removal.
   l. Existing railings.
8. **Items to be carefully removed and salvaged include, but may not be limited to, the following:**
   a. Existing masonry walls at overhead walkway locations designated to be removed, 2-wythes brick masonry.

B. Removed and Salvaged Items including, but not limited to signs, equipment, boxes, etc.
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

5. Items to be removed and reinstalled include the following:

a. Existing exterior mounted signs.
b. Existing interior mounted lighting.
c. Existing interior mounted piping.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Owner, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.5 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

\\nhfile\bt-doc\840090\02 design\specs\840090 02 41 19 selective building demolition.doc

MASONRY

SECTION 04 50 00

PART 1 - GENERAL

1.1 IN GENERAL

A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to all Sections within Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 41 19 – Selective Demolition
B. Section 05 01 20 – Structural Steel
C. Section 05 40 00 – Cold-Formed Metal Framing
D. Section 06 10 00 – Rough Carpentry
E. Section 07 62 00 – Sheet Metal Flashing and Trim

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, equipment, staging, temporary protection, tools and appliances necessary for the proper completion of the work in this section, as required in the specification and in accordance with good construction practice. All concrete repairs shall be completed as part of the scope of work. The work under this Section includes, but is not limited to, the following:

A. Coordinate with Section 02 41 19 – Selective Demolition. Carefully remove existing brick masonry as required to install new throughwall at locations as indicated in the Contract Drawings. Install new through wall flashings as indicated in the Contract Documents.
   1. Existing brick masonry units that are removed for new throughwall flashing and found to be in good/sound condition are to be salvaged for reuse.

B. Infill openings with salvaged brick masonry cavity wall at metal framing backup wall infill at locations as indicated on the Contract Drawings. Coordinate with Section 02 41 19 – Selective Demolition.

C. Infill openings with salvaged brick masonry veneer at CMU wall infill at locations and as indicated on the Contract Drawings. Coordinate with Section 02 41 19 – Selective Demolition.

D. Remove and replace deteriorated sealants at locations and as indicated in the Contract Drawings.
E. Clean all surfaces at work locations and adjacent to where masonry renovations were performed.

1.4 JOB CONDITIONS

A. The Contractor shall supply, install and maintain all shoring, supports, barriers, protection, temporary heat, warning lines, lighting and personnel required to support the structure, fixtures and facilities affected by his work and segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the building, occupants and the surrounding landscaped and paved areas.

B. The Contractor shall use dust collection vacuums (HEPA vacuums) to limit airborne dust associated with grinding the existing mortar joints. All costs associated with additional power generators shall be the Contractor's responsibility.

C. Coordinate the location of the new throughwall flashing with the Contract Documents for future installation of new roofing system.

D. Materials which have a temperature other than the application temperatures of the manufacturer shall not be applied.

E. Cold Weather Application - (Applies only to rebuilding, no repointing shall be completed when air temperature is less than forty degrees Fahrenheit [40°F]). The Contractor shall comply with the following cold weather masonry construction requirements at no change in contract price and provide all necessary heat:

1. The cold weather construction and protection requirements shall be closely followed.
2. Construction materials shall be received, stored, and protected in ways that prevent water from entering the materials.
3. If climatic conditions warrant, temperatures of construction materials should be measured. Frozen sand and wet masonry units must be thawed. Masonry units below twenty degrees Fahrenheit (20°F) must be heated above twenty degrees Fahrenheit (20°F) without overheating. Sufficient mortar ingredients should be heated to produce mortar temperatures between forty and one hundred twenty degrees Fahrenheit (40°F-120°F). Every effort should be made to produce consecutive batches of mortar with the same temperatures falling within this range. The mortar temperature after mixing and before use should be above forty degrees Fahrenheit (40°F), maintainable either by auxiliary heaters under the mortar board or by more frequent mixing of mortar batches. Heated mortar on mortar boards should not become excessively hot (greater than one hundred twenty degrees Fahrenheit [> 120°F]).
4. During below-normal temperatures, masonry should be placed only on sound unfrozen foundations. Masonry should never be placed on a snow or ice-covered surface, because of the danger of movement when the base thaws and the possibility of very little bond being developed between the mortar and the supporting surface.
5. At the end of the day, the top surface of all masonry should be protected to prevent moisture, as rain, snow or sleet, from entering the masonry. This protection must cover the top surface and should extend a minimum of two feet (2'-0") down all sides of the masonry.

WORKDAY TEMPERATURE	CONSTRUCTION REQUIREMENT	PROTECTION REQUIREMENT
Above 40°F	**Normal masonry procedures.**	*Cover walls with plastic or canvas at end of workday to prevent water entering masonry.*
40°F - 32°F	**Heat mixing water to produce mortar temperatures between 40°F - 120°F.**	*Cover walls and materials to prevent wetting and freezing. Covers should be plastic or canvas.*
32°F - 25°F	**Heat mixing water and sand to produce mortar temperatures between 40°F - 120°F.**	*With wind velocities over fifteen miles per hour (15 mph) provide windbreaks during day and cover walls and materials at the end of the workday to prevent wetting and freezing. Maintain masonry above freezing for sixteen hours (16 hrs.) using auxiliary heat or insulated blankets.*
25°F - 20°F	**Mortar on boards should be maintained above 40°F.**	
20°F - 0°F and below	**Heat mixing water and sand to produce mortar temperatures between 40°F - 120°F.**	*Provide enclosures and supply sufficient heat to maintain masonry enclosure above thirty-two degrees Fahrenheit (32°F) for twenty-four hours (24 hrs.).*

Note: Construction requirements, while work is in progress, are based on *ambient* temperatures. Protections requirements, after masonry is placed, are based on *mean* daily temperatures.

F. Hot Weather Application – The Contractor shall keep the areas being built sufficiently moist at all times during the operations. Mortar mixed and ready for application shall be used within one hour's (1 hr.) time and continually remixed to prevent excessive evaporation of moisture from the mortar. Discard all mortar which has begun to set or is not used within two hours' (2 hrs.) time. Water for tempering shall be available at all times.

G. Under no circumstances shall the Contractor remove existing materials and systems to the ground in an uncontrolled manner. Machinery or devices used shall be manufactured for this purpose. Adjacent building and property areas shall be protected from airborne debris.

H. No building interiors, whether new or existing shall be left exposed to the weather at the end of each workday.

I. During removal operations, the Contractor is responsible for the containment of all dust, dirt, debris, overspray and run-off resulting from the work. The Contractor shall collect and contain all materials and repair any resulting damage to adjacent surfaces, site fixtures or personal property. Specific attention is drawn to the use of chemicals and cleaners.

J. The Contractor shall put silt debris protection within the adjacent roofing drains to collect masonry dust from entering the leader lines.

K. Fully charged, inspected and approved fire extinguishers shall be on site at all times. No cutting, grinding or welding of any kind shall proceed without an approved fully charged fire extinguisher.

L. The general nature, quantity and surface area of the various work items are shown on the Contract Drawings.

M. The Contractor shall provide a dust proof site during the course of the work. Wet cutting methods, dust tight staging and enclosures as well as other methods shall be employed as necessary to meet this requirement.

1.5 DIMENSIONS AND QUANTITIES

A. All dimensions and quantities shall be determined or verified by the Contractor. The Contract Drawings have been compiled from various sources and may not reflect the actual condition at the moment of construction. The Contractor is cautioned to take all precautions and make all investigations necessary to install the proposed work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

1.6 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.

B. Submit a site-specific safety plan.

C. The Contractor shall submit the following items with their submittal package.
1. Methods of removal of materials.
2. Temporary protection procedures.
3. Staging/set-up procedures.
4. Program for containment of cleaning chemicals.

D. Submit a range to match the existing color, size and texture.

E. Proposed method of providing a dust proof site (dust removal) during masonry demolition work.

F. Proposed method of protection for adjacent landscaping, pavement, walkways, site plantings, and related sitework from damage.

1.7 TEST AREAS

A. Before full scale work is commenced, execute the following work for trial work areas to be reviewed by the Owner as to acceptability of color, texture and appearance match with the existing construction. Test areas will be at locations established by the Owner and Engineer:
1. Two (2) linear feet of throughwall flashing with soldered end dam.
2. Four (4) square feet of brick masonry rebuild or replacement.
3. Two (2) linear feet of sealant replacement.
4. Five (5) units of salvaged and cleaned brick masonry.

B. Prepare, install and cure all materials in accordance with these specifications and the manufacturer's instructions.

C. Trial areas shall be repeated until acceptable results are obtained. The accepted work shall be a standard for all subsequent work. Areas of masonry repointing shall be allowed to weather for seven days prior to Owner acceptance.

1.8 CLEANUP

A. Site clean-up shall be complete and performed daily to the satisfaction of the Owner.

B. All roof, building (interior and exterior), landscape and parking areas shall be cleaned of all trash, debris and dirt caused by, or associated with, the work.

C. All trash and debris shall be completely removed from the site daily during the work and at the completion of the work. All debris shall be legally disposed of off-site.

1.9 GUARANTEE

A. Upon completion of the work and prior to final payment, the Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two years (2 yrs.) and shall be signed by a Principal of the Contractor's firm and sealed if a corporation.

PART 2 – MATERIALS

2.1 SALVAGED MATERIALS AND ITEMS

A. All building materials, equipment and debris of whatever nature from the portions of the existing structure removed under this project and not designated to be reused or reinstalled shall become the property of the Contractor and legally disposed of off-site. The Contractor will be required to place all discarded materials in the appropriate rubbish receptacles for legal disposal by the Contractor.

2.2 BRICK MASONRY

A. Replacement brick masonry shall conform to ASTM C 216, Grade SW, Type FBS specifications. Brick shall match existing in size, configuration, color and texture. The majority of the brick masonry units appear to be two-inch by three- and one-half inch by seven- and five-eighths inch (2" x 3-1/2" x 7-5/8") in dimension. However, these units vary and will require the Contractor to confirm brick masonry unit sizes prior to ordering.

B. All brick shall be submitted to the Owner for acceptability as to color and appearance match with the existing brick. The Contractor may be required to submit additional brick samples for approval. No brick shall be purchased or installed until approval by the Owner is obtained.

2.3 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows:
   1. Provide special shapes for corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
   2. Provide square-edged units for outside corners, unless otherwise indicated.

B. Concrete Masonry Units: ASTM C 90.
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2000 psi.
   2. Weight Classification: Normal weight.
   3. Size (Width): Manufactured to dimensions three-eighths inch (3/8") less than nominal dimensions.

2.4 MORTAR

A. Mortar for rebuilding brick veneer shall be Type N, conforming to ASTM C270 specifications and shall match the existing in color, texture and appearance. Mortar shall conform to Parts 8 and 11 E of the BIA Technical Notes.

B. Portland cement shall be Type II (Type III may be used only if previously approved) conforming to ASTM C150, specifications.

C. Hydrated lime shall conform to ASTM C207, Type S specifications.

D. Sand shall conform to ASTM C144, amended as follows:

Sieve Size	**% Passing (By Weight)**
#4	100
#8	95-100
#16	70-100
#30	40-75
#50	20-40
#100	10-25
#200	0-10

E. Tinting or coloring agent shall be added to the sand, lime cement to color the fully-cured, in-place mortar to match the physical and chemical characteristics and specified requirements of the Type N mortar.

F. Admixtures: No admixtures shall be allowed.

G. Water shall be clean, potable tap water.

2.5 MORTAR AND GROUT FOR CONCRETE UNIT MASONRY

A. Masonry Cement: ASTM C 91.
1. Products:
a. Capital Materials Corporation: Flamingo Color Masonry Cement.
b. Esso, Italcementi Group: Brixment or Velvet.
c. Holcim (US) Inc.: Mortamix Masonry Cement, Rainbow Mortamix Custom Buff Masonry Cement, White Mortamix Masonry Cement.
d. Lafarge North America Inc.: Magnolia Masonry Cement, Lafarge Masonry Cement, Florida Super Masonry, Trinity Super White Masonry Type N.
e. Lehigh Cement Company: Lehigh Masonry Cement, Lehigh White Masonry Cement.
f. National Cement Company, Inc.: Coosa Masonry Cement.

B. Aggregate for Mortar: ASTM C 144.
1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than one-quarter inch (1/4”) thick, use aggregate graded with one hundred percent (100%) passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

C. Aggregate for Grout: ASTM C 404.

D. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
1. Available Products:
a. Addiment Incorporated: Mortar Kick.
b. Euclid Chemical Company (The): Accelguard 80.
c. Grace Construction Products, a unit of W. R. Grace & Co. - Conn.: Morset.
d. Sonneborn, Div. of ChemRex: Trimix-NCA.

E. Water: Potable.

2.6 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Masonry Joint Reinforcement, General: [ASTM A 951] [UBC Standard 21-10].
1. Interior Walls: Mill -dip galvanized, carbon steel.
2. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
3. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than sixteen inches (16”) on-center.
5. Provide in lengths of not less than ten feet (10’-0”).

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

2.7 MASONRY CLEANERS

A. Cleaner for newly installed, brick masonry, and repointing areas shall be Sure-Kleen 101 lime solvent by Pro-So-Co, Inc., Hydroclean HT 455 by Hydrochemical Techniques, Inc., 200 Lime Solvent as manufactured by Diedrich Technologies, or approved equal.

B. The cleaner shall be specifically recommended by the manufacturers for the removal of efflorescence from masonry, Radonseal Efflorescence cleaner, or approved equal. Cleaners with harsh chemicals and/or strong acids are not recommended but may be considered. Windows should be protected when using cleaners.

C. Masking materials shall be commercially available masking or duct tape of appropriate width. Self-adhesive materials shall be completely strippable, leaving no adhesive residue when removed.

D. Plastic sheet for masking tape areas shall be four millimeters (4 mil.) thick minimum polyethylene sheet of appropriate size to cover the required areas.

2.8 SEALANT AND ACCESSORIES

A. Sealant for exposed locations shall be a one-part polyurethane conforming to ASTM C920-87, Type S, Grade NS, Class 25, Uses NT, M, A, and O such as manufactured by Tremco, BASF-Sonneborn, Sika Corp., or Engineer approved equal.
   1. Contractor to provide sealant manufacturer’s standard five-year (5-yr.) warranty.

B. Color(s) shall be selected by the Owner from the approved manufacturer's color chart. Colors shall be the manufacturer’s available premium colors.

C. Primer shall be non-staining type as manufactured or recommended by the sealant manufacturer for each substrate.

D. Substrate cleaner shall be non-corrosive and non-staining as recommended by the sealant manufacturer. Cleaner shall be totally compatible with the sealant for each substrate.

E. Masking material shall be commercially available masking tape of appropriate width or other material recommended by the sealant manufacturer. Self-adhesive masking materials shall be of low tack and completely strippable, leaving no adhesive residue behind when removed.

2.9 MASONRY ACCESSORIES

A. Baffles to be installed in full head joint weeps of brick masonry shall be three-eighths inch by two- and one-half inch by three- and three-eighths inch (3/8" x 2-1/2" x 3-3/8") baffle comprised of a bonded cellular material such as Wire Bond - Cell Vent, No. 3601 as manufactured by Masonry Reinforcing Corporation of America, Quadro-Vent by Hohmann & Barnard, Inc., Cell Vent by Dur-O-Wall, Inc., or approved equal.

B. Anchors for use at new throughwall flashing locations shall be duel leg adjustable pintel, one-quarter inch (¼") diameter stainless steel tie such as Series 316 as manufactured by Heckman, D/A 5231 as manufactured by Dur-O-Wall, or approved equal.

C. Masonry Ties for rebuilding and new masonry work shall be DW-10HS Hot-Dipped Galvanized Steel Masonry Veneer Ties as manufactured by Hohmann & Barnard, Inc. or approved equal.

2.10 INSULATION

A. Rigid insulation at cavity wall infill sections to be extruded polystyrene rigid foam insulation board, in a thickness as indicated in the Contract Documents and have a minimum R-5 per inch Long-Term Thermal Resistance factor. XPS insulation to be closed-cell, moisture-resistant rigid foam board such as Foamular 250 as manufactured by Owens Corning or approved equal. Coordinate with Sections 06 16 43 – Gypsum Sheathing and 05 40 00 – Cold Formed Metal Framing.

B. Closed-Cell Polyurethane Foam Insulation: ASTM C 1029, Type II, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively per ASTM E 84. Coordinate with Sections 06 16 43 – Gypsum Sheathing and 05 40 00 – Rough Carpentry.
   1. Minimum density of 1.5 lb./cu. ft., thermal resistivity of 6.2ºF x h x sq. ft./Btu x in. at seventy-five degrees Fahrenheit (75ºF).
   2. Thermal Barrier for Foam Plastic Insulation at Occupied Spaces: Provide thermal barrier recommended by foam plastic manufacturer and tested with the specific product. Product shall have an active building code evaluation report that lists report number and effective dates of product acceptance.
   3. Ignition Barrier for Foam Plastic Insulation at Attic and Crawl Spaces: Provide ignition barrier recommended by foam plastic manufacturer and tested with the specific product. Product shall have an active building code evaluation report that lists report number and effective dates of product acceptance.

2.11 WEATHER RESISTANT MEMBRANE

A. Weather resistant membrane at wall infill section shall be a self-adhered, vapor permeable, water resistive air barrier membrane such as Henry Blueskin VP160 as manufactured by Henry, or approved equal. Coordinate with Sections 06 16 43 – Gypsum Sheathing and 05 40 00 – Cold Formed Metal Framing.

2.12 THROUGHWALL FLASHING AND ACCESSORIES

A. Plain copper shall be cold rolled sheet copper conforming to ASTM B 370-88 Specifications, sixteen ounce (16 oz.) and twenty ounce (20 oz.) as required. Sheet length shall be eight feet (8') maximum.

B. Solder for copper shall be fifty percent (50%) block tin and fifty percent (50%) pig lead conforming to ASTM Specification B 32, Grade SN 60.

C. Flux for copper shall conform to ASTM B 32, Type IS.

D. Copper fabric flashing shall consist of a full five ounce (5 oz.) copper sheet permanently bonded between two (2) layers of textured, woven high tensile strength glass fabric with asphalt compound or epoxy-based coating. Primers and mastic adhesive required for the proper installation of the fabric flashing shall be as specifically recommended by the fabric flashing manufacturer. Fabric flashings shall be as manufactured by York Manufacturing, Inc., Advanced Building Products, Inc., Sandell Manufacturing Company, Inc. or approved equal.

E. All accessories, including but not limited to nails, screws and clip strips shall be copper, brass, stainless steel or galvanized steel and completely compatible with the surrounding metal to prevent galvanic reaction.

F. Concealed sealant for metal-to-metal connections, or for seating termination bars: ASTM C1085, single components, butyl (polyisobutylene) rubber sealant, heavy bodied for joints with limited movement.

G. Termination bar shall be one-eighth inch by one-inch (1/8" x 1") copper bar with pre-punched holes spaced six inches (6") on-center.

H. Fasteners for securing termination bar at top of throughwall flashing, blind nailers, and cladding at concrete substrate shall be one-inch (1") to one- and one-half inch (1-1/2") long drive pins with zinc alloy sheaths as manufactured by Star, Rawl, or approved equal.

I. Rivets shall be three-sixteenths inch (3/16") diameter copper as required by the metal being secured.

J. Sheet metal flashings shall be shop fabricated. All breaks, bends and hems shall be uniform, clean, straight lines.
   1. Drip edges shall be hemmed three-quarter inch (3/4") wide and break at a thirty degree (30^{o}) angle.
   2. Clips shall be two-inch (2") wide minimum.
   3. All copper joints shall be soldered.
   4. Blind nailers shall be four inches (4") wide, folded to two-inch (2") wide final dimension.

J. The Contractor shall coordinate the use of compatible metals to prevent galvanic corrosion.

K. Fabrication Schedule:
1. Copper (16 oz.)
a. Throughwall flashing.
b. Counter flashing.
c. End dams.
d. Lally column caps .

2.13 GALVANIZED PLATE FOR BACK-UP WALL

A. Provide three-inch (3") wide, 24-gauge galvanized metal strapping.

B. Fasteners shall be #8, one- and one-half inch (1-1/2") minimum sheet rock screws compatible with to secure into the existing metal stud back-up wall.

PART 3 – EXECUTION

3.1 GENERAL WORKMANSHIP

A. Follow all applicable local, state and federal requirements regarding construction of scaffolding and protection of the public safety. Specific reference should be made to OSHA Construction Safety Regulations.

B. Set up of scaffolding or similar access and location of on-site storage areas shall be subject to review and approval by the Owner.

C. Do not leave any partially completed sections exposed to the elements overnight. Provide all devices (including heaters and insulation) necessary to maintain areas at the correct temperature and humidity for proper curing of mortar.

D. During freezing weather, the Contractor shall protect all masonry with tarpaulins or other approved material. Masonry materials shall be stacked on platforms and covered, or stored in a manner acceptable to the Owner, to protect them from contact with soil and weather exposure. Materials with stained faces will not be used in the walls.

E. No masonry work shall be executed when the temperature in the work area has dropped below forty degrees Fahrenheit (40ºF) unless it is rising. The Contractor shall provide heat and maintain the temperature of masonry materials and protect the completed work from freezing. Protection shall consist of heating and maintaining the temperature of masonry materials to at least forty degrees Fahrenheit (40ºF), but not more than one hundred degrees (100ºF), and maintain an air temperature above forty degrees Fahrenheit (40ºF) on both sides of completed masonry for a period of at least seventy-two hours (72 hrs.).

F. Keep covers tightly sealed on all evaporative products to prevent premature curing.

G. All debris shall be transported to dumpsters, in locations approved by the Owner, at ground level by enclosed chute or crane and scaling bucket. Uncontrolled dropping of debris to ground level will not be permitted.

H. During the removal of any existing component, the Contractor shall report to the Owner any areas of damaged, deteriorated or otherwise unsuitable framing, wood blocking, or wall materials uncovered during the work. Do not cover unacceptable areas until reviewed by the Owner and Engineer. Provide temporary protection to the area in question.

I. Any wall areas opened for replacement shall receive the new system that day and shall be enclosed with masonry. Should rebuilding of masonry not be completed, temporary weather protection and shoring for the wall shall be provided by the Masonry Contractor at no additional charge to the Owner.

J. If needed, the Contractor shall lay-up granite units' plumb, level, and true to the lines and dimensions at the existing walls. Chipped or broken units shall be repaired. If any such units are placed in the finished wall, they shall be removed and replaced with new units at no additional cost to the Owner.

K. The repointing of granite mortar joints is included at the locations shown on the Contact Drawings, and as specified in the Unit Price Section. Only additional scope of work designated by the Owner will be paid for at the Unit Price. The Contractor must confirm additional unit price items with the Owner prior to performing the work should compensation be desired. Adjacent masonry units damaged or removed as a result of the work will be removed and replaced at no cost to the Owner.

L. All shoring of the masonry components will be the responsibility of the masonry Contractor. Maximum spacing of temporary shoring shall be twelve inches (12") on-center. Any damage as a result of insufficient shoring shall be repaired or replaced at no additional cost to the Owner.

M. Refer to Brick Industry Association (BIA) technical notes for standard practice for masonry repointing, rebuilding and repair.

3.2 MASONRY STORAGE

A. Storage of all masonry shall be in the area designated by the Owner. All stored masonry units shall be covered

3.3 COURSING, BONDS AND JOINTS

A. Coursing and Bond Pattern
   1. Concrete Masonry Units: Place masonry units in half-running bond.

B. Joints, Masonry Exposed to View
   1. Joints: Fill all with mortar. Strike off flush. Joints to be free of drying crack
   2. Tooling: When mortar is thumb-print hard, tool joints with a non-staining tool.

3. Tooling Exceptions:
   a. Horizontal Joints, Exterior Concrete Masonry Units: Rake joints, brush clean, point with mortar to a flat cut joint. When mortar is thumb-print hard, tool with a round jointer with a diameter 0.125-inch larger than width.
   b. Horizontal Joints, Exterior Ground Face Concrete Masonry Units: Tool flush.
   c. Horizontal Joints, All Interior Joints: Tool flush.
   d. Vertical Joints, All Interior and Exterior: Tool concave.
4. Concealed from View Masonry: Fill joints with mortar and strike joints flush.
5. Exterior Joints Below Grade: Tool concave.

3.4 LAYING MASONRY – GENERAL

A. Masonry Walls and Partitions: Provide in various combinations and thickness as shown.

B. Line and Level Tolerances: Comply with tolerances herein when erecting all masonry work.

C. Joint Size: Provide and hold uniform joint sizes.

D. Non-Conforming Masonry Work: Correct, or replace, as directed by the Architect at no increase in Contract Sum.

E. Layout of Masonry: Plan ahead and layout masonry to minimize cutting closures or jumping bond.

F. Less-Than-Half-Size Units: Layout masonry to avoid use

G. Laying Masonry Units:
1. Color Variation of Masonry: Limit to the greatest extent possible.
2. Distribution of Masonry Colors: Distribute variations evenly over project
3. Do Not Expose to View: Masonry unit cores, frogs or other unfinished surfaces.
4. Solid Masonry Units: Lay in full bed of mortar, with full head joints; uniformly joint with other Work.
5. Hollow Concrete Masonry Units: Lay units in fully mortared bed joints.
6. Buttering Corners of Joints: Prohibited
7. Excessive Furrowing of Mortar Joints: Prohibited
8. Intersections, External Corners, Lip Stretchers: Interlock
9. Cut Masonry Units: See requirements in article 3.2, herein.

10. Spreading More Mortar than can be Covered Before Surface of Mortar Has Begun To Dry: Prohibited.
11. Shift or Tapping Masonry Units after Mortar has Achieved Initial Set: Prohibited.
12. Adjusting Masonry Units After Mortar has Achieved Initial Set: Remove entirely, clean off mortar and reset with fresh mortar.
13. Finish All Masonry as Wall and Partitions Are Built: Exception: cleaning down and repointing.

H. Built-In Reinforcement and Anchorage Items: Provide as work progresses, grout fully for secure anchorage.

I. Reinforcing Rods Cast into Concrete with Exposed Upturn Legs: Place masonry units cells over upturned rods. Fill rod-filled cells with specified grout.

J. Prefabricated Horizontal Joint Reinforcing: Embed as work progresses.
1. Reinforcing Continuity: Required to maintain.
2. Minimum Cover, Exterior Face of Wall: 0.625-inch.
3. Minimum Cover, All Else: 0.5-inch.
4. End Lap Reinforcing, Minimum: six inches (6”).
5. Prefabricated Reinforcing Types at Corners and Intersections: Provide L and T-shaped units.
6. Returns, Offsets, Column Fireproofing, Pipe Enclosures, Any Other Conditions: Cut and bend units as recommended by manufacturer to maintain reinforcing continuity.

K. Control Joints: Provide as per approved submittal.
1. Locations: Not to exceed twenty-four feet (24’) on-center spacing, and within two feet (2’) to four feet (4’) of building corners, as shown on structural drawings.
2. Joint: Keep clean and free of mortar droppings.

L. Clean-Outs: Provide as required to permit removal of mortar droppings and to confirm full height, solid grout infilling of cells.
1. Location: Base of Wall.

M. Protection: Provide complete protection for work of this section.
1. Protect: Against the following, without limitation
   a. Breakage.
   b. Weather damage to all masonry work.
   c. Wood boxing around door jambs and other related work.
   d. Weather damage over tops of walls
   e. Wherever necessary to protect work.

2. Protect work at all stages of construction through completion.
3. Masonry Not Roofed Over: Protect at all times when masons are not working on walls.
4. Protection Materials: Apply tarpaulins, waterproof paper or other approved material, properly secured to assure protection material remains in place to protect masonry from all possible hazards.
5. Protection from Rain: Protect all masonry from rain prior to, and during installation.

N. Holes and Cracks in New Mortar Joints: Point and fill with additional fresh mortar.
1. Spreading Adjacent Mortar Over Defect: Prohibited.
2. Filling Holes and Cracks with 'Dead'/Set Mortar Droppings: Prohibited.
3. Pointing Soft and Plastic Mortar: Point and fill with additional fresh mortar.
4. Pointing Hardened Mortar: Chisel defect out and refill cavity with additional fresh mortar.
5. Pointing Finish: Tool or rake joints as specified herein.

O. Cold Weather Procedures
1. Laying Masonry Work Below Forty Degrees Fahrenheit (< 40ºF): Prohibited without approved cold-weather submittals.
2. Ambient Temperature Below Forty Degrees Fahrenheit (< 40ºF): Protect masonry materials and finished work from frost by heating. Heat masonry materials, enclosing the work and heating enclosed spaces.
3. Building Upon Frozen Work: Prohibited.
4. Including Anti-Freeze Admixtures in Mortar Mix: Prohibited.
5. Completed Work Affected by Frost: Demolish and rebuild at no additional expense to Owner.

P. Hot Weather Procedures
1. Laying Masonry Work Above Eighty Degrees Fahrenheit (80ºF): Brush with water to lightly moisten contact surfaces of masonry units just prior to installation.

3.5 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of five-eighths inch (5/8”) on exterior side of walls, one-half inch (1/2”) elsewhere. Lap reinforcement a minimum of six inches (6”).
1. Space reinforcement not more than sixteen inches (16”) on-center.
2. Provide reinforcement not more than eight inches (8”) above and below wall openings, and extending twelve inches (12”) beyond openings.

B. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.6 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
   1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
   2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
   1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
   2. Limit height of vertical grout pours to not more than sixty inches (60”).

3.7 CONTROL JOINTS

A. Form control joints in concrete masonry using one of the following methods:
   1. Fit bond-breaker strips into hollow contour in ends of concrete masonry units on one side of control joint. Fill resultant core with grout and rake out joints in exposed faces for application of sealant.
   2. Install preformed control-joint gaskets designed to fit standard sash block.
   3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake out joint for application of sealant.
   4. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.

3.8 REMOVAL OF BRICK MASONRY

A. Coordinate the location of the new throughwall flashing with the Contract Drawings for future installation of new roofing system.

B. Remove brick masonry units in the locations shown on the Contract Drawings. Use hand and power tools to remove masonry. Pneumatic demolition tools are not permitted.

C. Remove maximum four (4) linear foot sections of masonry walls at a time, or as required to prevent deflection or displacement of the existing masonry to remain. Shore the sections as required to prevent displacement.

D. Saw-cut surrounding mortar joints to remove the designated masonry units. Remove adjacent units as required. Provide temporary shoring and protection, as necessary.

E. Remove masonry units in a manner so as not to damage sound materials designated to remain.

F. All throughwall flashings shall extend a minimum of eight inches (8”) above the limits of the roof edges and shall be terminated with an end dam.

3.9 BRICK MASONRY REPLACEMENT

A. Reconstruct brickwork with new brick to follow the existing profile and configuration. All brick masonry shall be plumb, level and true to the lines and dimensions of existing wall. Chipped or broken units shall not be used. If any such units are placed in the finished wall they shall be removed and replaced with new units at no additional cost to the Owner.

B. The Contractor shall supply all jacks, shoring and temporary supports necessary to support brickwork above and adjacent to any area to assure proper installation of the work.

C. Wet all new and existing masonry units in the work area. Masonry shall be kept damp but without standing water.

D. Utilize rotary mixers when fabricating all mortar. Be sure to maintain relative proportions of mortar materials to provide the texture and color to match the existing mortar. No anti-freeze compounds or other substances shall be added to the mortar. Mix all mortar for at least three minutes (3 min.) and not more than five minutes (5 min.) with the minimum amount of water to produce a workable consistency. The maximum allowable air content of cured mortar shall be twelve percent (12%) by volume. Re-tempering of mortars that have stiffened because of evaporation of water will be allowed in order to provide the proper consistency provided all mortar in a batch is utilized within two hours (2 hrs.) of initial mixing.

E. Set each brick in a full bed of mortar and build upward. Tool all joints to match the existing joint profile. Fully butter all heads.

F. Work mortar into joints for complete width and depth. Consolidate and tool into joint using tooling equipment to completely fill the joint cavity to match the existing joint profile. Tool exposed joints slightly with a suitable jointer when the mortar is thumbprint hard. For horizontal joints, jointers shall be at least twelve inches (12”)

long for brickwork. Jointers shall be slightly larger than the width of the joint so that complete contact is made along the edges of the units, compressing and sealing the surface of the joint. Strike flush joints that will not be exposed. Tool vertical joints first. Brush joints to remove all loose and excess mortar. Horizontal joints shall be level; vertical joints shall be plumb and in alignment from top to bottom of wall.

G. Set new masonry unit in full beds of mortar, top, bottom and sides. Utilize slate wedges as required to maintain mortar joint width. Should new masonry set in mortar require removal due to un-level/plumb conditions, that masonry unit shall be removed from the work area, cleaned and allowed to dry prior to reinstallation.

H. Provide full joint depth of new mortar. Strike off and tool joints to match existing joint configuration. Allow areas to fully cure prior to cleaning.

I. Where brick masonry replacement occurs in areas to be repointed, rake back joints and repoint together with the wall area.

J. Totally clean the areas of masonry rebuilding only after the rebuilding is completed and the mortar has been allowed to cure for eight (8) days minimum. Clean surfaces free of all dust, dirt and mortar stains as described in this section.

3.10 TEMPORARY SHORING

A. It is the responsibility of the Contractor to design, erect, and maintain all necessary shoring procedures sufficient to comply with applicable regulations, securely support all masonry or other elements left unsupported by the required removals and permit the work of other trades to proceed.
   1. If cracks occur in mortar joints of brick intended to remain, completely stabilize the area with additional shoring or new construction, cut out the damaged joint area and repoint it after removal of shoring. Secure the Engineer's approval of repair.
   2. Solidly patch all holes (with new mortar) left in mortar by withdrawal of shore fastenings.
   3. Completely remove shoring system when no longer needed.
   4. Notify the Owner forty-eight hours (48 hrs.) in advance of installation of shoring.
   5. The maximum spacing of temporary shoring vertical supports shall be twelve inches (12") on-center.
   6. The addition of temporary lateral bracing or blocking between vertical shoring elements is required.
   7. A sequenced shoring scheme is recommended at all shoring applications. The minimum length of remaining solid masonry wall located between each removed masonry section shall be four feet (4').
   8. Masonry and flashing replacement work must be completed in the same day that existing components are removed unless adequate temporary weather protection is provided to the satisfaction of the Owner and Engineer. Submit the intended demolition, shoring, and construction sequencing to accommodate this requirement. Submit the means and

methods of temporary weather protection to include materials and methods of fastening or securing.

9. Submit the means and methods of temporary protection to low roof areas and their components.
10. Submit the means and methods of temporary covering or masking of wall and roof penetrations, grills, vents, and mechanical units.
11. All temporary shoring of the brick masonry components to complete the masonry and flashing repairs will be the sole responsibility of the masonry Contractor. The Contractor must supply, install, and maintain all temporary shoring for the duration of the project.

3.11 THROUGHWALL FLASHING INSTALLATION

A. Fabricate and install new flashings a minimum of eight inches (8”) above the finished roof surface and designated locations and as shown on the Contract Drawings. Maintain step flashing so flashing heights stay above the finished roof or curtain wall eight-inch (8”) minimum. Refer to Contract Drawings for configuration of step flashings and end dams.

B. Fabricate new flashing and extend rear leg of flashing three-inch (3”) minimum up the back of the wall or as shown on the Contract Drawings. Secure the rear leg of the flashing to the back-up masonry wall with the specified fasteners and termination bar. Provide a full bead of sealant behind the flashing.

C. Secure rear leg of flashing to substrate with the specified fasteners and termination bar at eight inches (8”) on-center.

D. Provide the finish profile for the exposed portion of the flashing as shown on the Contract Drawings, with hemmed edge formed drip extending one-half inch (½”) beyond finish face of masonry.

E. Overlaps in flashing shall be six-inch (6”) minimum and soldered. Rivet overlaps and solder watertight completely enveloping rivets in solder.

F. Form the flashing to shed water. Provide two-inch (2”) high end dams at limits of throughwall flashings. Provide completely watertight seams and overlaps. Rivet and solder end dam connections. End damns shall be two-inch (2”) high minimum.

G. Install copper fabric flashing in a full bed of mastic over the vertical surface of the existing concrete masonry back-up wall and flashing. All seams shall be lapped six inches (6”) minimum and set in full bed of sealant. Secure copper fabric to masonry backup wall with pre-punched termination bar at eight inches (8”) on-center. Extend fabric one-half inch (½”) minimum beyond the exterior face of the brick masonry wall face, eight-inch (8”) minimum up the back of wall and lap onto metal flashings as indicated in the Contract Drawings. Provide a bead of sealant at the top of the reglet / termination bar, tooled to shed water.

H. Note: provide field confirmation of all dimensions prior to fabricating the flashings. Where irregularities in the surface occur, backer rod and filler material can be used

to provide positive support for the fabric coated copper flashings. Unsupported flashing will not be acceptable.

3.12 SOLDERING OF SHEET METAL

A. Refer to the publication, "Copper and Common Sense" by Revere Copper and Brass and all recommendations of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) concerning methods and materials to be used in the fabrication and construction of sheet metal flashings.

B. It is the intent of this Specification to utilize the most effective joint configuration possible to properly install strong, weathertight, metal flashings. Comply with the following standards unless otherwise specified when fabricating metal components to be joined:
   1. Whenever one-piece construction is not possible, solderable metals shall utilize interlocked, crimped, and fully soldered seams and joints.
   2. Seams and joints of non-solderable metals shall be interlocked, riveted, and completely filled with sealant.

C. Comply with Military Specification MIL-S-6872B entitled, "General Specifications for Soldering Process" when forming soldered joints. Use conduction soldering methods. Clean areas to be joined of oil, grease, pencil marks, paint, dirt, or other foreign substances. Remove burrs using files, grinding stones, or other methods. Hold parts in place using clamps, jigs, and supports or by self-fixturing. If parts are tack-soldered to hold them in place, the area of tack-soldering shall be reworked into the final soldering. Parts cannot be allowed to move during the soldering process.

D. Apply flux to surfaces that are to receive solder. Do not use flux-cored solder. Flux shall be fluid when heated and effective in removing and excluding oxides and other impurities from the joint. The molten solder should readily displace flux.

E. Heat areas to be joined above the liquidous temperature of the solder. To deliver maximum heat, apply the copper bit of the soldering iron at the right angle so that the flat side of the iron's bit provides maximum contact area. Apply solder to the joint and not the bit of the iron. Allow solder to flow in place to provide a minimum one-inch (1”) final width of solder over the joint. Do not disturb the joint until it has been allowed to completely cool. After soldering, completely remove flux and acid by washing and scrubbing with a neutralizing agent.

F. Shop fabricate sheet metal flashings to the fullest extent possible. Fabricate all breaks, bends, and hems with uniform, clean, straight lines.

G. Sheet metal flashings shall be as specified herein and as required to match the existing sheet metal systems. Refer to the publication, "Copper and Common Sense" by Revere Copper and Brass and all recommendations of the Sheet Metal and Air Conditioning Contractors National Association concerning methods and materials to be used in the fabrication and construction of sheet metal flashings.

3.13 SEALANT INSTALLATION

A. Install sealant where shown on the Contract Drawings and as required for the proper completion of the work.

B. Clean and prime substrates in strict accordance with sealant manufacturer's requirements.

C. Precondition sealants to a temperature between sixty- and seventy degrees Fahrenheit (60ºF-70ºF) or as required by the manufacturer. Apply sealant to clean dry surfaces only when the ambient temperature is between sixty- and eighty-five degrees Fahrenheit (60ºF-85ºF).

D. Joint primer shall be applied to all properly prepared, cleaned, and dry substrates. Primer shall be approved by the sealant manufacturer for each substrate and shall be completely compatible with the existing materials and proposed sealants and accessories.

E. Sealant shall have a minimum application life of three hours (3 hrs.) after mixing.

F. Unless otherwise required by the sealant manufacturer, the sealant shall be mixed for a period of six minutes (6 min.) minimum with a slow speed electrical drill and mixing paddle. The sides of the container shall be repeatedly scraped to ensure adequate mixing.

G. Sealant shall be applied to clean, dry, joints by knife, trowel, manual or air pressure caulking guns using proper nozzle sizes.

H. All joint sealant shall be immediately tooled to assure full adhesion. Sealant shall be dry tooled, straight, uniform, smooth, and neatly finished to the profiles detailed. No soaps, wetting of slicking agents will be allowed.

3.14 MASONRY CLEANING

A. Totally clean all repaired, or repointed masonry areas of all construction stains and excess mortar. Do not perform any cleaning until mortar joints and adjacent sealants are fully cured.

B. Test the specified cleaners on a small area of masonry wall to determine compatibility with the masonry, window units, sealants, etc. Evidence of discoloration, metallic salts or other detritus shall be grounds for requiring the use of a substitute cleaner.

C. The Contractor will be required to clean the masonry units with the minimum cleaning solution mix ratios as recommended by the cleaner manufacturer. Should the minimum dilution ratios not clean the masonry, the Contractor will be required to slightly decrease the dilution rates to clean the surfaces. It is recommended that the Contractor use care when performing the masonry repairs to prevent increasing the mixing solutions.

D. Apply the cleaner at the manufacturer's recommended dilution rate and dwell duration. Pre-wet the wall if the manufacturer so recommends.

E. Allow the cleaner to stand for the manufacturer's recommended dwell period while monitoring to ensure that the surface does not dry. Steel bristle wire brushes are not to be used.

F. Rinse all cleaner from the wall with water applied at the manufacturer's recommended flow and pressure. High pressure washing equipment may be required. Coordinate activities so that the Architect may witness and approve a mockup cleaning with the use of the proper spray tip and high-pressure equipment. Any acid neutralizing agent required by the manufacturer shall be applied as part of this rinse. Ensure that effluent does not accumulate at ground level, and fully rinse all effluent from sidewalks, streets and landscaping each day.

G. The Contractor must provide sufficient site protection to prevent the cleaning effluent from draining into the adjacent storm drains. The Contractor will provide a narrative as to how the site protection will be performed.

3.15 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

A. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

3.16 CLEANING

A. Prior to acceptance of the masonry work covered in this section, the Contractor shall perform a thorough clean-up of the work site, building surfaces, landscaping, etc. Any plantings or other items damaged shall be repaired or replaced to the satisfaction of and at no additional cost to the Owner.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 04 50 00 Masonry.docx

STRUCTURAL STEEL

SECTION 05 12 00

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to all Sections within Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 41 19 – Selective Demolition
B. Section 04 50 00 – Masonry
C. Section 05 40 00 – Cold-Formed Metal Framing

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, equipment, staging, temporary protection, tools and appliances necessary for the proper completion of the work in this section. Coordinate the work with adjacent repairs.

A. Supply, fabrication, and installation of new steel beams, plates, angles and associated hardware. Include hot-dipped galvanized beams, plates, angles, and hardware. Weld steel as noted on the drawings and as required for the installation. Touch up welds with zinc-rich paint. Include temporary shoring as required to install the work.

B. Coordinate work within this Section with all other associated trades to perform work in an orderly fashion and to minimize temporary supports and weather protection.

C. Supply all shoring, hydraulic jack equipment and accessories, and protection necessary to protect the building areas and building systems.

D. Report to Engineer if any deteriorated existing beams are encountered during field examination prior to commencing the Work.

E. Fabricate and install new beams, plates, and bolts where indicated on the Contract Drawings.

F. Weld new steel as shown on the Contract Drawings.

G. Clean and restore all areas affected by the work.

1.4 JOB CONDITIONS

A. Equipment required to hoist materials and remove debris shall be supplied. Maintained, and operated by the Contractor.

B. Remove rubbish and debris from the project site daily; do not allow accumulations inside or outside the buildings.

C. The Contractor shall be responsible for securing and protecting their equipment, materials, and tools (as well as partially completed construction) from weather, vandalism or abuse.

D. The building will be occupied during construction. Provide and maintain all shoring, bracing, supports, barriers, protection, warning lines, lighting and personnel required to support the structure, fixtures and facilities affected by this work and segregate the work area(s) to prevent damage to the building, occupants and the surrounding paved areas. Items damaged as a result of the work in this section shall be repaired or replaced by the Contractor to the satisfaction of and at no additional cost to the Owner.

E. The Contractor shall field verify and identify all existing electrical and mechanical equipment within the affected work area prior to start of work. Temporary protection and supports are to be provided for all electrical, plumbing lines, fire sprinkler, mechanical conduits and equipment, and any other building utility within the affected work area. The Contractor shall remove, protect, store, and replace, as required, existing removed equipment, components, etc. in order to install the work.

F. The Contractor will be responsible for coordinating all disconnects, relocations, reconnects associated with the installation of the new steel, as it is required to perform the work.

G. The Contractor shall utilize skilled and experienced specialty workers to install the work. Experienced trade workers shall be utilized for all aspects of the work.

H. Coordinate the work in this section with the work by other trades to ensure the orderly progress of the work.

I. Fully charged, inspected and approved fire extinguishers shall be on site at all times. No cutting, grinding or welding of any kind shall proceed without an approved fully charged fire extinguisher.

J. All permits associated with welding in the City of Augusta shall be obtained by the contractor prior to performing any welding work.

1.5 BUILDING PROTECTION

A. The existing building systems shall be totally protected during the renovation work. The Contractor is responsible for the prompt repair of any damage to the building systems resulting from the work at the project at no additional cost to the Owner.

B. Install any additional protection over all flooring, equipment, windows, mechanical equipment, conduits, doors, wall penetrations, etc. during the work as required.

1.6 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, (AISC Specifications)
1. AISC 360-10Specification for Structural Steel Buildings
2. AISC 326-09Detailing for Steel Construction
3. AISC 303-10Code of Standard Practice for Steel Buildings and Bridges

C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1. ASTM A36 Standard Specification for Carbon Structural Steel
2. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
3. ASTM F436 Standard Specification for Hardened Steel Washers
4. ASTM F844 Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use

D. AMERICAN WELDING SOCIETY (AWS)
1. AWS A2.4 Standard Symbols for Welding, Brazing and Nondestructive Examination
2. AWS D1.1 Structural Welding Code - Steel

E. STEEL STRUCTURES PAINTING COUNCIL (SSPC)
1. SSPC-Paint 25 Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel

1.7 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.

B. The following shall be submitted:
1. Drawings: Shop and erection details including members (with their connections) not shown on the Contract Drawings. Welds shall be indicated by standard welding symbols in accordance with AWS A2.4.

2. Statements: Erection plan of the structural steel beams required. Erection plan shall conform to the requirements of AISC 303, shall be submitted prior to erection, and shall describe all necessary temporary supports, including the sequence of installation and removal.
3. Certificates: Certified copies of mill test reports for structural steel, structural bolts, nuts, washers and other related structural steel items.
4. Certified copies of welder qualifications test records showing qualification in accordance with AWS D1.1.
5. A copy of the AISC certificate indicating that the fabrication plant meets the specified structural steelwork category.
6. Samples: Random samples of bolts, nuts, and washers as delivered to the job site if requested, taken in the presence of the Owner's representative and provided to the Owner's representative for testing to establish compliance with specified requirements.

1.8 DIMENSIONS AND QUANTITIES

A. All dimensions and quantities shall be determined or verified by the Contractor. The Contract Drawings have been compiled from various sources and may not reflect the actual condition at the moment of construction. The Contractor is cautioned to take all precautions and make all investigations necessary to install the proposed work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

1.9 QUALITY ASSURANCE

A. Structural steel fabrication and erection shall be performed by an organization experienced in structural steel work of equivalent magnitude.

B. The Contractor shall be responsible for correctness of detailing, fabrication, and for the correct fitting of structural members. Connections, for any part of the structure not shown on the Contract Drawings, shall be considered simple shear connections and shall be designed and detailed in accordance with pertinent provisions of AISC. Substitution of sections or modification of connection details will not be accepted unless approved by the Engineer. Welding shall be in accordance with AWS D1.1.

1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Material shall be stored out of contact with the ground in such manner and location as will minimize deterioration.

1.11 WARRANTY

A. Upon completion of the work, and prior to final payment, the Contractor shall submit a Warranty of his work to be free from defect in materials and workmanship. This Warranty shall be for a period of two years (2 yrs.)and shall be signed by a Principal of the Contractor's firm and sealed if a corporation.

1.12 CLEAN-UP

A. Site cleanup shall be complete and performed daily to the satisfaction of the Owner.

B. All trash and debris shall be completely removed from the site daily during the work and at completion of the work. All debris shall be legally disposed of off-site.

C. Upon completion of the work of this section, all building areas shall be cleaned of all trash, debris and dirt caused by, or associated with, the work.

PART 2 - MATERIALS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with the following:
1. AISC 360-10 Specifications for Structural Steel Buildings
2. AISC 326-09 Detailing for Steel Construction

2.2 MATERIALS

A. Structural Steel W-shapes: ASTM A572 Gr. 50

B. Structural Steel Channels, Angles, Plates and Bars: ASTM A36.

C. Electrodes for Welding: Comply with AWS Code. E70 series unless otherwise noted.

D. All new steel members to be hot dipped galvanized in accordance with ASTM A123 with touch-up ZRC paint in the field as required.

2.3 FASTENERS AND CONNECTIONS

A. Bolts, nuts and washers, complying with ASTM A325 with a geometry complying with Type 1 Heavy Hex Structural Bolts, ANSI Standard B18.2.1.

B. Finish: Hot-dip galvanized coating, ASTM A 153/A 153M for hardware, Class C, at exterior locations unless otherwise noted on Contract Drawings.

C. Electrodes for Welding: Comply with AWS D1.1 and D1.4 – Structural Welding codes.

2.4 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" as applicable.

1. Mark and match-mark materials for field assembly.
2. Complete structural-steel assemblies, including welding of units, before starting hot dip galvanizing and shop-priming operations.

B. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

C. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.

2.5 STEEL GALVANIZING

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI #79.

B. Zinc-Rich Primer: Complying with SSPC-Paint 20 or SSPC-Paint 29 and compatible with topcoat.
1. Products:
a. Benjamin Moore & Co.; Epoxy Zinc-Rich Primer CM18/19.
b. PPG Architectural Finishes, Inc.; Aquapon Zinc-Rich Primer 97-670.
c. Sherwin-Williams Company (The); Corothane I GalvaPac Zinc Primer.

C. Galvanizing Repair Paint: SSPC-Paint 20 high-zinc-dust-content paint for re-galvanizing welds in steel.

PART 3 - EXECUTION

3.1 FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.

B. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

C. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs and other defects.

D. Bolt field connections, except where welded connections or other connections are indicated on the drawings.

E. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.

F. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning.

3.2 ERECTION

A. Erection of structural steel shall be in accordance with the applicable provisions of AISC.

A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

B. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

C. Level and plumb individual members of structure within specified AISC tolerances.

D. All personnel shall be currently certified for the welding which they perform.

E. Do not enlarge un-aligned holes in members by burning or by use of drift pins. Ream holes that must be enlarged to admit bolts.

F. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on as indicated on the Contract Drawings and, as acceptable to Engineer. Finish gas-cut sections equal to a sheared appearance when permitted.

G. Touch-Up Galvanizing Paint / Zinc Rich Coating: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop galvanizing. Apply galvanizing paint / zinc rich coating (ZRC) to exposed steel areas. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

3.3 QUALITY CONTROL

A. Any material or workmanship which is rejected by the Engineer shall be replaced promptly to the satisfaction of the Engineer.

B. Corrective Work:
   1. Structural steel members or assemblages having fabrication errors, exceed permissible tolerances, or which inspections or laboratory test reports have indicated to be not in compliance with specifications, shall not be allowed in the finished work. Such members or assemblages may be corrected if permitted by the Engineer or the testing agency.
   2. Perform additional test, at Contractor's expense, as may be necessary to reconfirm any non-compliance of original work, and as may be necessary to show compliance of corrected work.
   3. Corrective work is to be done preferably in the shop, and in accordance with AISC and AWS requirements. When requested by the Engineer, submit shop drawings, "for approval", showing details of proposed corrective work.

C. Welding: The Owner will engage an independent testing agency to inspect and test during fabrication and erection of structural steel assemblies, as follows:
   1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
   2. Perform visual inspection of welds.
      a. Continuous visual inspection shall be required on all full penetration welds.

3.4 PROTECTING AND CLEANING

A. Clean adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 05 12 00 Structural Steel.docx

COLD-FORMED METAL FRAMING

SECTION 05 40 00

PART 1 - GENERAL

1.1 IN GENERAL

A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 41 19 – Selective Building Demolition
B. Section 04 50 00 – Masonry
C. Section 05 12 00 – Structural Steel
D. Section 06 10 00 – Rough Carpentry
E. Section 06 16 43 – Gypsum Sheathing

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work as required in the specifications, in accordance with good construction practice and as shown on the Contract Drawings. The work under this section generally includes the following:

A. Exterior non-load-bearing wall framing.

B. Infill exterior non-load-bearing wall framing with insulation.

1.4 PROJECT CONDITIONS

A. The building and site will be occupied or in use during construction. The Contractor shall take all necessary precautions to create as little disturbance or disruption to the building and occupants as possible during the course of the work. All entries and exits and access to emergency equipment must be kept clear at all times.

B. Field Measurements: Following demolition of existing masonry veneer, verify actual locations of openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.5 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
   1. Design Loads:
      a. In accordance with all applicable Codes for Dead, Live, Wind and Seismic Loads.
   2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
      a. As permissible by the Metal Wall Panel manufacturer, but no greater than L/180.
   3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of one hundred twenty degrees Fahrenheit (120ºF).
   4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
      a. Upward movement of one-half inch (½") and downward movement of one-inch (1").

B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
   1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
   2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

1.6 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 – Shop Drawings and Submittals

A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
   1. Prepare shop drawings only after field measurements and documentation of existing conditions. All trades must participate in the shop drawings to produce a fully coordinated set.

C. Calculations: Provide structural calculations prepared, signed and sealed by a qualified professional structural engineer registered in the Commonwealth of

Massachusetts for the cold-formed metal framing and associated connections indicating compliance with design loads required by all applicable codes.

D. Welding certificates.

E. Qualification Data: For testing agency.

F. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
1. Steel sheet.
2. Mechanical fasteners.
3. Vertical deflection clips.
4. Horizontal drift deflection clips
5. Miscellaneous structural clips and accessories.

G. Research/Evaluation Reports: For cold-formed metal framing.

1.7 QUALITY ASSURANCE

A. Engineering Responsibility: Preparation of Shop Drawings, design calculations, and other structural data by a qualified professional engineer.

B. Professional Engineer Qualifications: A professional structural engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.

D. Product Tests: Mill certificates or data from a qualified independent testing agency or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and metallic-coating thickness.

E. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code-Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

F. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

G. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
   1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

All exterior non-load bearing wall framing components are to comply with the requirements provided herein and any additional requirements stipulated by the Metal Wall Panel manufacturer. Where a conflict arises between the specifications and the Metal Wall Panel manufacturer requirements, the more restrictive shall control.

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
   1. Allied Studco.
   2. MarinoWare, A Division of Ware Industries.
   3. Dietrich Metal Framing, a Worthington Industries Company.
   4. Evolution 1, LLC: Enviro-Beam pre-insulated framing assemblies.

2.2 PERFORMANCE REQUIREMENTS

A. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200 and the following:
   1. Wall Studs: AISI S211.
   2. Headers: AISI S212.

B. Fire Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 COLD-FORMED STEEL FRAMING MATERIALS

A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
   1. Grade: ST50H or as required by structural performance.
   2. Coating: G90 (Z275) or equivalent.

B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: 50 (340), Class 1 or 2 or as required by structural performance
   2. Coating: G90 (Z275).

2.4 EXTERIOR NON-LOAD-BEARING WALL

A. Steel Studs for Non-Loadbearing Wall Framing: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 14 gauge (0.0677 inch) or as required by structural performance.
   2. Minimum Flange Width: one- and three-eighths inches (1-3/8”) or as required by structural performance.
   3. Minimum Web Depth: six inches (6”), or as required by structural performance.
   4. Minimum Effective Section Properties:
      a. $I_x = 3.095\ in^4$
      b. $S_x = 1.030\ in^3$

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and matching minimum base-metal thickness of steel studs.

C. Steel Box Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: Flange width, web depth, and section properties as determined by structural performance.
   2. Provide pre-insulated box framing assemblies at window openings.

D. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure.

E. Double Deflection Tracks: Manufacturer's double, deep-leg, U-shaped steel tracks, consisting of nested inner and outer tracks; unpunched, with unstiffened flanges.

2.5 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Hole reinforcing plates.

C. Insulation for boxed framing assemblies: ROXUL CAVITYROCK as recommended by manufacturer for pre-insulated boxed framing assemblies.

2.6 THERMAL INSULATION

A. Exterior infill wall insulation: Unfaced Mineral-Wool Board Insulation: ASTM C612; with maximum flame-spread and smoke-developed indexes of 0 and 0, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics; Underwriters Laboratories Listed. Insulation shall comply with Section 8.16 of NFPA 5000. Coordinate with Sections 06 16 43 – Gypsum Sheathing.
1. Density: Provide dual layer product with the following densities.
   a. Outer layer: 6.24 lb/cu.ft. per ASTM C303.
   b. Inner layer: 3.75 lb/cu.ft. per ASTM C303.
2. Thermal resistivity: 4.3ºF x h x sq.ft./Btu/in. at 75ºF (27.7 K x m x/W at 24ºC) per ASTM C518.
3. Size: twenty-four by forty-eight inches (24” x 48”) cut to fit project specific conditions.
4. Thickness: three inches (3”) min., or as required to achieve an R-12.6.
5. Acceptable Product: ROXUL CAVITYROCK
6. Substitutions: Approval of product substitutions is subject to strict conformance with physical characteristics of specified product.
7. Accessories: Mechanical fasteners in accordance with manufacturer’s written recommendations.
8. Ensure insulation components and accessories are approved in writing by single manufacturer.
9. Provide one-quarter of an inch (¼”) space between boards and air barrier. Install shims as needed to maintain space.

B. Spray Foam Insulation for filling voids and joints: single component, closed cell spray polyurethane, class 1, low expansive foam (Class A). Approved in writing by Manufacturer for compatibility with air barrier products and accessories.

2.7 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

C. Welding Electrodes: Comply with AWS standards.

2.8 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.

B. Shims: Load bearing, high-density multi-monomer plastic, non-leeching or cold-formed steel of same grade and metallic coating as framing members supported by shims.

C. Sealer Gaskets: Closed-cell neoprene foam, one-quarter of an inch (¼") thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.9 FABRICATION

A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
   1. Fabricate framing assemblies using jigs or templates.
   2. Cut framing members by sawing or shearing; do not torch cut.
   3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
   4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of one-eighth of an inch (1/8”) in ten feet (10’) [1:960] and as follows:
   1. Spacing: Space individual framing members no more than plus or minus one-eighth of an inch (1/8” [3 mm]) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
   2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of one-eighth of an inch (1/8” [3 mm]).

PART 2 - EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
   1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding one-sixteenth of an inch (1/16” [1.6 mm]).

D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
   1. Cut framing members by sawing or shearing; do not torch cut.
   2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
      a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
      b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.

H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of one-eighth of an inch (1/8”) in ten feet (10’) [1:960] and as follows:
   1. Space individual framing members no more than plus or minus one-eighth of an inch (1/8” [3 mm]) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
   1. Stud Spacing at typical building wall: sixteen inches (16”) and as needed to fasten cladding components.

C. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from supporting structure to prevent transfer of vertical loads while providing lateral support.
   1. Install single slotted deep-leg deflection tracks and anchor to primary structure, or
      a. Alternate: Install double deep-leg deflection tacks and anchor outer track to primary structure.

E. Install horizontal bridging in wall studs, spaced in rows indicated on Shop Drawings but not more than forty-eight inches (48” [1220 mm]) apart. Fasten at each stud intersection.
   1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.

a. Alternate: Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
b. Alternate: Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instruction

F. Top Bridging for Single Deflection Track: Install row of horizontal bridging within twelve inches (12") of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.
1. Install solid blocking at centers indicated on Shop Drawings.

G. Install miscellaneous framing and connections, including web stiffeners, clip angles, continuous angles, anchors and fasteners to provide a complete and stable wall-framing system.

3.4 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting to determine compliance of replaced or additional work, will be performed at the Contractor's expense.

3.5 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

ROUGH CARPENTRY

SECTION 06 10 00

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to all sections within Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01 21 00 – Allowances
B. Section 07 53 00 – Elastomeric Roofing and Flashing
C. Section 07 62 00 – Sheet Metal Flashing and Trim
D. Section 09 91 23 – Painting

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools, and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice and as required by the material manufacturer, as amended. The work under this Section generally includes the following:

A. Coordinate this work with all trades to provide orderly progress of the tasks.

B. Remove existing and install new wood blocking at roof perimeters, roof to wall locations, and as required to properly terminate the new roofing and flashing systems. Refer to Section 07 53 00 – Elastomeric Roofing for additional information.

C. Install plywood at locations and as indicated in the Contract Drawings.

D. Carefully remove, tag, store, and reinstall existing wood trim components as required to perform the work. Remove and replace deteriorated exterior wood trim as required in a configuration to match existing. There are no known quantities indicated in the Contract Drawings. Review quantities to be replaced with the Owner and Engineer prior to performing the work. The contractor shall carry an allowance for an additional quantity of wood trim to be replaced as part of the base bid contract. Additional quantities to be carried are to be as indicated in the allowance schedule within the Contract Documents. Coordinate with Section 01 21 00 – Allowances.

E. Install new wood trim in a configuration to match the adjacent existing to remain trim.

F. Clean and restore all areas affected by the work.

1.4 JOB CONDITIONS

A. All surfaces to receive the new wood blocking shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. Do not dry with open flames.

A. Coordinate this work with the work described in other Sections of this Specification.

B. Do not leave any newly installed wood blocking exposed. Cover and protect all newly installed wood daily with the new flashing system.

C. Protect all existing and new wood stored on site to prevent moisture absorption. Use tarps over the wood pile (top, sides, and bottom) elevated on pallets (one side lower to shed water).

D. Verify condition and securement of existing wood blocking designated to remain. Verify that existing wood blocking fasteners to deck are specified fasteners spaced twenty-four inches (24”) on-center maximum.

E. If delays in the project exceeding one week (1 wk.) are anticipated due to inclement weather (or due to any other condition), all wood shall be stored in weatherproof box trailers or storage sheds in locations to be designated by the Owner.

1.5 REFERENCE STANDARDS

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
B. APA – THE ENGINEERED WOOD ASSOCIATION
C. NATIONAL DESIGN SPECIFICATION (NDS)
D. AMERICAN FOREST AND PAPER ASSOCIATION (AFPA)
E. AWPA – AMERICAN WOOD PROTECTION ASSOCIATION

1.6 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used, net amount of preservative retained, and chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials, both before and after exposure to elevated temperatures when tested according to ASTM D 5516 and ASTM D 5664.
3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

C. Contractor to provide site safety plan and Job Hazard Analysis.

1.7 QUALITY ASSURANCE

A. Forest Certification: Provide rough carpentry produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC's "Principles and Criteria for Forest Stewardship."

1.8 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

1.9 GUARANTEE

A. The Contractor shall supply the Owner with a minimum two-year (2-yr.) workmanship warranty for their work. In the event any work related to this section is found to be defective within two years (2 yrs.) of substantial completion, the Contractor shall remove and replace such at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 DIMENSIONAL LUMBER

A. All dimensional lumber for roofs and walls shall be construction grade Douglas Fir, Hem-Fir or Southern Yellow Pine, formed to the dimensions shown on the Detail Drawings and as required for proper installation of the new work. All new exterior perimeter woodwork, nailers, and wood blocking used on the building shall be minimum six-inch (6") wide, except where otherwise detailed. Wood furring/blocking shall be permitted to be minimum four inches (4") wide at expansion joints and wall locations.

B. All woodwork shall have a maximum moisture content of nineteen percent (19%) by weight on a dry weight basis. Kiln drying may be required to conform to maximum nineteen percent (19%) moisture content.

C. Shims for roof edge blocking shall be continuous cedar of the size required to provide a sloped surface for the roof edge detail as shown in the Contract Drawings.

2.2 PLYWOOD

A. Plywood shall be APA Grade CD, Exterior, minimum one-half inch (1/2") thick for wall systems, unless designated otherwise on the detail drawings. Pressure treated plywood will not be permitted.

2.3 EXTERIOR TRIM REPLACEMENT

A. Lumber Trim for Painted Finish:
   1. Species and Grade: Mahogany, Grade 1 (domestic).
   2. Maximum Moisture Content: Nineteen percent (19%) with at least eighty-five percent (85%) of shipment at twelve percent (12%) or less.
   3. Finger Jointing: Not allowed.
   4. Face Surface: Surfaced (smooth).

B. Moldings for Painted Finish, WMMPA WM 4, N-grade wood moldings, without finger jointing. Made from kiln-dried stock to patterns included in WMMPA WM 12.
   1. Species: Western red cedar.

2.4 MISCELLANEOUS LUMBER

A. General: Provide lumber for support or attachment of other construction, including the following:
   1. Rooftop equipment bases and support curbs.
   2. Blocking.
   3. Nailers.

B. For items of dimension lumber size, provide Construction, Stud, or No. 2 grade lumber with fifteen percent (15%) moisture content.

2.5 FASTENERS

A. In general, all fasteners, anchors, nails, straps, and other accessories shall be of stainless steel, galvanized steel, or fluorocarbon coated steel. Galvanizing shall be hot dip in accordance with ASTM A153 Specifications. Electro-galvanized items shall not be used.

B. Fasteners for securing wood blocking to wood blocking shall be galvanized annular threaded ring shank nails. Fasteners shall be of sufficient length to penetrate the receiving member one- and one-half inches (1-1/2") minimum, except full depth into plywood.

C. Fasteners for securing wood blocking to wood decking shall be #14 self-drilling, self-tapping, fluorocarbon coated screws of sufficient length to penetrate the decking one-inch (1") minimum, one- and one-quarter inches (1-1/4") maximum.

D. Fasteners for securing plywood to concrete and masonry surfaces shall be one-quarter inch (¼") diameter hammer drive anchors with zinc-alloy sheaths and stainless-steel inserts as manufactured by Star Fasteners, Rawl, OMG or approved equal. Anchors shall be of sufficient length to penetrate the receiving substrate one- and one-quarter inches (1-1/4") minimum.

E. Fasteners for securing wood blocking to CMU blocks and brick masonry units shall be Kwik-Con II+Torx Hex Screw Anchor as manufactured by Hilti or approved equal. Fasteners shall be of sufficient length to penetrate the receiving substrate one- and three-quarter inches (1-3/4") minimum.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

C. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.

D. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

E. Use fasteners of appropriate type and length. Predrill members when necessary to avoid splitting wood.

3.2 REMOVAL OF WOOD BLOCKING

A. Remove and dispose of all deteriorated wood blocking and all blocking scheduled to be removed and replaced in accordance with the Contract Drawings and this Specification.

3.3 PERIMETER WOOD BLOCKING INSTALLATION

A. Refer to FM Data Sheet 1-49 concerning spacing requirements for perimeter blocking anchorage. All anchors and fasteners that attach wood blocking to the structure shall have their spacing halved for an eight-foot (8') length away from all exterior corners of the perimeter.

B. The perimeter wood blocking shall be installed at a consistent, even height throughout that roof area to provide a flush transition from insulation to blocking and provide an even and continuous line for metal fascia installation.

C. All butt joints in woodwork shall be flush to provide a smooth, uniform line with no irregularities. Built-up blocking shall have butt joints staggered four feet (4') minimum layer to layer. The minimum length of any individual piece of woodwork shall be two feet (2'). All lengths of woodwork shall have a minimum of two (2) fasteners. Layers of wood blocking at corners shall be interlocked to provide additional stability.

D. At roof perimeters, the wood blocking and plywood shall be installed as detailed. Provide eight-inch (8") nominal wide blocking at roof perimeters unless otherwise detailed.

E. Existing wood blocking and curbs may be required to be cut back or trimmed to provide an even flush assembly as shown on the Detail Drawings. This shall be accomplished with power or hand tools. Should cutting of existing components reduce or eliminate securement of their components, the Contractor shall re-secure with the appropriate fasteners.

3.4 FASTENING OF WOODWORK

A. All new woodwork shall be secured with the specified fasteners spaced twelve inches (12") on-center maximum, or unless otherwise specified by Factory Mutual Global's Data Sheet FM 1-49.

B. All existing woodwork to be reused shall be re-secured with the specified fasteners spaced twelve inches (12") on-center maximum, to the roof deck. The Contractor shall be made aware that the re-securement fasteners may need to penetrate multiple layers of existing wood blocking before penetrating the roof deck and shall provide proper length fasteners.

C. Wood blocking shall be fastened directly to the roof deck with the specified fasteners spaced twelve inches (12") on-center maximum, staggered off the centerline of the woodwork being secured. Predrilling of fastener holes shall be completed prior to installing fasteners. Should the wood blocking be greater than a nominal two by six (2x6), fasteners shall be spaced twelve inches (12") on-center maximum in pairs.

D. Wood blocking to wood blocking connections shall be made using the specified fasteners spaced twelve inches (12") on-center maximum and staggered off the centerline of the woodwork being secured. Nails shall be of sufficient length to penetrate the receiving member one- and one-half inches (1-1/2") minimum.

E. Plywood shall be fastened to vertical concrete, CMU, and masonry surfaces with the specified fasteners spaced eight-inches (8") on-center both vertically and horizontally.

F. Plywood shall be fastened to vertical stud framing with the specified fasteners spaced six inches (6”) on-center maximum vertically.

G. Spacing of fasteners should not exceed twelve inches (12”), eight feet (8’) each way from outside corners. Withdrawal resistance should be one hundred pounds (100 lbs.) per nail minimum.

3.5 PLYWOOD SHEATHING INSTALLATION

A. Coordinate this work with that of the other trades to provide the orderly progress of construction and a watertight condition. It is the intent of these specifications to install plywood sheathing at designated parapet walls and where designated on the Contract Drawings.

B. Secure new plywood sheathing over the substrate accepting the new elastomeric flashings. Where practical, the plywood assembly can be sized to allow the plywood surface to be flush with the wood blocking around the perimeter of the roof system. Coordinate with Sections 07 53 00 – Elastomeric Roofing and Flashing and 07 62 00 – Sheet Metal Roofing and Flashing.

3.6 PROTECTING AND CLEANING

A. New wood blocking and plywood shall be kept dry before, during and after installation.

B. Clean adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

C. Refer to close-out procedures described in Division One of these Specifications for additional information.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 06 10 00 Rough Carpentry.docx

THIS PAGE INTENTIONALLY LEFT BLANK.

GYPSUM SHEATHING

SECTION 06 16 43

PART 1 - GENERAL

1.1 IN GENERAL

A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Structural Steel – Section 05 01 20
B. Cold-Formed Metal Framing – Section 05 40 00
C. Rough Carpentry – Section 06 10 00
D. Painting – Section 09 91 23

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice. The work under this Section generally includes the following:

A. Install interior gypsum board at wall infill locations as indicated.

B. Clean and restore all areas affected by the repair work.

1.4 JOB CONDITIONS

A. Coordinate the work in this Section with the work in other sections to maintain a watertight condition and to ensure the orderly progress of work.

1.5 REFERENCES

A. ASTM International (ASTM):
   1. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products.
   2. ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
   3. ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

4. ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
5. ASTM C1280 Standard Specification for Application of Gypsum Sheathing.
6. ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
7. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.
8. ASTM C840 Specification for Application & Finishing of Gypsum Board.

1.6 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.

B. Product Data: Manufacturer's specifications and installation instructions for each product specified.

C. Written verification that all gypsum sheathing products are manufactured in the United States of America.

D. Written verification that all interior and exterior gypsum products do not contain corrosive chemicals or materials.

1.7 WARRANTY

A. Provide products that offer twelve months of coverage against in-place exposure damage (delamination, deterioration and decay).

PART 2 - PRODUCTS

2.1 INTERIOR SHEATHING

A. Gypsum Wallboard:

1. Gypsum wallboard shall be 5/8" thick, paper face with a tapered edge. Gypsum board shall meet ASTM C1396 Standard Specification for Gypsum Wall Board.

2. Size: Maximum available lengths (4'x8' or 4'x14') to minimize end-to-end joints with manufacturer's standard edge profile, unless noted otherwise.

B. Acceptable Manufacturers:

Subject to compliance with these specifications and project conditions, the following manufacturers are acceptable:
1. United States Gypsum Company (USG)
2. Georgia-Pacific Building Products
3. National Gypsum Company
4. or approved equal

2.2 EXTERIOR SHEATHING

A. Coordinate installation with Sections 0450 00 – Masonry and 05 40 00 Cold Formed Metal Framing.

B. Fiberglass-Mat Faced Gypsum Sheathing: ASTM C1177:
1. Thickness: five-eighths of an inch (5/8”).
2. Width: four feet (4’).
3. Length: eight feet (8’) minimum.
4. Weight: 1900 pounds per M square feet (max).
5. Edges: Square.
6. Surfacing: Coated fiberglass mat on face, back, and long edges.
7. Racking Strength (Ultimate, not design value) (ASTM E72): Not less than 540 pounds per square foot, dry.
8. Flexural Strength, Parallel (ASTM C473): eighty pounds per foot (80 lbf.), parallel.
9. Humidified Deflection (ASTM C1177): Not more than one-quarter of an inch (1/4”).
10. Permeance (ASTM E96): 23 perms.
11. R-Value (ASTM C518): 0.56.
12. Non-combustible in accordance with ASTM E 136.

C. Acceptable Manufacturers:
1. DensGlass Gold, Georgia-Pacific Gypsum.
2. GoldBond Brand e^{2}XP, National Gypsum
3. GreenGlass, Temple-Inland
4. or approved equal

2.3 ACCESSORIES

A. Joint compound shall be premixed conforming to ASTM C475 Specifications. Compound shall be asbestos free.

B. Corner beads shall be DUR-A-BEAD No. 103 1-1/4” x 1-1/4” (one- and one-quarter inches by one- and one-quarter inches).

C. Metal trims shall be No. 200-A-J shaped channel five-eighths of an inch (5/8”) in size. Plastic tear away trim will be considered.

2.4 FASTENERS AND ACCESSORIES

A. In general, all fasteners, anchors, nails, straps and other accessories shall be of stainless steel, galvanized steel or fluorocarbon coated steel. Galvanizing shall be hot dip in accordance with ASTM A 153 Specifications. Electro-galvanized items shall not be used.

B. Fasteners for securement of gypsum to metal studs shall be No. 12, self-drilling, self-tapping screws with flat heads. Screws shall be of sufficient length to penetrate the metal studs five-eighths of an inch (5/8") to one-inch (1").
   1. For steel framing less than 0.03 inch thick: Comply with ASTM C1002.
   2. For steel framing from 0.033 inch thick to 0.112 inch thick: Comply with ASTM C954.

C. Provide all accessory clips, angles, etc. as required for the proper securement of sheathing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:
   1. Inspection: Verify that project conditions and substrates are acceptable to the installer, to begin installation of work of this section.

3.2 GENERAL WORKMANSHIP

A. All materials shall be stored in a secure place, approved by Architect/Engineer, and be protected from the environment.

B. Gypsum sheathing shall be free of defects including but not limited to broken corners, excessive moisture, dimensional irregularities and the like. Defective panels shall be marked and immediately removed from the site.
   1. Sheet metal or mesh patches at broken corners will not be allowed.
   2. Damage at corners will require either full replacement of the entire panel, or cutting and patching of the panel back to the next adjacent stud, providing two (2) full support points for the sheathing.

3.3 INTERIOR GYPSUM SHEATHING

A. Coordinate with other work including mechanical and electrical work. Installation of conduit and ductwork above ceilings or behind walls shall be complete before installation of gypsum board system.

B. Install in accordance with manufacturer's current printed recommendations and in accordance with ASTM C636.

C. Do not install interior gypsum board when ambient temperature is below forty degrees Fahrenheit (40ºF).

D. Install gypsum wallboard to the interior surface of studs, fastening eight inches (8") on-center vertically and sixteen inches (16") on-center horizontally so as to slightly dimple the gypsum, but not break the surface.

E. At patching locations, provide minimum two points of support for gypsum board. Surface defects and damage shall be corrected as required to leave gypsum board smooth, uniform in appearance, and ready to receive finish as specified.

3.4 EXTERIOR GYPSUM SHEATHING

A. General: Install sheathing in accordance with ASTM C1280 and the manufacturer's recommendations.

B. The panels shall be cut to fit and installed tightly butted to adjacent panels as required to cover the cavity. At no time will unsupported ends of the panels be allowed.

C. The panels shall be secured to the metal studs with the specified screws spaced at twelve inches (12") on-center, maximum.
   1. Fasteners should be set flush with the panel face.
   2. Fasteners that penetrate through the face of the sheathing are prohibited.

D. Install mesh and mastic at all horizontal and vertical joints and along all limits of sheathing panels where panels abut closure flashing.

END OF SECTION

\\nhfile\bt-doc\840090\02 design\specs\840090 06 16 43 gypsum sheathing.doc

THIS PAGE INTENTIONALLY LEFT BLANK.

ELASTOMERIC ROOFING AND FLASHING

SECTION 07 53 00

PART 1 – GENERAL

1.1 GENERAL PROVISIONS

A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to all sections within Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 04 50 00 – Masonry
B. Section 06 10 00 – Rough Carpentry
C. Section 07 62 00 – Sheet Metal Flashing and Trim
D. Section 09 91 23 – Painting

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools, and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice and as required by the material manufacturer, as amended. The work under this Section generally includes the following:

A. Coordinate this work with all other trades to provide orderly progress of work.

B. Supply all shoring and protection necessary to protect the building areas, building systems and landscape areas.

C. Supply all necessary chutes, disposal facilities, transportation and labor necessary to dispose of all demolished materials, dirt, and debris off-site in a legal dumping area. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish and debris.

D. Remove and dispose of existing roofing materials, including but not limited, to rolled asphalt roof membrane, flat seam metal roof, and wood plank deck at Roof Area A1.

E. Remove and dispose of existing roofing materials, including but not limited, to rolled asphalt roof membrane and flat seam metal roof down to the existing to remain wood plank deck at Roof Area A2. Prepare surfaces which remain to receive new roofing assembly.

F. Remove all existing base flashings. Remove other existing flashings and other components as required to properly complete the work.

G. Clear roof surfaces of debris by sweeping and vacuuming methods as required to remove all debris from the wood roof deck surface.

H. Remove, protect and/or store all materials and assemblies to be reinstalled.

I. Coordinate with Section 06 10 00 – Rough Carpentry for the installation of wood blocking and planking required to provide a minimum eight-inch (8") flashing height and properly terminate the roof membrane and flashings as indicated on the Contract Drawings.

J. Furnish and install a new adhered single-ply elastomeric roofing assembly including, but not limited to, fleece-backed elastomeric membrane and baseboard over existing tongue and grove wood deck at Roof Area A2.

K. Install transition flashing at existing to remain elastomeric roofing assembly at roof area E2.

L. Coordinate the installation of sheet metal flashings, including but not limited to, edge metals, counter flashings, skirt flashings, hook strips and clips to properly terminate the roofing membrane and shed water from walls with Section 07 62 00 – Sheet Metal Flashing and Trim.

M. Clean and restore all areas affected by the work to the satisfaction of the Owner.

1.4 JOB CONDITIONS

A. Schedule and execute all work without exposing the building interiors to inclement weather. Protect all new and existing roof work, the building, and its contents from staining and damages. Segregate all work areas from the building occupants.

B. The Contractor shall utilize skilled and experienced specialty workers to install the work. Experienced trade workers shall be utilized for all aspects of the work.

C. The building shall be occupied during construction. The Contractor shall provide all protection, barriers, and guards necessary to segregate their work area, and the areas below, from pedestrian and vehicular traffic. Also protect existing roof areas, equipment, landscaping, and paved areas from damage.

D. All surfaces to receive new insulation, membrane or flashings shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. No open flames shall be permitted on the roof at any time.

E. Remove only as much existing roofing as can be replaced and made weather tight each day, including all flashing work.

F. Roofing shall not be applied when ambient temperature is less than forty degrees Fahrenheit (< 40ºF) unless approved in writing by the Engineer and membrane manufacturer.

G. Temporary waterstops shall be installed at the end of each day's work and shall be removed before proceeding with the next day's work. Waterstops shall be compatible with all materials and shall not emit dangerous or incompatible fumes. Waterstops must be installed to permit proper roof drainage. Waterstops shall not be installed to impede roof surface drainage.

H. Cover sidewall areas with canvas tarps where existing roof system is discarded into refuse containers via trash chutes. Plastic or "poly" tarps shall not be used at these locations.

I. All new and temporary construction, including equipment and accessories, shall be secured from wind damage or blow-off.

J. Equipment required to hoist materials to the roof and remove debris from the roof shall be supplied, maintained, and operated by the Contractor.

K. The Contractor shall provide protection for sitework, plantings, landscaping, building surfaces, interior spaces, and similar items to protect from damage. Items damaged as a result of the work in this section shall be repaired or replaced by the Contractor to the satisfaction of and at no additional cost to the Owner.

L. The Contractor shall clean all debris which may infiltrate through the roof decking into the interior prior to demobilization from the site. This shall include, but not be limited to, floors, cabinets, and drop ceilings.

M. The Contractor shall notify the Owner at least seventy-two hours (72 hrs.) in advance of doing any interior demolition work so that the Owner may provide entry into required areas.

N. No removal, replacement, repair or covering of potentially deteriorated roof deck shall be performed without authorization from both the Engineer and Owner.

O. The Contractor is cautioned to take all necessary precautions and make all investigations necessary to install the work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

1.5 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.

B. A sample roofing system warrantee and letter of confirmation from the roof membrane manufacturer stating that the Contract Documents have been reviewed and that there are no exceptions to the Specifications and Contract Drawings shall be submitted. The roofing system must meet the intent of UL 790, Class A and Factory Mutual Class indicated for the field, perimeters, and corners respectively, shall be in conformance with all local and state building codes, and is accepted by the manufacturer for the required warranty.

C. The Contractor shall provide adequate staging and protection of the interior building as required to perform the work. Provide submittals for site protection and staging as specified in Section 01 33 00 – Shop Drawings and Submittals.

D. Provide a letter of approval from the baseboard manufacturer and membrane manufacturer that the proposed system is compatible with the cold adhesive system and will achieve the specified warranty.

E. Provide the manufacturer's product and installation literature for each item listed in Part 2 for approval. Shop drawings are required indicating any anticipated changes.

F. Submit evidence that the cold adhesive manufacturer's representative had observed the insulation installation and that the system appears to be installed in accordance with the manufacturer's instructions.

1.6 QUALITY CONTROL

A. Roofing Contractor's Experience Requirements: The Roofing Contractor shall be experienced, to the satisfaction of the Owner and Engineer, in the installation of warranted, cold-process, multiple-ply, roofing systems. Minimum required experience involves the successful installation of at least five (5) projects of similar scope, size and complexity where the Roofing Contractor has installed the Manufacturer's cold-process, modified-bitumen roofing assemblies, within the past three years (3 yrs.). All such references must be available for inspection by the Owner and Engineer, as may be requested. Provide the following submittal information:

1. Name, address and contact person of each of the five (5) projects being used as a reference.
2. Copies of Roofing Material Manufacturer's warranties, showing dates and square footage for each of the five (5) referenced projects.
3. Written letter of "Certification" or "Approval" from the Roofing Materials Manufacturer showing that the Roofing Contractor has been "Certified" or "Approved" by the Roofing Materials Manufacturer for a minimum of three years (3 yrs.).

1.7 TESTING PROCEDURES

A. During the course of the work, the Owner (or designated representative) may secure samples, in accordance with testing guidelines defined within ASTM D140, of materials and completed roofing being installed at the job site and submit them

to an independent laboratory for comparison to the material performance requirements listed in these specifications.

B. Should test results prove that materials and/or completed roofing do not meet or exceed the performance requirements listed within these specifications:
   1. Contractor shall pay for all testing.
   2. Construction installed and found not to comply with the specifications shall be removed and replaced at no change to the contract price.

1.8 WARRANTY AND GUARANTEE

A. Roofing Contractor's Guarantee: Upon completion of the work, and prior to final payment, the Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two years (2 yrs.), and shall be signed by a Principal of the Contractor's firm, and sealed if a corporation. In the event any work related to the roofing, flashing, or metal work is found to be defective within two years (2 yrs.) of substantial completion, the roofing contractor shall remove and replace such at no additional cost to the Owner. The roofing Contractor's warranty obligation shall run directly to the building Owner, and a copy of the roofing signed warranty shall be sent to the roofing system's manufacturer.
   1. The duration of the Roofing Contractor's two-year warranty shall run concurrent with the roofing system's manufacturer's twenty-year (20-yr.) warranty.

B. Roofing Systems Manufacturer's Warranty: The roofing manufacturer shall guarantee roof areas to be in a watertight condition and free from seam separation and the delamination of the roofing system components, for a period of twenty year (20 yrs.), from the date of final acceptance of the roofing system. The warranty shall be a twenty-year (20-yr.) no dollar limit, non-prorated total system labor, and material warranty, for wind speeds up to seventy-five miles per hour (75 mph). The total system warranty shall include all roofing materials, related components, and accessories including, but not limited to the baseboard, vapor retarder, insulation board, cover board, roofing membrane, membrane flashings, fasteners, adhesives and termination metals and roof drain assemblies. The manufacturer shall repair leaks and defects in materials and workmanship as promptly after observation as weather and site conditions permit.

PART 2 – MATERIALS

2.1 ROOFING AND FLASHING MEMBRANES

A. Roofing membrane shall be 0.060 mil thick non-reinforced compounded rubber sheet elastomer (EPDM) laminated to a 0.055 mil non-woven polyester fleece-backing, as manufactured by Carlisle SynTec Systems, Inc., Versico Incorporated, or approved equal.

B. The elastomeric sheet membrane shall have the following minimum properties:

PHYSICAL PROPERTY	TEST METHOD	SPECIFICATIONS
Tolerance on Nominal Thickness, %	ASTM D 751	+/- 10
Thickness over Fleece, min.	ASTM D4637	.060 mil
Breaking Strength, min, lbf	ASTM D 751	210
Elongation, Ultimate, min, %	ASTM D 412	480
Tear Strength, min, lbf	ASTM D 751 (B Tongue Tear)	45
Brittleness point, max, °F	ASTM D2137	-67
Puncture Resistance, Joules	ASTM D5635	27.5
Resistance to Heat Aging Properties after four weeks (4 wks.) @ 240°F	ASTM D 573	
Breaking Strength, min, lbf	ASTM D 751	200
Elongation, Ultimate, min, %	ASTM D 412	225
Linear Dimensional Change, max, %	ASTM D 1204	-0.7
Ozone Resistance Condition after exposure to 100 pphm Ozone in air for 168 hours @ 104°F (40°C) Specimen wrapped around 3" mandrel	ASTM D 1149	No Cracks
Resistance to Water Absorption After 7 days immersion @ 158°F (70°C) Change in mass, max %	ASTM D 471	2.0
Resistance to Outdoor (Ultraviolet) Weathering Xenon-Arc, 4000 hours exposure, 176°F (80°C) black panel temperature	ASTM D 26	No Cracks No Crazing

C. Stripping shall be six-inch (6") or nine-inch (9") wide semi-cured EPDM self-adhering seam cover strips (minimum thickness: sixty millimeters [60 mils.]) as manufactured by the approved roof membrane manufacturer.

D. Factory fabricated membrane seams shall be step tapered to achieve a smooth transition across the seam. Seams shall be vulcanized.

E. Flashing membrane to be used at corners of walls or penetrations shall be of the same manufacturer as the roof membrane and shall be 0.060" thick uncured elastomer completely compatible with all other components used in the new roofing

system. Cured membrane specified in 2.1B shall be used at straight flashing runs. Seams shall be stripped-in with uncured membrane.

F. All materials and accessories used to install the roofing and flashing membrane systems shall be of the same manufacturer as the sheet membrane. These materials include, but are not limited to, the following:
1. Surface cleaners and primers.
2. Bonding adhesive.
3 Splicing cement.
4. Lap Sealant.
5. Mastics.
6. Caulkings and sealants.
7. Pourable sealer.
8. Pipe seals.
9. Walkway Pad.
10. Membrane termination strips, bars, plates and fasteners.

G. All membrane manufacturer's required details shall be considered a part of this project and incorporated into the project details by the Contractor.

2.2 BASEBOARD

A. Baseboard for use on wood deck areas shall be one-half inch (1/2") minimum thick, type X, cellulosic fiber-reinforced, moisture resistant gypsum core board such as USG Securock Brand UltraLight or approved equal as required by the roof manufacturer.

B. The base boards shall be a maximum of four feet by eight feet (4' x 8') in size and shall conform to E84. Boards shall be square, uniform in dimension, and approved in writing by the membrane manufacturer. A copy of the written acceptance shall be forwarded to the Engineer.

C. Joint tape shall be recommended by the coverboard manufacturer and shall have a minimum width of four inches (4").

2.3 FASTENERS AND ACCESSORIES

A. In general, fasteners, straps and other hardware shall be copper, brass, stainless steel or hot-dip galvanized steel. Galvanizing shall be per ASTM A 153-82 specifications.

B. All accessories, including, but not limited to nails, screws, clips, fastening strips, etc. shall be completely compatible with the material being fastened to prevent galvanic reaction and premature deterioration.

C. Nails for membrane and flashing terminations shall be No. 12 Stubbs gauge, large head, threaded shank, hot dip galvanized roofing nails of sufficient length to penetrate the wood blocking one- and one-quarter inch (1-1/4") minimum

D. Fasteners for terminating roof membrane and flashing at concrete or masonry substrates shall be minimum one- and one-half inch (1-1/2”) long drive pins in zinc sheaths as manufactured by Star, Rawl or approved equal. Embedment into masonry shall be one- and one-quarter inch (1-1/4”) minimum.

E. Fasteners for securement of flashings, and hook strips to wood blocking and plywood substrates shall be galvanized annular threaded ring shank nails. Fasteners shall be of sufficient length to penetrate the substrate one- and one-quarter inch (1-1/4”) minimum, except full depth of plywood.

F. Baseboard fasteners over wood deck: #14 self-drilling, self-tapping, fluorocarbon coated screws of sufficient length to penetrate decking one-inch (1”) minimum, one- and one-quarter inch (1-1/4”) maximum.

2.4 SEALANTS AND ACCESSORIES

A. Sealant for sheet metal flashings and other exposed locations shall be a one-part polyurethane conforming to ASTM C920-87, Type S, Grade NS, Class 25, Uses NT, M, A, and O such as manufactured by Tremco, BASF-Sonneborn, Sika Corp., or approved equal.

B. Color(s) shall be selected by the Owner from the approved manufacturer's color chart. Colors shall be the manufacturer’s available premium colors such as "Color Pak" by Tremco or approved equal.

C. Primer shall be non-staining type as manufactured or recommended by the sealant manufacturer for each substrate.

D. Substrate cleaner shall be non-corrosive and non-staining as recommended by the sealant manufacturer. Cleaner shall be totally compatible with the sealant for each substrate.

E. Bond breaker tape shall be pressure-sensitive tape as recommended by the sealant manufacturer.

F. Masking material shall be commercially available masking tape of appropriate width or other material recommended by the sealant manufacturer. Self-adhesive masking materials shall be of low tack and completely strippable, leaving no adhesive residue behind when removed.

PART 3 - EXECUTION

3.1 GENERAL WORKMANSHIP

A. Do not deliver to site or install any material or system that has not been approved by the Engineer or Owner. Materials installed without approval may be required to be removed at no additional cost to the Owner.

B. The prepared roof deck surface must be dry, clean and smooth. Provide dryers, if necessary, to dry deck surfaces prior to installing new work. Open flame devices shall not be used.

C. Maintain temporary protection of the new and existing roof system throughout the duration of the project. The roof system will be cleaned to the satisfaction of the Owner and Engineer prior to final payment. All areas of stained membrane will be cut out and replaced by the Contractor at no additional cost to the Owner. Multiple patches in close proximity will not be acceptable and will require one (1) large patch.

D. Comply with the manufacturer's written instructions and these specifications for all roof repairs and associated work. Flashing shall be installed along with the membrane to assure weather tight termination.

E. Do not cut any material with a solvent or dilutant unless specifically instructed by the manufacturer in writing.

F. Keep covers tightly sealed on all canned and evaporative products to prevent premature curing.

G. Partial or unmarked cans or rolls of materials cannot be used.

H. Do not store rolls of membrane or flashings on the roof without the written consent of the Engineer and Owner.

I. Refer to the publication, "Copper and Common Sense" by Revere Copper and Brass and all recommendations of the Sheet Metal and Air Conditioning Contractors National Association concerning methods and materials to be used in the fabrication and construction of sheet metal flashings.

3.2 REMOVAL OF EXISTING SYSTEM

A. Remove all existing roofing materials and flashings down to the existing wood plank roof deck. Scrape and sweep clean loose debris. Notify the Engineer of any areas of unsuitable roof deck or associated components.

B. Remove existing rolled asphalt roof membrane, base flashings, termination bars, and associated components in their entirety down to existing masonry wall or blocking.

C. Scrape and clean the existing roof deck, walls and penetration surfaces. Notify the Owner and Engineer of any areas of unsuitable roof deck or associated components.

D. Sequence work to minimize building exposure between demolition and new roof materials installation. Install temporary roofing and flashing as necessary to maintain a watertight condition throughout the course of the work. Remove temporary work prior to installation of permanent roof system materials. Only remove as much roofing

and flashings as can be made weathertight the same day with the new work. Arrange each day's termination point to prevent interruption of roof top drainage.

E. Remove existing strainers, clamping rings, and drain bowls from the existing drain assemblies.

F. Temporarily support exposed duct work.

G. Remove, disconnect, store, and reinstall existing rooftop mechanical equipment in preparation for new roof system. Removals, lengthening/shortening, and reinstallations of mechanical equipment including mechanical/electrical connections are to be performed by licensed tradesmen. Costs for mechanical/electrical work shall be included in the Contractor's bid price. Coordinate with Section 26 10 00 – Temporary Mechanical/Electrical Disconnects for limits and work activities.

H. Remove existing mechanical equipment support curbs in preparation for installing new curbs at unit locations as indicated.

3.3 DECK PREPARATION

A. Allow moist deck sections to dry prior to application of roof insulation. Open flames are strictly prohibited from the roof areas.

B. Ensure that deck surface and joints are clean of all debris and roofing materials.

C. Tape cracks and joints in deck to prevent adhesive seepage into building interior.

3.4 BASEBOARD INSTALLATION

A. Install baseboard with long joints in continuous, straight lines, perpendicular to roof slopes, with end joints staggered between rows. Tightly butt baseboards together.

B. Mechanically fasten the layers of base board and secure to roof deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Fasten insulation to resist uplift pressures to meet the intent of **FM Global Requirements** to achieve the required wind uplift results.

C. Review underside of roof deck for the potential of existing conduits.

3.5 ADHERED MEMBRANE INSTALLATION

It is the intent of this Specification Section to provide the Owner with a new, adhered membrane, one hundred percent (100%) bonded to the insulation, of sufficient bond strength to resist the uplift pressures indicated for the field, perimeters, and corners respectively, in conformance with all local and state building codes, and is accepted by the manufacturer for the required warranty uplift pressures as defined in FM Data Sheet 1-28, current edition.

A. Refer to Section 06 10 00 – Rough Carpentry, regarding the installation of wood blocking and similar accessory woodwork. Be sure all loose or deteriorated bituminous substances are removed with the original system. Clean any items designated to remain of all remaining bitumen.

B. Inspect surface of insulation prior to installation of roof membrane. Insulation surface shall be clean and smooth with no excessive surface roughness. Contaminated surfaces or unsound surfaces such as broken or delaminated boards or insulation voids shall be removed and disposed. Cover boards shall be swept and blown clean of all dust prior to applying bonding adhesives.

C. Install fully adhered elastomeric roofing on all roof areas designated to receive such. Install membrane system in accordance with the recommendations and requirements of the membrane material's manufacturer, as amended in these Specifications, or whichever is more restrictive. Follow manufacturer requirements concerning application rates for cleaners, solvents, adhesives and similar materials. The application rates for these items given in these Specifications are to be considered nominal and the actual rates will vary from manufacturer to manufacturer.

D. Position roofing membrane without stretching over the insulation. Lay sheets in a shingle fashion. Allow the membrane to relax for minimum one-half hour (½ hr.) before bonding. Fold the sheet back onto itself so that one-half (½) of the underside of the sheet is exposed. It is essential that the fold in the sheet be smooth, with no wrinkles or buckles, because these could cause wrinkles in the sheet during installation. Apply the bonding adhesive onto the substrate and allow the adhesive to cure or rise and apply the bonding adhesive again to both the sheet and the substrate per the manufacturer's requirements. Roll the membrane with a thirty-inch (30") wide, one hundred fifty pound (150 lb.) weighted segmented steel roller to set the membrane into the adhesive, being careful to avoid wrinkles. Brush down the bonded half of the sheet with a push broom to achieve maximum contact. Fold back the unbonded half of the sheet and repeat the bonding procedure. No wrinkles shall be allowed in the completed application. Wrinkled sheets shall immediately be removed and replaced and not patched. Do not apply bonding adhesive in areas that are to be spliced to flashings or adjacent sheets. At end laps, membrane shall be butted together and overlay with six-inch (6") wide cured cover strip.

E. Splice adjacent sheets in accordance with the manufacturer's written instructions using the manufacturer's double sided seam tapes (minimum six-inch [6"] tape). Totally clean areas to be spliced of all talc, dirt and other foreign substances using clean rags with manufacturer's splice wash cleaner or other manufacturer's recommended cleaner. Clean all seam areas at least twice in two separate applications with new rags and cleaner each time. Change the rags and cleaner frequently. It is imperative that these seam areas be totally clean. Install manufacturer's in-seam sealant to cleaned seams as recommended by the membrane manufacturer. Apply seam tape for the full width (minimum six inches

[6]") of the lap splice. Totally clean the completed splice for a distance of one-inch (1") on either side of the edge of the top sheet using clean rags and cleaner. Apply a continuous bead of lap sealant to the edge of the spliced sheet and feather out bead using preformed trowel. Lap sealant must be set daily as the work progresses.

F. Nail off membrane, after relaxing, adhering and splicing, along all perimeters and around all flashing units. Membrane shall be nailed off with the hook strip flange or termination bar along perimeters as detailed. The membrane at all flashing locations shall be nailed off six inches (6") on-center maximum with the specified roofing nails through tin discs. In areas where no metal flanges are installed (such as at roof to wall details), the nailing shall be reduced to four inches (4") on-center maximum. All nailing shall be held back two inches (2") from the edge of the membrane. Vertical nailers, when used, shall be fastened eight inches (8") on-center. Extend membrane behind vertical nailers and secure through it.

G. Temporary waterstops shall be constructed to provide a one hundred percent (100%) watertight seal utilizing a raised temporary waterstop at the end of each day's work. Sweep back and totally clean the gravel and flood coat from the existing roof and set a two-inch by four-inch (2" x 4") stud atop the prepared area in sealant or materials recommended by the membrane manufacturer. Where stopping work on the new system, maintain the stagger of the insulation joints by installing partial fillers. Carry the new membrane up and over two-inch by four-inch (2" x 4") waterstop. Seal the edge of the new membrane onto the old membrane in a continuous heavy application of sealant or materials recommended by the membrane manufacturer. Weight the membrane down in the sealant with a two-inch by ten-inch (2" x 10") wood member with ballast on top. Ballast should be approximately twenty pounds per linear foot (20 lb./l.f.). When work is resumed, remove all sealant, membrane, insulation fillers, etc. from the area of the waterstop. Do not reuse any of the materials in the new work. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation in order to maintain a watertight condition.

3.6 WATERSTOPS

A. All flashings shall be installed concurrently with the roof membrane in order to achieve a watertight condition as the work progresses. When a situation arises where a break in the day's work occurs in the central area of a roof, a temporary waterstop shall be constructed to provide a one hundred percent (100%) watertight seal utilizing a raised temporary waterstop. Sweep back and totally clean the existing roof and set a two-inch by four-inch (2" x 4") stud atop the prepared area in roof cement as recommended by the membrane manufacturer. Where stopping work on the new system, maintain the stagger of the insulation joints by installing partial fillers.

B. Carry the new membrane up and over two-inch by four-inch (2" x 4") waterstop. Seal the edge of the membrane in a continuous heavy application of roof cement. Weight the membrane down in the sealant with a two-inch by ten-inch (2" x 10") wood member with ballast on top. Ballast should be approximately twenty pounds per

linear foot (20 lb./l.f.). When restarting work, remove all sealant, membrane, insulation fillers, etc. from the work area. Do not reuse any of the material in the new work. Cut off contaminated EPDM membrane and dispose of immediately. If inclement weather occurs while a temporary waterstop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.

3.7 MEMBRANE FLASHING

All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the job progresses. The Contractor shall arrange his schedule, as much as practical, to install complete distinct roof areas each which, once flashed, will then be installed completely. No temporary membrane flashings shall be allowed without the prior written approval of the Engineer. Approval will only be for specific locations on specific dates.

A. Ensure that all air intakes and air handling units have been shut off or temporary protected to prevent adhesive fumes from infiltrating the building.

B. Ensure that all substrates are free from contaminates prior to the installation of the new flashing membranes. Install the manufacturers' buffer or protection sheets as required.

C. Cured membrane shall be used for flashing purposes as much as practical. Uncured sheets are to be used at vent pipes, inside and outside corners, seams in flashings or at any other location where forming of membrane flashings is required.

D. Flashing sheet shall be spliced to the membrane first, and then bonded to the mating surface. Totally clean the roof membrane area to receive flashing sheet using new, clean rags and manufacturer's splice wash cleaner. All talc, dirt, excess bonding adhesive and other foreign material shall be totally cleaned from the roof membrane sheet. Clean all seam areas at least twice in two (2) separate applications with new rags and cleaner each time. After cleaning, apply splicing cement to both the underside of the flashing sheet and the prepared roof membrane for a width of minimum six inches (6"). Be sure cement is not on bonding adhesive areas.

E. Apply bonding adhesive to surface of wood, metal, masonry or other material or surface to be flashed. Also apply bonding adhesive to flashing membrane making sure bonding adhesive is not applied to splice area of flashing and using longest possible lengths of flashing membrane. Apply bonding adhesive using rollers or brushes one hundred percent (100%) to all surfaces at a smooth, uniform rate, free of holidays, light spots, globs or similar irregularities, at the manufacturer's application rate. Allow two (2) surfaces of adhesive to dry to a tacky condition, such that adhesive does not stick or string when touched with a dry finger. After bonding adhesive has set on both surfaces, roll flashing onto surface carefully to prevent wrinkles, fishmouths, bridging or similar flaws. Unless otherwise detailed, top of

membrane flashings must be minimum eight inches (8”) above the surface of the roof membrane, three-inch (3”) minimum above the bottom of metal counterflashings, and minimum three inches (3”) past the limits of nail heads or other fasteners. Membrane flashings shall extend the full width of horizontal metal flashing flanges (i.e., gravel stops). After setting, roll membrane into place using a two-inch (2”) wide steel roller and heavy hand pressure. Roll one hundred percent (100%) of the surface to assure total adhesion with no wrinkles or bridging. After rolling, splice vertical or side laps of flashing sheet using minimum six-inch (6”) wide splices and splicing cement. After applying splicing cement to both mating surfaces of the flashing sheet vertical laps and allowing it to become tacky, roll splice in place as described above.

F. Inside and outside corners and other changes in direction of flashing sheets shall not be butt-type splices at the point of direction change. All flashing sheets shall be jointed past the change in direction. Inside vertical corners shall be folded with no cuts in the sheet at the corner. Folds shall be “pig’s ear” type on flashing sheets entering a corner. Splice shall be made sixteen-inches (16”) minimum away from corner. Outside vertical corners, such as around curb units, shall extend a minimum of two inches (2”) around the corner for each flashing sheet. Contour flashing sheets in place with light pressure. Flashing sheet may be heated, if ambient temperature is below sixty degrees Fahrenheit (< 60ºF) in order to work them in place. Heating shall be done with heat lamp or air gun. No open flames can be used. All flashings shall be installed in accordance with the approved shop drawings and manufacturer’s instructions, unless amended. Flashings shall be turned up and over the tops of curbs as much as practical.

G. Membrane flashing terminating on a vertical surface shall be mechanically fastened to the substrate.
   1. On wood surfaces, termination bars and flashings shall be secured with the specified large head roofing nails spaced six inches (6”) on-center maximum or as specifically required by the membrane manufacturer.
   2. On masonry surfaces, termination bars and flashings shall be secured using the specified drive pins through predrilled holes spaced eight inches (8”) on-center maximum or as specifically required by the membrane manufacturer.

H. Strip in all metal flanges such as gravel stops and vents with EPDM. Two-ply stripping to be used by applying a six-inch (6”) wide strip of flashing over which a nine-inch (9”) wide strip is to be applied. Uncured membrane shall be utilized where required by the manufacturer or by detail conditions. Stripping shall be continuous over the entire flange and extend onto the membrane six-inches (6”) minimum.

I. Strip in all roof to wall terminations where new membrane will terminate below the existing membrane wall cladding with EPDM. Uncured membrane shall be utilized where required by the manufacturer or by detail conditions. Stripping shall be continuous over the entire flange and extend onto the membrane three inches (3”) minimum on each side of the lap.

J. Strip in all field seams with EPDM with a single six-inch (6") wide EPDM stripping membrane. Uncured membrane shall be utilized where required by the manufacturer or by detail conditions. Stripping shall be continuous over the entire seam and extend onto the field membrane four inches (4") minimum.

K. Lap sealant shall be applied daily along all edges of membranes which terminate on the horizontal, gravel stops and similar locations. After proper installation of membrane flashings, clean the area of the lap with the manufacturer's recommended cleaner and apply continuous bead of lap sealant to all seams, including vertical laps of the flashings. Feather the sealant bead using the preformed trowel. Should uncaulked seams be found to have weathered beneath ponding conditions, the Contractor will be required to strip-in these seams with six-inch (6") stripping as required by the Owner.

3.8 INSTALLATION OF SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated, eliminate air pockets, and ensure contact and adhesion of sealant at sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
   a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.9 CLEANUP

A. All floor, site and adjacent areas, both interior and exterior, damaged or stained by the installation of the roofing work shall be repaired and cleaned of all dust, debris and any other materials to the Owner's satisfaction.

B. The Contractor shall not demobilize the site until the completed work is toured by the Owner and Engineer. Any unsatisfactory items observed will be reported in "punch-list" form. These items shall be corrected immediately by the Contractor prior to demobilization from the job site. Final payment will not be made until all punch list items are complete and guarantees have been received.

C. All scaffolding, barriers, temporary facilities and the like shall be removed upon completion of the work. Areas damaged as a result of the Contractors equipment shall be restored to their original condition, all to the satisfaction of the Owner.

D. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

E. Clean and neutralize flux materials. Clean off excess solder and sealants.

F. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

G. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SHEET METAL FLASHING AND TRIM

SECTION 07 62 00

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 07 53 00 – Elastomeric Roofing and Flashing
B. Section 26 10 00 – Temporary Mechanical/Electrical Disconnects

1.3 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Supply all necessary chutes, disposal facilities, transportation, and labor necessary to dispose of all demolished materials, dirt, and debris off-site in a legal dumping area. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish, and debris.
   2. Provide all necessary underlayment, miscellaneous flashing, attachment clips, and closure members to ensure a weathertight installation.
   3. Install new shop fabricated metal roof fascia system and associated components as shown on the Contract Drawings at designated locations.
   4. Install new sheet metal flashings and trim as shown on the Contract Drawings, and as required to properly terminate the membrane.
   5. Install counter-flashings at roof membrane terminations.
   6. Install blind nailers at all vertical roof membrane and sheet metal termination locations.
   7. Coordinate installation of wood blocking with Section 07 53 00 – Elastomeric Roofing and Flashing.
   8. Complete all associated work.
   9. Clean and restore all areas affected by the work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Install roof edge flashings capable of resisting the Wind Zone forces required by Code according to recommendations in FMG Loss Prevention Data Sheet 1-49.

C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): one hundred twenty degrees Fahrenheit (120ºF), ambient; one hundred eighty degrees Fahrenheit (180ºF) material surfaces.

D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show layouts of sheet metal flashing and trim, including plans and elevations. Distinguish between shop- and field-assembled work. Include the following:
   1. Identify material, thickness, weight, and finish for each item and location in Project.
   2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
   3. Details for fastening, joining, supporting, and anchoring sheet metal flashing and trim, including fasteners, clips, cleats, and attachments to adjoining work.
   4. Details of expansion-joint covers, including showing direction of expansion and contraction.

C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
   1. Sheet Metal Flashing: Twelve inches (12”) long Include fasteners, cleats, clips, closures, and other attachments.
   2. Trim: Twelve inches (12”) long Include fasteners and other exposed accessories.
   3. Accessories: Full-size Sample.

D. Contractor to provide site safety plan and Job Hazard Analysis.

1.6 MOCK-UP TEST AREAS

A. Before full scale work is commenced, execute the following work for trial work areas to be reviewed by the Owner as to acceptability of color, texture, and appearance match with the existing construction. Test areas will be at locations established by the Owner.
   1. Two linear feet (2 LF) of each roof edge metal configuration.

B. Trial areas shall be repeated until acceptable results are obtained, and the accepted areas shall be a standard for all subsequent work. Construction of test areas shall be in conformance with all Contract Documents and shall use only submitted materials.

C. Each mock-up shall be a minimum of two feet by two feet (2’ x 2’) where applicable and shall include all components of the roofing system.

1.7 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.
   1. Meet with the Owner, Designer, Owner's insurer if applicable, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, and roof-mounted equipment.
   2. Review methods and procedures related to sheet metal flashing and trim.
   3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
   4. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.9 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leak proof, secure, and noncorrosive installation.

1.10 WARRANTY AND GUARANTEE

A. Upon completion of the work, and prior to final payment, the Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two years (2 yrs.)and shall be signed by a Principal of the Contractor's firm and sealed if a corporation.

B. Finish Warranty: Twenty years (20 yrs.) for aluminum sheets.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. Plain red copper shall conform to ASTM B370 Temper H00 (1/8 hard), cold-rolled except where temper 060 is required for forming. Sixteen-ounce per square foot (16 oz./sq. ft.) minimum unless otherwise noted. Copper sheet metal for the project shall be Temper H00 unless required to meet conditions where forming is required to match rougher stone or other uneven surfaces; these conditions shall be reviewed for approval of use of 060 soft copper or lead prior to fabricating. Refer to fabrication schedule.

B. Solder for copper shall be fifty percent (50%) block tin and fifty percent (50%) pig lead conforming to ASTM Specification B 32, Grade SN 60.

C. Flux for copper shall conform to ASTM B 32, Type IS.

D. All accessories, including but not limited to nails, screws and clips shall be stainless steel or galvanized steel and completely compatible with the surrounding metal to prevent galvanic reaction. Galvanizing shall be per ASTM A153-09.

E. Termination bars shall be one-eighth inch by one-inch (⅛" x 1") stainless steel or copper bar (as required to prevent galvanic action with the flashings being secured) with pre-punched holes at six inches (6") on-center, or as required by the membrane manufacturer.

F. Clamps shall be screw adjustable stainless-steel hose clamps with a minimum three-eighths inch (⅜") band width.

G. Rivets shall be three-sixteenths inch (3/16") diameter stainless steel as required by the metal being secured.

H. Sheet metal flashings shall be shop fabricated. All breaks, bends, and hems shall be uniform, clean, straight lines.
   1. All aluminum joints shall be adequately overlapped, back-sealed, and riveted.
   2. Flanges shall be four-inch wide (4") wide minimum.
   3. Drip edges shall be hemmed three-quarter inch (¾") wide and break at a thirty degree (30°) angle.
   4. Clips shall be two inches (2") wide.
   5. All flanges to be covered with roofing or flashing membranes shall have a one-quarter inch (¼") minimum hem on the edge.
   6. All sheet metal joints shall have six-inch (6") wide cover and backer plates.
   7. Blind nailers shall be four inches (4") wide folded to a two-inch (2") wide final dimension.
   8. Fascia reveals shall not exceed eight-inches (8"). Fascia requiring a greater vertical face than eight-inches (8") shall be fabricated as a two-piece system with each face of equal exposure.
   9. Maintain equal fascia height around entire perimeter of each roof area and where fascias abut.

2.2 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

C. Sealing Tape: Pressure-sensitive, 100% solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, non-toxic, non-staining tape.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

F. Slip sheet shall be fifteen-pound (15-lb.) red rosin paper.

2.3 FABRICATION SCHEDULE

A. Note, similar flashing components have been listed under multiple metal fabrications type and thicknesses. The Contractor shall coordinate the use of compatible metals to prevent galvanic corrosion and coordinate painted finish components at visible locations.

1. Sixteen ounce (16 oz.) Copper.
   a. Counterflashing.
   b. Blind nailer.
2. Twenty ounce (20 oz.) Copper.
   a. Clips.
3. Twenty-four ounce (24 oz.) Copper.
   a. Hook Strip.

2.4 FASTENERS

A. In general, fasteners, straps and other hardware shall be copper, brass, stainless steel, or hot-dip galvanized steel. Galvanizing shall be per ASTM A 153 specifications. Electro-galvanizing will not be accepted.

B. Fasteners for securement of flashings and hook strips to concrete or masonry shall be one-quarter inch (¼")diameter hammer drive anchors with zinc sheaths and flat heads such as Zamac Nailins by Rawl, Star Fasteners, Unifast, or approved equal. Anchors shall be of sufficient length to penetrate the substrate one- and one-quarter inch (1¼") minimum.

C. Sheet metal to wood blocking connections and mechanical unit securement (exposed securement): Self-drilling, self-tapping, Number 10, stainless steel hex-head screws, one and one-half inches (1½") long, equipped with metal capped EPDM washers.

D. Nails for flashing securement at wood substrates shall be No. 12 Stubbs gauge, large head, threaded shank, copper, or galvanized steel nails minimum one-inch (1") long.

E. Fastens for securement of the pre-engineered edge metal shall be recommended by the manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.
   1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and

other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

1. Coat side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
2. Underlayment*:* Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip-sheet or install a course of polyethylene underlayment.
3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than twelve inches (12”) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of ten feet (10’) with no joints allowed within twenty-four inches (24”) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used, or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than one-inch (1”) deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than one-and one-quarter-inches (1¼”) for nails and not less than three-quarter inch (¾”) for wood screws.

1. Galvanized or Pre-painted, Metallic-Coated Steel: Use stainless-steel fasteners.
2. Aluminum: Use aluminum or stainless-steel fasteners.
3. Stainless Steel: Use stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than one-inch (1”) deep into sealant. Form joints to

completely conceal sealant. When ambient temperature at time of installation is moderate, between forty- and seventy degrees Fahrenheit (40ºF - 70ºF), set joint members for fifty percent (50%) movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below forty degrees Fahrenheit (< 40ºF).

I. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of one and one-half inches (1½") except where pre-tinned surface would show in finished Work.
   1. Do not solder aluminum sheet.
   2. Stainless-Steel Soldering: Pre-tin edges of uncoated sheets to be soldered using solder recommended for stainless steel and phosphoric acid flux. Promptly wash off acid flux residue from metal after soldering.
   3. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 ROOF FASCIAS

A. Confirm that the roof membrane extends down, beyond the transition of the wood blocking as shown on the contract drawings.

B. Should the new metal edge not provide a minimum of one- and one-half-inch (1½") coverage over the transition beyond the wood blocking, a two-piece flashing system, of equal dimension, shall be installed around the perimeter of the roof edge to provide a uniform height. Hook strips shall be secured at three inches (3") on-center, staggered about the center line. Backer plates shall be installed between each seam. The fascia metal shall extend a minimum of two inches (2") below the pre-manufactured metal.

C. Install a sacrificial piece of roof membrane between the finished roof edge membrane, and the sheet metal hook strip. The membrane shall be sealed to both the finished roof surface, and the metal hook strip to prevent water infiltration under the detail.

D. Secure the hook strip per the manufacturer's recommendations. Confirm a uniform, level reveal around the perimeter of the building.

E. Where the edge metal meets a rising wall, coordinate the installation of a blind nailer at these locations to terminate the roofing system.

3.4 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners

where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing four inches (4") over base flashing. Lap counterflashing joints a minimum of four inches (4") and bed with elastomeric sealant.
   1. Secure in a waterproof manner by means of snap-in installation and sealant.

C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:
   1. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for flashing on vent piping.

3.5 COUNTERFLASHINGS

A. Fabricate new counterflashing and receivers to the dimensions and shapes where shown in the Contract Drawings and as specified herein.

B. Secure counter-flashings with clips where indicated. Fabricate and secure clips as previously specified.

3.6 BLIND NAILERS

A. Fabricate and install blind nailers flashing with a two-inch (2") minimum leg inserted behind membrane or sheet metal fascia. Fasten flashing through leg of blind nailers.

B. Fold blind nailer to two-inch (2") wide final dimension with one-half inch (½") hemmed edge over fastener.

C. Provide continuous beads of sealant at back and leading edges.

3.7 CONTINUOUS CLEATS AND HOOK STRIPS

A. Form continuous cleats/hook strips with three-quarter inch (¾") kicks, bent out at a thirty degree (30°) angle to the face or wall. Height of continuous cleats/hook strips shall be as indicated on the Detail Drawings.

B. Secure continuous cleats/hook strips to wood blocking with the specified fasteners spaced at six inches (6") on-center.

C. Provide one-eighth inch (⅛") butt joints between hook strip sections.

3.8 SECUREMENT CLIPS

A. Secure clips to substrate with the specified fasteners at minimum six inches (6”) on-center, or as indicated on the Detail Drawings.

B. Bend clips a minimum of one-inch (1”) over bottom drip edge of flashing and crimp tightly.

C. Coordinate with installation of roofing flashing termination bar.

3.9 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

\\NHFile\BT-DOC\840090\02 Design\specs\840090 07 62 00 Sheet Metal Flashing and Trim.docx

PAINTING

SECTION 09 91 23

PART 1 - GENERAL

1.1 IN GENERAL

A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.

B. Refer to Division 1 for additional information.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Masonry – 04 05 00
B. Cold Formed Metal Framing – Section 05 40 00
C. Rough Carpentry – Section 06 10 00
D. Gypsum Sheathing – Section 06 16 43
E. Elastomeric Roofing – Section 07 53 00

1.3 SCOPE OF WORK

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this section, as required in the specifications and in accordance with good construction practice. The work under this Section includes, but is not limited to, the following:

A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces including, but not limited to, the following:
   1. Interior gypsum wallboard and exterior trim to the extent indicated on the Contract Drawings.

1.4 PROJECT CONDITIONS

A. Coordinate the work in this Section with the work in other sections to ensure the orderly progress of work.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of forty-five degrees Fahrenheit (45ºF). Maintain storage containers in a clean condition, free of foreign materials and residue.

C. Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between fifty- and ninety degrees Fahrenheit (50ºF - 90ºF).

D. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between forty-five and ninety-five degrees Fahrenheit (45ºF - 95ºF).

E. Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds eighty-five percent (85%); or at temperatures less than five degrees Fahrenheit (> 5ºF) above the dew point; or to damp or wet surfaces.

1.5 REFERENCE STANDARDS

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH)

ACGIH TLV-BKLT	(1991-1992) Threshold Limit Values (TLVs) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)
ACGIH TLV-DOC	Documentation of Threshold Limit Values and Biological Exposure Indices

B. CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.1000	Air Contaminants

C. COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-2246	Paint, Latex (Interior)
CID A-A-2904	Thinner, Paint, Mineral Spirits, Regular and Odorless

D. FEDERAL STANDARDS (FED-STD)

FED-STD-313	(Rev. C) Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities

E. FEDERAL SPECIFICATIONS (FS)

FS TT-P-29	Paint, Latex
FS TT-P-650	(Rev D) Primer Coating, Latex Base, Interior, White (for Gypsum Wallboard, or Plaster)

F. SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC-PS Guide 1.09	Three-Coat Oil Base Zinc Oxide Painting System
SSPC-PS Guide 2.00	Guide for Selecting Alkyd Painting Systems
SSPC-PA 1	Shop, Field, and Maintenance Painting of Steel

1.6 SUBMITTALS

A. Submittals shall be made in accordance with the General Conditions and Section 01 33 00.

B. Product Data: Manufacturer's specifications and installation instructions for each product specified.

C. Samples: For each type of finish-coat material indicated.

1.7 QUALITY ASSURANCE

A. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required.
   1. Wall Surfaces: Provide samples on at least one hundred square feet (100 sq. ft.).
   2. Doors and frames: provide sample on at least one door and frame.
   3. Small Areas and Items: Architect will designate items or areas required.
   4. Final approval of colors will be from benchmark samples.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Government.
   1. Quantity: One gallon (1 gal.), as appropriate, of each material and color applied.

1.9 GUARANTEES AND WARRANTIES

A. Upon completion of the work, and prior to final payment, submit a Contractor Guarantee of his/her work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two years (2 yrs.), and shall be signed by a Principal of the Contractor's firm, and sealed if a corporation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

C. Manufacturers' Names (Paints and Stains):
1. Benjamin Moore & Co. (Benjamin Moore).
2. PPG Industries, Inc. (Pittsburgh Paints).
3. Sherwin-Williams Co. (Sherwin-Williams).
4. or approved equal.

D. Manufacturers' Names (Exterior Steel Coatings):
1. Tnemec Company, Incorporated (Zinc 95).
2. Rust-Oleum Industrial Coatings
3. Sherwin-Williams Co. (Sherwin-Williams).
4. or approved equal.

E. Manufacturers' Names (Structural Steel Coatings):
1. Tnemec Company, Incorporated (Zinc 95).
2. Rust-Oleum Industrial Coatings
3. Sherwin-Williams Co. (Sherwin-Williams).
4. Kurfee’s Coatings, Inc.
5. or approved equal.

2.2 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another, and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. Colors: Coordinate with other Sections where color matching is required. Match existing or adjacent materials as indicated, or as selected by the Owner from the Manufacturer’s full range of colors.

2.3 PREPARATORY COATS (PAINT)

A. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
   1. Plaster, gypsum wallboard substrates: Premium low-VOC, latex primer, first line manufactured for new plaster applications by the paint manufacturer.
   2. Wood trim: Premium low-VOC, interior latex primer.

2.4 INTERIOR FINISH COATS

A. Premium Interior Low-VOC Low-Luster Washable Acrylic Paint: Walls (color to be selected by Owner).

B. Clear Polyurethane stain, Low-VOC: Wood trim.

2.5 EXTERIOR FINISH COATS (PAINT)

A. Field Applied Paint (Wood Trim)
   1. Exterior Grade High performance Architectural Latex, semigloss or as required by the Owner.
   2. Color to be selected by Owner.

PART 3 - EXECUTION

3.1 APPLICATION

A. Examine substrates and adjoining construction and conditions under which Work is to be installed. Do not proceed with Work until unsatisfactory conditions are corrected.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
   1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
   1. Provide barrier coats over incompatible primers or remove and reprime.
   2. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
      a. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
      b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
   3. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

E. Material Preparation:
   1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
   2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
   1. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.

G. Sand lightly between each succeeding enamel coat.

H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
   1. Omit primer over metal surfaces that have been shop primed and touchup painted.
   2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.

I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

K. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

L. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

3.2 CLEANING AND PROTECTING

A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.

C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
   1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces.

3.3 INTERIOR PAINT SCHEDULE

A. Gypsum Board:
   1. Acrylic Finish: Two finish coats over a primer, or minimum DFT required by manufacturer.

3.4 EXTERIOR PAINT SCHEDULE

A. Wood Trim:
   1. Primer: One (1) coat, 4.0 DFT, or as otherwise specified by the paint manufacturer.
   2. Finish Coats: Two (2) coats, 2.0 DFT, or as otherwise specified by the paint manufacturer.

END OF SECTION

THIS PAGE INTENTIONALL LEFT BLANK.