ROOFING PROJECT MANUAL
&
SPECIFICATIONS

for

CHARDON LOCAL SCHOOLS
2021 ROOFING PROJECT

Project # **BB201216**

ADDENDA 1
~~**3/29/21**~~
4/9/21

Sealed bids will be received at the office of the Superintendent, Chardon Local School District, 428 North Street, Board of Education, Chardon, Ohio 44024 until 8:30am on April 26, 2021 and will be opened and read beginning at 9:30 am.

TABLE OF CONTENTS

TABLE OF CONTENTS

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

ARTICLE 1 - GENERAL INSTRUCTIONS

1.1 Applicable Law and Forum

1.1.1 The rights of any Bidder or any party to a subsequent Contract shall be governed by the laws of the state of Ohio and only Ohio courts shall have jurisdiction over any action or proceeding related to the Bid or any subsequent Contract. The Bidder irrevocably consents to such jurisdiction.

1.2 Project Scheduling and Coordination

1.2.1 When the Contract Documents refer to a period of time by a number of days, it excludes the first day and includes the last day of the period. If the last day of the period falls on a Saturday, Sunday, or a legal holiday, that day shall be omitted and the period shall end on the next day which is not a Saturday, Sunday, or legal holiday.

1.2.2 The time for completion of the Project indicated on the **Bid Form** is the time for Substantial Completion applicable to the Bidder.

1.2.3 The Board of Education for Chardon Local Schools, 428 North St., Chardon, OH 44024 (the Contracting Authority and Owner) may assign all or any portion of its interest in a Contract with one or more of the successful Bidders to another successful Bidder as an agreed condition for an award of the Contract for the respective Bid. The assignment may include, without limitation, the duty to schedule, coordinate, and administer the Contract.

1.2.4 The Contractor is responsible for scheduling the Project, coordinating the Subcontractors, and providing other services identified in the Contract Documents.

1.2.5 By submitting its Bid, the Bidder indicates its understanding that the Contract Sum, based on its Bid and as amended by Change Orders, includes all costs that the Contracting Authority owes the Bidder.

1.3 Written Notice

1.3.1 Notice under the Contract Documents shall be validly given if:

1.3.1.1 delivered personally to a member of the organization for whom the notice is intended;

1.3.1.2 delivered, or sent by registered or certified mail, to the last known business address of the organization; or

1.3.1.3 sent by facsimile, email, or web-based project management software, provided the original signed document is delivered within 3 business days after the date of the electronic transmission.

1.3.2 Notices provided to one Project Participant from another shall be simultaneously copied to the prospective Bidders, the Owner, the Contracting Authority, and the Roof Consulting Firm.

ARTICLE 2 - BIDDING PROCEDURES

2.1 Examination of Contract Documents and the Site

2.1.1 Before submitting a Bid, the Bidder shall examine all Contract Documents, including, but not limited to, the Drawings, Specifications, and Addenda for all divisions of Work for the Project, noting in particular all requirements that may affect its Work in any way.

2.1.2 The Bidder's failure to become acquainted with the extent and nature of Work required to complete any portion of the Work in conformity with the requirements of the Contract Documents, shall not be a basis for additional compensation.
2.1.3 Before submitting a Bid, the Bidder should not only examine and evaluate the Site and related Project conditions where the Work will be performed, but shall also consider when the Work will be performed including, but not limited to, the following:

2.1.3.1 the condition, layout, and nature of the Site and surrounding area;

2.1.3.2 the availability and cost of labor;

2.1.3.3 the availability and cost of materials, supplies, and equipment;

2.1.3.4 the cost of temporary utilities required in the Bid;

2.1.3.5 the cost of any permit or license required by a local or regional authority having jurisdiction over the Project;

2.1.3.6 the usual weather conditions of the Project location;

2.1.3.7 conditions bearing upon transportation, disposal, handling, and storage of equipment, materials, and waste; and

2.1.3.8 subsurface and concealed physical conditions and related information provided in the Contract Documents.

2.2 Pre-Bid Meeting

2.2.1 The Bidder is encouraged to attend the pre-bid meeting, where the Roof Consulting Firm, and the Contracting Authority, will receive questions regarding the Contract Documents. The Roof Consulting firm shall issue notice of the time and place of any pre-bid meeting to each firm that has requested plan copies.

2.2.2 The Roof Consulting Firm shall prepare minutes of the pre-bid meeting for the Project record. If questions raised by the prospective Bidders require changes to, or clarifications of, the Contract Documents, the Roof Consulting Firm shall issue the changes by written Addendum, along with a list of pre-bid meeting attendees.

2.2.3 Additional compensation shall not be based upon the Bidder's failure to attend the pre-bid meeting, which results in the Bidder's incomplete knowledge and familiarity of the Project requirements.

2.3 Request for Interpretation

2.3.1 If the Bidder finds any perceived ambiguity, conflict, error, omission, or discrepancy within the Contract Documents, including the Drawings, Specifications, and Addenda, or between any of the Contract Documents and Applicable Law, the Bidder shall submit a written Request for Interpretation ("RFI") to the Roof Consulting Firm for an interpretation or clarification.

2.3.1.1 The Bidder is responsible for prompt delivery of the RFI.

2.3.1.2 The Roof Consulting Firm shall respond to RFIs received more than 7 days before the bid opening.

2.3.2 The Roof Consulting Firm shall issue Addenda in response to RFIs that modify or clarify the Contract Documents. Any Addenda issued within 72 hours before any bid opening (excluding Saturdays, Sundays, and legal holidays) shall extend the bid opening date by 7 days pursuant to **Section 3.3.1**.

2.3.2.1 The Addenda may be delivered via facsimile or e-mail, posted to a web or FTP site, or otherwise furnished to each firm that has requested plan copies.

2.3.3 Any interpretation or clarification of the Contract Documents made by any Person other than the Roof Consulting Firm, in any manner other than a written Addendum, shall not be binding, and the Bidder shall not rely upon the interpretation or clarification.

2.3.4 The successful Bidder shall not be compensated for a claim alleging insufficient data, incomplete, ambiguous, conflicting, or erroneous Contract Documents or proposed Contract Documents, or assumed conditions regarding the nature, extent, or character of the Work, if the Bidder did not submit a related RFI prior to the bid opening.

2.4 Basis of Design and Acceptable Components

2.4.1 The Contract Documents may list components produced by specific manufacturers to denote kind, quality, or performance requirements.

2.4.2 The component listed first is the Basis of Design Component.

2.4.3 Other listed components are Acceptable Components.

2.4.3.1 If the Bidder includes an Acceptable Component in its Bid, the Bidder is responsible for the costs of coordination and modification required.

2.5 Substitutions Prior to Bid Opening

2.5.1 If the Bidder proposes to use an article, device, material, equipment, form of construction, fixture, or item other than the Basis of Design or Acceptable Components named in the Specifications, the Bidder shall certify that the proposed item is equal in quality and all aspects of performance and appearance, to the item specified.

2.5.1.1 If approval of a Substitution requires changes to the Contract Documents or affects the work of other trades, the Bidder is responsible for all additional costs.

2.5.2 The Bidder shall submit its request for Substitution to the Roof Consulting Firm no later than 10 days prior to the bid opening, which must include:

2.5.2.1 the name and complete description of the proposed Substitution, including Drawings, performance and test data, and other information necessary for a complete evaluation; and

2.5.2.2 a statement setting forth any changes that the Proposed Substitution will require in the Contract Documents or the Project.

2.5.3 If the Roof Consulting Firm approves the Proposed Substitution, the Roof Consulting Firm shall issue an Addendum.

2.5.4 If the Roof Consulting Firm does not approve the Proposed Substitution, the Roof Consulting Firm shall inform the Bidder of its decision, which is final. The Roof Consulting Firm may reject a proposed Substitution because the Bidder failed to provide sufficient information to enable the Roof Consulting Firm to completely evaluate the Proposed Substitution without causing a delay in the scheduled bid opening.

2.5.5 Proposed Substitutions received by the Roof Consulting Firm less than 10 days prior to the bid opening shall not be considered.

2.6 Bid Form

2.6.1 Each Bid shall be submitted on the **Bid Form** and sealed in an envelope clearly marked as containing a Bid, indicating the Contracting Authority's Project number and name, and the date and time of the bid opening on the envelope. Refer to **Section 3.1.2** for requirements related to envelope markings.

2.6.1.1 Any change, alteration, omission, or addition in the wording of the **Bid Form** shall cause the Bid to be rejected as not responsible or non-responsive.

2.6.1.2 All pages of the **Bid Form**, shall be submitted with the Bid. Failure to do so may cause the Bid to be rejected as not responsible or non-responsive.

.1 If the names, locations, and service locations of Subcontractors are not known at the time of the Bid Opening, the Bidder must provide the information requested with its **Subcontractor and Material Supplier Declaration** form.

2.6.1.3 Unless the Bidder withdraws the Bid as provided in **Article 4**, the Bidder is required to comply with all requirements of the Contract Documents, regardless of whether the Bidder had actual knowledge of the requirements and regardless of any statement or omission made by the Bidder that might indicate a contrary intention.

2.6.2 The Bidder shall fill in all relevant blank spaces on the **Bid Form** by printing in ink or by typewriting, and not in pencil.

2.6.2.1 The Bidder shall show all bid amounts in both words and figures. In the case of a conflict between the words and figures, the amount shown in words shall govern, where the words are not ambiguous. When the Bidder's intention and the meaning of the words are clear, omissions, or misspellings of words shall not render the words ambiguous.

2.6.2.2 The Bidder shall initial alteration or erasure of items filled in on the **Bid Form**.

2.6.3 If the Bidder is a corporation, partnership, or sole proprietorship, an officer, partner or principal of the Bidder shall print or type the legal name of the Bidder on the line provided, and sign the **Bid Form**. If the Bidder is a joint venture, an officer, partner or principal, as applicable, of each member of the joint venture shall print or type the legal name of the applicable member on the line provided, and sign the **Bid Form** on behalf of that member. All signatures must be original.

2.7 Allowances

2.7.1 If Allowances are provided on the **Bid Form**, the amount of each Allowance shall be included in the Base Bid amount. Allowances shall be used solely for the purpose of determining the adjustment to the Contract Sum for the difference between the amount of the Allowance and the actual cost of the related Work provided. Allowances shall not include the Contractor's Fee.

2.8 Unit Prices

2.8.1 If Unit Prices are requested on the **Bid Form**, the amount of the scheduled quantities shall be included in the Base Bid amount. Unit prices shall be used solely for the purpose of determining the adjustment to the Contract Sum for the difference between the estimated quantities on the **Bid Form** and the actual quantities provided.

2.8.2 Unit Prices shall include all materials, equipment, labor, delivery, installation, and any other cost or expense, in connection with, or incidental to, the performance of that portion of the Work. Unit Prices shall not include the Contractor's Fee on account of the associated Unit Price Work. The Bidder shall submit Unit Prices for all items listed.

2.9 Alternates

2.9.1 If an Alternate is listed on the **Bid Form**, the Bidder shall fill in the applicable blank with an increased or decreased bid amount and indicate which by circling the word "ADD" or the word "DEDUCT" as applicable. The Contracting Authority reserves the right to accept or reject any or all bid amounts for Alternates, in whole or in part, and in any order.

2.9.1.1 If no change in the bid amount is required, indicate "No Change" or "$0."

2.9.1.2 Failure to make an entry or an entry of "No Bid," "N/A," or similar entry on any Alternate shall cause the Bid to be rejected as not responsible or non-responsive if that Alternate is selected.

2.9.1.3 Failure to indicate a negative number by circling "DEDUCT," preceding the number by a minus sign, or enclosing the number in parentheses will indicate the Bidder's intent to increase the Base Bid by the amount entered in the applicable blank.

2.9.1.4 If an Alternate is not selected, an entry as listed in **Section 2.9.1.2** on that Alternate shall not, by itself, render a Bid not responsible or non-responsive.

2.10 Submittals with Bid Form

2.10.1 The Contracting Authority shall reject a Bid as not responsible or non-responsive if the Bidder fails to submit the following with the Bid Form in a sealed envelope:

2.10.1.1 A Bid Guaranty as provided in **Article 5**, meeting the requirements of Ohio Revised Code ("ORC") Sections 153.54 and 153.571.

2.10.2 If the apparent low Bidder does not submit a valid Power of Attorney of the agent signing for the Surety with its Bid, the Contracting Authority shall direct the apparent low Bidder to deliver a valid and appropriate Power of Attorney to the Contracting Authority within a period determined by the Contracting Authority. The Contracting Authority shall not enter into a Contract without a valid Power of Attorney.

2.10.3 The Bidder is encouraged to submit background information with its Bid using the **Bidder's Qualifications** form and including, but not limited to, the information listed in this **Section 2.10**. If the apparent low Bidder does not submit the **Bidder's Qualifications** form and related information with its Bid, the Bidder shall provide it upon request in accordance with **Section 3.5.4**, including, but not limited to:

2.10.3.1 the overall experience of the Bidder, including number of years in business under present and former business names;

2.10.3.2 a complete listing of all the Bidder's ongoing construction projects and a listing of construction projects which are similar in cost and type to the Project completed by the Bidder in the last 5 years. Include information of the scope of work and value of each contract, and a project name/contact Person/address/phone number for the owner and the architect or engineer for each project;

2.10.3.3 a Certificate of Compliance with Affirmative Action Programs, issued pursuant to ORC Section 9.47, by the Equal Opportunity Coordinator of the Department of Administrative Services;

2.10.3.4 a complete listing of Affirmative Action and EDGE program violations in the last 5 years;

2.10.3.5 a complete listing of EPA, OSHA, or other regulatory entity issues or violations in the last 5 years;

2.10.3.6 a complete listing of judgments, claims, arbitration proceedings or suits pending or outstanding in the last 5 years;

2.10.3.7 a complete listing of Drug-Free Workplace Program and Drug-Free Safety Program ("DFSP") violations in the last 5 years;

2.10.3.8 upon request of the Contracting Authority, the apparent low Bidder shall submit the following information, which is not a public record under ORC Section 149.43; and shall remain confidential, except under proper order of a court:

- **.1** an annual financial statement prepared within the 12 months prior to the bid opening by an independent licensed accounting firm; and the name, address, contact Person, and phone number of the bank normally used by the Bidder for its primary banking**;** or
- **.2** a financial report generated within 30 days prior to the bid opening from Standard and Poor, Dun and Bradstreet or a similar company acceptable to the Contracting Authority documenting the financial condition of the Bidder; and the name, address, contact Person, and phone number of the bank normally used by the Bidder for its primary banking.

2.10.3.9 a description of the Bidder's relevant facilities and major equipment, whether leased or owned;

2.10.3.10 a description of the management experience of the Bidder's project manager(s) and superintendent(s) and a comprehensive resume for each;

2.10.3.11 a description of the EDGE-certified Business Enterprises the Bidder proposes as Subcontractors and Material Suppliers for this Project by attaching a fully completed EDGE Affidavit for each EDGE-certified Business Enterprise;

2.10.3.12 to support a Bond, a current and signed Certificate of Compliance issued by the Ohio Department of Insurance, showing the Surety is licensed to do business as a surety in Ohio;

2.10.3.13 a current Ohio Workers' Compensation Certificate;

2.10.3.14 if the Bidder is a foreign corporation not incorporated under the laws of Ohio, a Certificate of Good Standing from the Ohio Secretary of State; or, if the Bidder is a foreign person or partnership, evidence that the Bidder filed, with the Ohio Secretary of State, a Power of Attorney designating the Ohio Secretary of State as the Bidder's agent for the purpose of accepting service of summons in any action brought under ORC Section 153.05 or under ORC Sections 4123.01 to 4123.94, inclusive;

2.10.3.15 evidence that the Bidder is enrolled in, and in good standing in, a DFSP approved by the Ohio Bureau of Workers' Compensation ("OBWC"); and

2.10.3.16 any other data or information which the Roof Consulting Firm may request concerning the responsibility of the Bidder, including a complete list of major Subcontractors with an estimated contract value of $200,000 or more, which the Bidder proposes to employ on the Project.

2.11 Changes in the Bid Amount

2.11.1 Any change to a previously submitted Bid shall be in writing and received by the Contracting Authority before the time scheduled for the bid opening.

2.11.2 Changes shall provide an amount to be added to, or subtracted from, the bid amount, so that the final bid amount may be determined only after the sealed envelope is opened.

2.11.3 If the Bidder's written instruction reveals the bid amount in any way prior to the bid opening, the Contracting Authority may, in its sole discretion, reject the Bid as not responsible or non-responsive.

ARTICLE 3 - BID OPENING AND EVALUATION

3.1 Delivery of Bid

3.1.1 The Bidder shall submit its Bid to the Contracting Authority at the location indicated in the **Bid Form** one hour prior to the time scheduled for the bid opening (Bids will be received until 8:30am on April 26, 2021 and will be opened and read beginning at 9:30 am).

3.1.2 If the sealed bid envelope is enclosed in another envelope for the purpose of delivery, the exterior envelope shall also be clearly marked as containing a Bid with the Project name and Project number, construction trade of the Bid, and the date and time of the bid opening shown on the envelope (Bids will be received until 8:30am on April 26, 2021 and will be opened and read beginning at 9:30 am).

3.1.3 Bids that arrive at the location designated in the **Bid Form** after the time set for the receipt of bids (8:30am on April 26, 2021) shall not be opened or considered.

3.2 Bid Opening

3.2.1 Sealed Bids shall be received at the location designated in the **Bid Form** until one hour prior to the time stated when all Bids shall be opened, read aloud, and the tabulation made public (Bids will be received until 8:30am on April 15, 2021 and will be opened and read beginning at 9:30 am).

3.2.2 The public opening and reading of Bids is for informational purposes only and is not to be construed as an acceptance or rejection of any Bid submitted.

3.2.3 The contents of the bid envelope are public records and open for inspection, upon request, at any time after the bid opening, except for any information that is not defined as a public record under Ohio law.

3.3 Bid Opening Extension

3.3.1 If an Addendum is issued within 72 hours prior to the published time for the bid opening, excluding Saturdays, Sundays and legal holidays, the bid opening shall be extended 7 days. If the Contracting Authority approves, the bid opening may be extended for more than 7 days, and consideration for additional advertising may be recommended.

3.3.2 As part of issuing any Addendum earlier than 72 hours prior to the published time for the bid opening, excluding Saturdays, Sundays and legal holidays, only the Contracting Authority may approve a revised bid opening date or additional advertising.

3.4 Bid Evaluation Criteria

3.4.1 The Contracting Authority reserves the right to accept or reject any or all Bids, in whole or in part, and reserves the right to award the Contract to any remaining Bidder the Contracting Authority determines, in its sole discretion, to have submitted the lowest responsible Bid.

3.4.2 The Contracting Authority reserves the right to accept or reject any or all Alternates. Alternates may be accepted or rejected in any order.

3.4.3 If any Bidder has engaged in collusive bidding, the Contracting Authority shall reject that Bidder's Bid as non-responsible for the Contract. A collusive bidder may also be debarred from future Contracts.

3.4.4 The Contracting Authority reserves the right to waive, or to allow any Bidder a reasonable opportunity to cure a minor irregularity or technical deficiency in a Bid, provided the irregularity or deficiency does not affect the bid amount, or otherwise give the Bidder a competitive advantage. Noncompliance with any material requirements of the Contract Documents shall cause a Bid to be rejected as not responsible or non-responsive.

3.4.5 If, in the opinion of the Contracting Authority, the award of the Contract to the lowest Bidder is not in the best interest of the Owner, the Contracting Authority may accept, in its discretion, another Bid so opened, or the Contracting Authority may reject all Bids and advertise for other Bids. The advertisement shall be for the period, in the form, and in the publications directed by the Contracting Authority.

3.5 Bid Evaluation Procedure

3.5.1 The Contract shall be awarded to the lowest responsible Bidder as determined in the discretion of the Contracting Authority, or all Bids may be rejected in accordance with Applicable Law.

3.5.1.1 In determining which Bid is the lowest, the Contracting Authority shall consider the Base Bid and the bid amounts for any Alternate, or Alternates, which the Owner decides, in its sole discretion, to accept.

3.5.1.2 The total of the bid amounts for the accepted Alternate(s) shall be added to, or deducted from, the Base Bid, as applicable, for determining the lowest Bidder.

3.5.1.3 If two Bidders submit the same bid amount and both are determined to be responsible, the Contracting Authority may select one Bidder by the flip of a coin, which shall be conducted in the presence of both Bidders and shall be final.

.1 If one of the Bidders refuses to participate in, or fails to be present at, the flip of a coin, the remaining Bidder shall be selected.

3.5.2 A Bid shall be rejected as not responsive or non-responsive if the Bid contains a Bid Guaranty executed by a Surety not licensed in Ohio or a Bid Guaranty that is otherwise determined to be insufficient by the Contracting Authority.

3.5.2.1 The Bidder may be subject to a Pre-Award Affirmative Action Compliance Review pursuant to OAC Section 123:2-5-01 including a review of the Bidder's employment records and an on-site review.

.1 The Bidder must submit the information requested no later than 10 days after receipt of the request. Failure to timely respond to this request for records may result in the Bidder being found not responsible or non-responsive.

3.5.2.2 If the lowest Bidder is not responsible or non-responsive, the Bidder shall be notified according to **Section 3.6**.

3.5.3 In determining whether a Bidder is responsible, factors to be considered include, without limitation:

3.5.3.1 preferences required by law, where applicable;

3.5.3.2 the experience of the Bidder;

3.5.3.3 the financial condition of the Bidder;

3.5.3.4 the conduct and performance of the Bidder on previous Contracts, including compliance with Equal Employment Opportunity in the Construction Industry Administrative Rules, OSHA, and demonstration of good faith effort to participate in the EDGE Business Development program, or actual participation in the EDGE Business Development program, or both, as indicated in the ORC and the Ohio Administrative Code;

3.5.3.5 the facilities of the Bidder;

3.5.3.6 the management skills of the Bidder, including the capability of the Bidder to construct and manage the entire Project, including but not limited to the plumbing, fire protection, heating, ventilating and air conditioning, and electrical branches or classes of the Work;

3.5.3.7 the Bidder's ability to execute the Contract properly, including past performance of the Bidder and the Subcontractors that the Bidder proposes to use on the Project; and

3.5.3.8 a signed affidavit affirming that neither the bidder nor any subcontractor has entered into an agreement with any labor organization.

3.5.4 The Roof Consulting Firm shall obtain from the lowest responsible Bidder any information the Contracting Authority determines appropriate to consideration of factors showing responsibility. The Contract shall be awarded to the lowest responsible Bidder, unless all Bids are rejected. The Bidder shall provide all requested information within 3 days of a request from the Roof Consulting Firm**,** or a longer period, if the Contracting Authority consents in writing.

3.5.5 If the lowest Bidder is not responsible, the Contracting Authority shall evaluate the next lowest Bidder according to the procedures set forth in this **Section 3.5** until the Contract is awarded, all Bids are rejected, or all Bidders are determined to be not responsible.

3.6 Rejection of Bid

3.6.1 If the lowest Bidder is not responsible, the Contracting Authority shall reject the Bid and notify the Bidder in writing by Certified Mail of the finding and the reasons for the finding.

3.6.2 Ten Percent Rule.

3.6.2.1 If the lowest responsible Bid for the Contract, including the Base Bid and accepted Alternates if any, exceeds an amount 10 percent greater than the published Estimated Construction Cost for the Contract, the Contracting Authority shall reject all Bids.

3.6.3 A Bidder notified in accordance with **Section 3.6.1** may object to its rejection by filing a written protest, which must be received by the Contracting Authority within 5 days of the notification provided pursuant to **Section 3.6.1**.

3.6.4 Upon receipt of a timely protest, the Contracting Authority shall meet with the protesting Bidder to hear its objections. ORC Chapter 119 administrative hearing requirements are not applicable to the bid protest meeting**.**

3.6.4.1 No Contract award shall become final until after the Contracting Authority has met with all Bidders who have timely filed protests and the award of the Contract is affirmed by the Contracting Authority.

3.6.4.2 If all protests are rejected, the Contract shall be awarded to the lowest responsible Bidder, or all Bids shall be rejected.

3.7 Notice of Intent to Award

3.7.1 The Contracting Authority shall notify the apparent successful Bidder that upon satisfactory compliance with all conditions

precedent for execution of the Contract, within the time specified, the Bidder shall be awarded the Contract.

3.7.2 The Contracting Authority reserves the right to rescind any Notice of Intent to Award if the Contracting Authority determines it issued the Notice of Intent to Award in error, or if the conditions precedent for execution of Contract set forth in **Article 6** are not met.

ARTICLE 4 - WITHDRAWAL OF BID

4.1 Withdrawal prior to Bid Opening

4.1.1 A Bidder may withdraw a Bid after the Contracting Authority receives the Bid, provided the Bidder makes a request in writing and the Contracting Authority receives the request prior to the time of the bid opening, as determined by the Contracting Authority.

4.2 Withdrawal after Bid Opening

4.2.1 The Bid shall remain valid and open for acceptance for a period of 60 days after the bid opening; provided, however, a Bidder may withdraw a Bid from consideration after the bid opening if the bid amount was substantially lower than the amounts of other Bids, providing the Bid was submitted in good faith, and the reason for the bid amount being substantially lower was a clerical mistake, as opposed to a judgment mistake, and was actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of Work, labor, or material made directly in the compilation of the bid amount.

4.2.1.1 Notice of a request to withdraw a Bid shall be made in writing filed with the Contracting Authority within 2 business days after the bid opening. The Contracting Authority reserves the right to request the Bidder to submit evidence substantiating the Bidder's request to withdraw the Bid.

4.2.1.2 No Bid may be withdrawn under **Section 4.2.1** which would result in awarding a Contract involving the same item on another Bid to the same Bidder.

4.2.2 If a Bidder withdraws its Bid under **Section 4.2.1**, the Contracting Authority may award the Contract to the next lowest responsive and responsible Bidder, or reject all Bids and advertise for other Bids. In the event the Contracting Authority advertises for other Bids, the withdrawing Bidder shall pay the costs, in connection with the re-bidding, of printing new Contract Documents, required advertising, and printing and mailing of notices to prospective Bidders, if the Contracting Authority finds that these costs would not have been incurred but for the withdrawal.

4.2.3 A Bidder may withdraw the Bidder's Bid at any time after the 60-day period described in **Section 4.2.1** by giving written notice to the Contracting Authority.

4.3 Refusal to Accept Withdrawal

4.3.1 If the Contracting Authority contests the right of a Bidder to withdraw a Bid pursuant to **Section 4.2.1**, a hearing shall be held within 10 days after the bid opening and the Contracting Authority shall issue an order allowing or denying the claim of this right within 5 days after the hearing is concluded. The Contracting Authority shall give the withdrawing Bidder timely notice of the time and place of the hearing.

4.3.1.1 The Contracting Authority shall make a stenographic record of all testimony, other evidence, and rulings on the admissibility of evidence presented at the hearing. The Bidder shall pay the costs of the hearing.

4.3.1.2 Pursuant to ORC Section 119.12, the Bidder may appeal the order of the Contracting Authority required by **Section 4.3.1**.

4.4 Refusal to Perform

4.4.1 In the event the Contracting Authority denies the request for withdrawal and the Bidder refuses to perform the Contract, the Contracting Authority may reject all Bids or award the Contract to the next lowest responsible Bidder.

4.5 Effect of Withdrawal

4.5.1 A Bidder, who is permitted to withdraw a Bid under **Section 4.2.1**, shall not supply material or labor to, or perform a subcontract or other work for, the Person to whom the Contract is awarded; or otherwise benefit, directly or indirectly, from the performance of the Project for which the withdrawn Bid was submitted; without the Contracting Authority's prior written consent.

ARTICLE 5 - BID GUARANTY AND BOND

5.1 Bid Guaranty

5.1.1 The Bidder shall submit a Bid Guaranty with the Bidder's Bid, payable to the Contracting Authority, in accordance with the Ohio Revised Code and in the form of either:

5.1.1.1 the signed **Document 00 43 13 - Bid Security Form** contained in the Contract Documents for the amount of the Base Bid plus all additive Alternates; or

5.1.1.2 a certified check, cashier's check, or letter of credit, for 10 percent of the Base Bid, plus all additive Alternates – a letter of credit shall expressly provide that it is revocable only by the Contracting Authority.

5.1.2 The Bid Guaranty shall be in form and substance satisfactory to the Contracting Authority and shall serve as an assurance that upon acceptance of the Bid, the Bidder shall comply with all conditions precedent for Contract execution, within the time specified by the Contracting Authority.

5.1.3 If the blank line on the **Bid Security Form** is not filled in, the penal sum shall be the full amount of the Base Bid plus all additive Alternates. If the blank line is filled in, the amount shall not be less than the full amount of the Base Bid plus all additive Alternates, stated in dollars and cents. A percentage is not acceptable. In the event the blank line is filled in for an amount less than the full amount of the Base Bid plus all additive alternates, the Bid shall be rejected as not responsible or nonresponsive.

5.1.4 An authorized agent must sign the **Bid Security Form**, and the Bidder shall provide a Power of Attorney from the Surety. A Surety authorized by the Ohio Department of Insurance to transact business in Ohio must issue the **Bid Security Form**.

5.1.5 The requirements of ORC Section 3901.86 may be applicable requiring an Ohio resident agent countersign the **Bid Security Form**. The Bidder shall determine the applicability of this provision.

5.1.6 Bid Guaranties in the form of a certified check, cashier's check, or letter of credit shall be returned to unsuccessful Bidders 60 days after the bid opening. Bid Guaranties in the form of a certified check, cashier's check, or letter of credit shall be returned to the successful Bidder upon providing **Document 00 61 13 - Performance and Payment Bond Form** from a Surety satisfactory to the Contracting Authority.

5.2 Forfeiture of Bid Guaranty

5.2.1 If for any reason, other than as authorized by **Section 4.2.1** or **Section 5.3**, the Bidder fails to execute the Agreement, and the Contracting Authority awards the Contract to another Bidder, which the Contracting Authority determines is the lowest responsible Bidder:

5.2.1.1 The Bidder who failed to execute the Agreement is liable to the Owner for the difference between its Bid and the Bid of the next lowest responsible Bidder, or for a penal sum not to exceed ten percent of the bid amount, whichever is less.

5.2.2 If the Contracting Authority then awards a Contract to another Bidder, which the Contracting Authority determines is the lowest responsible Bidder and that Bidder fails or refuses to execute the Agreement:

5.2.2.1 The liability of the lowest responsible Bidder shall be the difference between the bid amount of the lowest responsible Bidder and another Bidder which the Contracting Authority determines is the lowest responsible Bidder, except as provided in **Section 5.3**, but not in excess of the liability specified in **Section 4.2.2**.

5.2.2.2 The liability on account of an award to the lowest responsible Bidder beyond the third lowest responsible Bidder shall be determined in like manner**.**

5.2.3 If the Contracting Authority does not award the Contract to another Bidder under **Section 5.2.2**, but submits the Project for re-bidding:

5.2.3.1 The Bidder failing or refusing to execute the Agreement is liable to the Owner for a penal sum not to exceed 10 percent of the Bidder's bid amount or the costs in connection with the resubmission of printing new Contract Documents, required advertising, and printing and mailing notices to prospective Bidders, whichever is less, except as provided in **Section 5.3**.

5.3 Exception to Forfeiture

5.3.1 A Bidder for a Contract with the Owner costing less than $500,000 may withdraw its Bid from consideration if its Bid for another Contract with the Owner for less than $500,000 has already been accepted if:

5.3.1.1 the Bidder certifies in good faith that the total amount of its current contracts is less than $500,000; and

5.3.1.2 the Bidder's Surety certifies in good faith that the Bidder is unable to perform the subsequent Contract because such performance would exceed the Bidder's bonding capacity.

5.3.2 If a Bid is withdrawn pursuant to **Section 5.3.1**:

5.3.2.1 the Contracting Authority may award the Contract to another Bidder which the Contracting Authority determines is the lowest responsible Bidder or reject all Bids and submit the Project for re-bidding; and

5.3.2.2 neither the withdrawing Bidder nor the Bidder's Surety shall be liable for the difference between the Bidder's Bid and that of the next lowest responsible Bidder for a penal sum, or for the costs of printing new Contract Documents, required advertising, and printing and mailing notices to prospective Bidders.

5.4 Bond

5.4.1 Prior to signing the Agreement, the Bidder shall provide the Bond required by law in form and substance satisfactory to the Contracting Authority, and from a Surety licensed to do business in the state of Ohio and satisfactory to the Contracting Authority.

5.4.1.1 If the Bidder provided **Document 00 43 13 - Bid Security Form**, described in **Section 5.1.1.1**, as its Bid Guaranty then that form shall be the Bond.

5.4.1.2 If the Bidder provided another form of Bid Guaranty, described in **Section 5.1.1.2**, then **Document 00 61 13 - Performance and Payment Bond Form**, described in **Section 5.1.6**, shall be the Bond.

5.4.1.3 The Bidder shall not be required to provide both forms described above.

5.4.2 The Bond must be in the full amount of the Contract to indemnify the Owner against all direct and consequential damages suffered by failure of the Contractor to perform according to the provisions of the Contract and in accordance with the Plans, Specifications, details, and bills of material therefore and pay all lawful claims of Subcontractors, Material Suppliers, and laborers for labor performed or materials furnished in performing and completing the Contract.

ARTICLE 6 - CONTRACT AWARD AND EXECUTION

6.1 Conditions Precedent for Execution of Contract

6.1.1 The successful Bidder must submit the items in this **Section 6.1** to the Contracting Authority before executing the Agreement.

6.1.2 Bond, and to support the Bond, a Certificate of Compliance issued by the Ohio Department of Insurance, showing the Surety is licensed to do business in the state of Ohio.

6.1.3 Ohio Workers' Compensation Certificate

6.1.4 Certificate of Compliance with any required Affirmative Action Programs, issued by the Equal Opportunity Coordinator.

6.1.5 Certificate of Insurance (ACORD form is acceptable) and copy of additional insured or loss payee endorsement. The Contracting Authority reserves the right to request and receive a certified copy of the Contractor's insurance policies.

6.1.6 If a Bidder is a foreign corporation (e.g., not incorporated under the laws of Ohio) it must submit a Certificate of Good Standing from the Ohio Secretary of State showing the right of the Bidder to do business in the state of Ohio.

6.1.7 If a Bidder is an individual or partnership, nonresident of the State, it must submit a Power of Attorney designating the Ohio Secretary of State as the Bidder's agent for accepting service of summons in any action brought under ORC Section 153.05 or under ORC Sections 4123.01 to 4123.94, inclusive.

6.1.8 If the Contract includes plumbing; electrical; hydronics; refrigeration; and heating, ventilating and air conditioning ("HVAC") Work, the Contractor or its Subcontractors must submit proof of current licensing pursuant to Applicable Law.

6.1.9 Evidence that the Bidder is enrolled in, and in good standing in, a DFSP approved by the OBWC.

6.1.10 Required Notice of Unresolved Findings for Recovery.

6.1.10.1 By submitting its Bid, the Bidder warrants that it is not subject to an unresolved findings for recovery under ORC Section 9.24. ORC Section 9.24 prohibits the State from awarding a Contract to any Bidder against whom the Auditor of State has issued a finding for recovery if the finding for recovery is unresolved at the time of award. If the Contract is awarded to a Bidder subject to an unresolved finding for recovery under ORC Section 9.24, the Contract is void on its face and the Contractor shall immediately repay to the Owner any funds paid under the Contract.

6.1.11 If the Bidder is a joint venture, it must submit the executed agreement between the joint venturers describing the division of services/work and percentage of contract for each company, and a Power of Attorney which authorizes one or more individuals to bind the joint venture and each individual joint venturer to Contract Modifications.

6.1.12 Sworn statement of no personal property tax liability pursuant to ORC Section 5719.042.

6.2 Non-compliance with Conditions Precedent

6.2.1 The award of the Contract and execution of the Agreement require the Contractor to comply with:

6.2.1.1 all conditions precedent for execution of the Contract within 10 days of the date of the Notice of Intent to Award; and

6.2.1.2 the **Bidder's Qualifications** form.

6.2.2 Non-compliance with the conditions precedent for execution of the Contract as stated in **Section 6.1** within the timelines stated in **Section 6.2.1** following the date of the Notice of Intent to Award shall be sufficient cause to permit the Contracting Authority to cancel the Notice of Intent to Award, for the Bidder's lack of responsibility and award the Contract to another Bidder, which the Contracting Authority determines is the lowest responsible Bidder; or the Contracting Authority may re-bid the Work at its sole discretion.

6.2.3 The Contracting Authority may extend the time for complying with the conditions precedent for execution of the Contract for good cause. The extension is not a waiver of the conditions precedent for execution of the Contract.

6.3 Time Limits

6.3.1 The Contracting Authority's failure to award the Contract and execute the Agreement-within 60 days of the bid opening invalidates the entire bid process and all Bids submitted, unless the time is extended by written consent of the apparent lowest responsible Bidder and the Contracting Authority.

6.3.1.1 If the Contracting Authority awards the Contract within 60 days of the bid opening, increases in material, labor, and subcontract costs shall be borne by the Bidder.

6.3.1.2 If failure to execute the Contract within 60 days of the bid opening is due to matters for which the Owner is solely responsible, the Contractor is entitled to a Change Order authorizing payment of verifiable increased costs in materials, labor, or subcontracts. This increase shall not exceed the difference in price between the successful Bidder and the price of the next lowest responsible Bidder.

6.3.1.3 If failure to execute the Contract within 60 days of the bid opening is due to matters for which the Contractor is responsible, the Contracting Authority shall not grant a request for increased costs.

6.4 Notice to Proceed

6.4.1 The Contracting Authority shall issue a Notice to Proceed to the Contractor, which establishes the date for commencement and the calendar days allocated for Substantial Completion. Within 10 days of the date of the Notice to Proceed, or other period as mutually agreed by the Contractor and the Contracting Authority, the Contractor shall furnish the following submittals to the Roof Consulting Firm:

6.4.1.1 Schedule of Values;

6.4.1.2 preliminary schedule of Shop Drawings and other Submittals;

6.4.1.3 Subcontractor and Material Supplier Declaration form, with completed "Bidder Affirmation and Disclosure" forms acknowledging that the Contractor affirms, understands, and will abide by the requirements of Executive Order 2011-12K for Subcontractors that were not identified in the **Bid Form**;

6.4.1.4 qualifications of proposed project manager(s) and superintendent(s) and a comprehensive resume of each.

END OF DOCUMENT

SECTION 01 10 00

SUMMARY OF WORK

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. WORK COVERED BY CONTRACT DOCUMENTS

A. Project identification: Project consists of re-roofing all roof areas at the High School (Base Bid 1), the Middle School and Munson Elementary School (Base Bid 2), Masonry repairs and flashing replacement at Park Elementary School, and roof repairs at Park Elementary School Auditorium Bldg. and Maple Street Elementary School (Base Bid 3) and related work as indicated on the drawings and/or as specified.

1. Project Locations: Chardon Local Schools
High School – 151 Chardon Ave.
Middle School – 424 North St.
Munson Elementary School – 12687 Bass Lake Rd.
Park Elementary School (Classroom Bldg.) – 111 Goodrich Ct.
Park Elementary School (Auditorium Bldg.) – 111 Goodrich Ct.
Maple Street Elementary School– 308 Maple Ave.
All addresses located in Chardon, OH.

2. Project Title: 2021 Roofing Project

3. Project Owner: Chardon Local Schools
428 North Street
Chardon, Ohio 44024

B. Project Consultant Identification: The contract documents were prepared by:

1. Roof Consultant: Adam Bradley Enterprises, Inc.
1540 Chagrin River Road
Gates Mills, OH 44040

For project information or copies of bidding documents, contact:
Tom Case
216.272.8457
tomc@adambradleyinc.com
or
Bill Bare at; 440.622.2246

1.3. BIDDER REQUIREMENTS:

A. The Roofing applicator company on this Project must have the experience and qualifications specified in the Bidding Documents.

B. Any requests for substitutions of specified materials or practices must be submitted by the Prime Bidder. Requests for substitutions from manufacturers, suppliers or Subcontractors will not be considered.

~~B.~~C. Unapproved Subcontractors cannot be utilized on this Project. All Subcontractors are subject to the Owners approval.

1.4. SUMMARY OF WORK:

A. Bidders for the following Base Bids shall provide all labor, materials, tools, equipment, services, etc. to provide complete, watertight roof systems, drainage and other related work as shown and/or specified in the Construction Documents;

1. Base Bid Package 101; High School (roof replacement and related work). All roof areas as indicated in the Contract Documents.
2. Base Bid Package 102, Middle School (roof replacement and related work). All roof areas as indicated in the Contract Documents.
3. Base Bid Package 103, Munson Elementary School (roof replacement and related work). All roof areas as indicated in the Contract Documents.
4. Base Bid Package 104. Park Elementary School AND Maple Elementary Schools– All masonry and roofing repairs as indicated in the Contract Documents.
5. Combination Bid Packages 101/102/103/104, Optional Combination, All Work included in Base bids 101, 102, 103 and 104, High School, Middle School, Munson Elementary School, Park Elementary and Maple Elementary Schools.

B. Unit Prices: as indicated in Section 01 22 00 Unit Prices.

C. Alternates: as indicated in Section 01 23 00 Alternates

D. Bid Package 101 work includes, but is not limited to:

1. Base Bid; High School – Remove and replace all roof areas:
    a. All work as indicated in the Specifications and Drawings.
2. Add Alternate 1; Add insulation adhesive and ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas:
    a. Under the Base Bid, no cover board will be adhered over mechanically fastened insulation on metal decks
    b. Bidders shall state the cost to be added to the Base Bids to install ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas.
    c. All work to be as indicated in the Specifications and Drawings.

E. Bid Package 102 work includes, but is not limited to:

1. Base Bid; Middle School: Remove and replace all roof areas:
    a. All work as indicated in the Specifications and Drawings.
2. Add Alternate 1; Add insulation adhesive and ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas:
    a. Under the Base Bid, no cover board will be adhered over mechanically fastened insulation on metal decks
    b. Bidders shall state the cost to be added to the Base Bids to install ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas.
    c. All work to be as indicated in the Specifications and Drawings.

F. Bid Package 103 work includes, but is not limited to:

1. Base Bid; Munson Elementary School: Remove and replace all roof areas:

    a. All work as indicated in the Specifications and Drawings.

2. Add Alternate 1; Add insulation adhesive and ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas:

    a. Under the Base Bid, no cover board will be adhered over mechanically fastened insulation on metal decks

    b. Bidders shall state the cost to be added to the Base Bids to install ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas.

    c. All work to be as indicated in the Specifications and Drawings.

G. Bid Package 104 work includes, but is not limited to:

1. Base Bid; Masonry and roofing repairs at Park Elementary School and Maple Elementary School;

    a. All work as indicated in the Specifications and Drawings

H. (OPTIONAL) Combination Package 101/102/103/104 – High School, Middle School, Munson Elementary School, Park Elementary School and Maple Elementary School and, if awarded is in lieu of separate Bid Packages 101, 102, 103 and 104.

    a. All work to be as indicated in the Specifications and Drawings.

1.5. INTENT OF THE SPECIFICATIONS:

A. The intent of these specifications is to describe the materials and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

B. Roof Consulting Firm specified the work conveyed in the Contract Documents for Owner's benefit. These Contract Documents are between Owner and Roof Consulting Firm only. Nothing contained in these Contract Documents shall create a contractual relationship between the Contractor and the Roof Consulting Firm.

C. Assumption of Responsibility: Throughout these specifications, unless specifically noted otherwise, all work shall be assumed to be the sole responsibility of the Contractor.

1.6. SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC "MasterFormat" numbering system.

    1. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contact Documents.

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

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

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

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

1.7. WORK UNDER OTHER CONTRACTS

A. Owner may award separate contracts for related or unrelated construction operations at this site. These operations may be conducted simultaneously with work under this contract.

B. Cooperation with other Contractors and Trades that may be present on the site is expected so that work on those contracts may be carried out. Owner reserves the right to resolve conflicts if required.

1.8. EXISTING HVAC, ELECTRICAL EQUIPMENT, GAS LINES AND OTHER PIPING OR TUBING

A. Existing HVAC and electrical equipment may require temporary disconnection, relocation, and reconnection. Such work shall be a part of this Contract and shall be performed by the appropriate licensed tradesmen. Cost of the work shall be included in Base Bid.

B. Electrical conduit and electrical items may have to be permanently relocated to prevent re-attachment to new roofing or sheet metal components. Such work shall be a part of this contract and shall be performed by the appropriate licensed tradesmen. Cost of the work shall be included in Base Bid.

C. Gas lines and other piping and tubing may require disconnection, raising and reconnection. Such work shall be a part of this Contract and shall be performed by the appropriate licensed tradesmen. Cost of the work shall be included in Base Bid.

1.9. REGULATORY REQUIREMENTS

A. TAXES:

1. Contractor shall pay all sales, consumer, use and other similar taxes required by law.

B. PERMITS AND FEES:

1. The Contractor shall apply for and secure all incidental permits, governmental fees and licenses necessary for proper execution and completion of the Work.

2. Special work permits, approved by the Owner, shall be required to perform work under the following special circumstances. These permits shall be requested not later than 72 hours before the work is to begin.

a. Above Ceiling Work Permit for areas outside the designated work areas.

b. Hot Work Permit.

c. After Hours Permit.

C. GOVERNING CODES AND STANDARDS:

1. Work performed under this specification shall be in compliance with applicable Industry Standards and all applicable codes, laws, and ordinances of the municipal, state, and federal departments concerned. Materials and workmanship required by such regulations shall be provided by the Contractor whether or not specifically noted herein or shown on the drawings.

2. Bidders are directed to immediately advise the Roof Consulting Firm if they discover any materials, products, or designs that conflict with or fail to satisfy any of the following Codes, Standards or Local Ordinances;

a. Ohio Building Code (OBC)

b. Americans with Disabilities Act Architectural Guidelines (ADAAG)

c. National Fire Protection Association (NFPA)

d. Occupational Safety and Health Standards of Construction Industry (OSHA)

e. Factory Mutual Global (FMG)

f. Underwriters Laboratories (UL)

3. Industry Standards: Minimum standards of construction shall comply with all applicable standards including but not limited to;

a. NRCA

b. SMACNA

D. The above notwithstanding, Industry Standards and Codes are recognized as minimum requirements. In many cases these Contract Documents specify materials, quantities, thicknesses, details, assemblies, etc., that clearly exceed the Industry Standards and prevailing Codes. In all these cases the more stringent requirements in the Contract Documents shall be required.

1.10. NOTICES AND POSTINGS:

A. The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and orders of any public authority bearing on the performance of the Work. If Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, without providing notice to building owner's representative, Contractor shall assume full responsibility and shall bear all costs.

B. Post at job site in a protective sleeve the following,

1. Copies of all permits

2. Copies of all MSDS sheets

1.11. PROTECTION:

A. The efforts of the Roof Consulting Firm and their Roof Consulting Firms are focused on designing a project which will be safe upon completion. The Roof Consulting Firm and their Roof Consulting Firms have no training, nor expertise in, and take no responsibility for construction means and methods, nor job site safety. These issues are exclusively the Contractors responsibility. Processing and/or approving submittals made by the Contractor which may contain information related to construction means and methods or safety issues shall not be construed as voluntary assumption by the Roof Consulting Firm or any of their Roof Consulting Firms of any responsibility for means and methods of construction nor job site safety. Similarly, participation in meetings where such issues might be discussed shall not be construed as voluntary assumptions by the Roof Consulting Firm or any of their Roof Consulting Firms of any responsibility for means and methods of construction nor job site safety.

B. The Contractor shall use precautions necessary to provide for the safety of property owner, visitors to the site, and all connected with the work of this project.

C. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted in advance by the Owner. All access roadways must remain open to traffic unless otherwise temporarily permitted by the Owner.

D. Temporary Fencing shall be erected to secure all ground level construction staging areas from non-construction personnel in accordance with Section 01 50 00.

E. Safety Requirements

1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
2. Comply with applicable Federal, State, Local and Owner health and safety requirements.
3. Notify the Owner in advance whenever work is expected to be potentially hazardous and/or harmful to persons and/or property on the site. Contractor is solely responsible for employing means and methods (acceptable to the Owner) deemed necessary to prevent harm to such persons and property.
4. Maintain a construction crewmember as a Floor Area Guard whenever roof decking is being repaired or replaced.
5. Maintain proper fire extinguishing equipment and trained personnel within close proximity and with unobstructed access to work areas whenever power tools, torches and/or other heat-producing equipment is being used on the project.
6. ALL SAFETY REQUIREMENTS OF THE BUILDING OWNER, INCLUDING OWNERS POLICY ON TOBACCO PRODUCTS (ATTACHED AS APPENDIX 2) MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED.

1.12. EXPERIENCE OF CONTRACTOR

A. Contractor will be disqualified if Chardon Local Schools has any claims against them in excess of $50,000.00.

B. In addition to requirements listed elsewhere, any Roofing Applicator proposed for the work of this project must have experience successfully installing roofing systems of the types specified for at least the last ~~ten~~ five consecutive (~~10~~5) years. Bidders shall submit with their bid a letter stating such experience in the application of such fully adhered membrane systems, including Project names, Owner names and Owner's representative contact information.

C. Roofing Contractor's Qualifications to be submitted prior to award of the Contract:

1. Certification from the Manufacturer that Applicator has been an approved applicator by the Manufacturer prior to the bidding period; such certification must be maintained throughout the installation of this project.
2. Letter from Roofing Manufacturer that the Manufacturer:
    a. Is an Associate Member in good standing with National Roofing Contractor's Association (NRCA).
    b. Will notify Roof Consulting Firm of planned site visits in a timely manner so Roof Consulting Firm can coordinate his site visits to correspond.
    c. Will supply representative to perform periodic inspections throughout the course of the Project. Written reports must be submitted to the Roof Consulting Firm and copies to the Contractor. Each site visit must be accompanied by a written report.
    d. Will provide written reports to Roof Consulting Firm summarizing any communication with Contractor regarding any aspect of the Work.
    e. Has a minimum of 15-year experience manufacturing the specified roofing systems.
    f. Will provide a factory trained technician to attend site meetings and to perform final inspections of the roofing system.
    g. Letter from material manufacturer confirming that all bidding documents have been approved, that the site has been inspected and meets the requirements for suitability, that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied, and that the specified warranty shall be provided upon satisfactory completion of the project:
        i. If details for any manufacturer's systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer's reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements.
        ii. No deviation is to be made from this Specification without prior written approval by the manufacturer; submit such approval to the Roof Consulting Firm.
3. Submit list of at least ten projects of the same materials and methods specified for this project within a radius of 50 miles from the project site and that are available for inspection by the Owner.
4. Letter certifying that Contractor has no Liens or Notices to Lien outstanding against them.
5. Letter certifying that Chardon Local Schools has no claims against them in excess of $50,000.00.
6. Provide address of a permanent office within 60 miles of project site.
7. Provide letter ensuring leak response within 12 hours of any leak notification during the course of the work and for a period of five years after completion of the work.
8. Provide a permanent contact phone number that can be called 24 hours per day, seven days per week for leak repair service for the entire duration of the warranty period.
9. Provide name of a full-time supervisor/foreman experienced with the specified roof system

on-site when roof system application is in progress. Certification of general experience and specific roof system experience shall be included in the submittal.

10. Certify that the project will be staffed and equipped with a trained crew and all capital equipment required to perform the work of this project in accordance with all Contract Documents. Submit list of available manpower and equipment planned for use on this project;

    a. Maintain all equipment and tools in good working order;

    b. Submit written safety plan and equipment to the work force and specify, in writing, proper clothing.

11. Shall appoint a Safety Coordinator who shall be a member of the roofing installation crew. The name of the appointee shall be submitted, including all qualifications for the appointment.

D. Maintain a daily job log to be kept on site at all times from the pre-roofing conference until final close-out. The job log shall include:

1. Copies of all submittals.
2. Safety coordinator appointment with emergency telephone numbers; fall protection plan and material safety data sheets for all products.
3. Daily crew attendance and time records.
4. A summary of each days work including any photographs or detail revisions.
5. A field sketch showing areas of work for the day.
6. Accident reports.
7. Material delivery records; and a visitor register.
8. Complaint log, listing complaints received from any party of any nature, and the actions taken and resolution, with dates and names of individuals involved.

E. Contractor shall provide a foreman or superintendent to be present on the job site at all times to supervise all Work by all subcontractors utilized on the project. On site Foreman/Superintendent must have a cell phone on site at all times and provide number to Roof Consulting Firm and Owner.

1.13. CONSTRUCTION SCHEDULE

~~A. NOTE: Liquidated damages for work that is not complete by the completion deadline are a part of this contract as required by State law.~~

~~B.~~A. The following items must be submitted to the Roof Consulting Firm no later than five (5) consecutive calendar days after the date of the Authorization to Proceed. No payment requests will be authorized until these submittals have been received and approved by the Owner and the Roof Consulting Firm:

1. All submittals as detailed in Section 01 33 00.

~~C.~~B. Construction timelines and benchmarks listed below are essential and must be met. The Contractor shall submit proposed construction schedules with their bids within these requirements and staff the project to satisfy milestone dates.

1. Authorization to proceed: on or about May 15, 2021.
2. On-site Work to begin on or about June 12, 2021 unless modified in writing by the Owner.

3. All roof areas where roof demolition has started in 2021 must be substantially completed by August 15, 2021. Remaining areas that are not complete in 2021 may restart on May 28, 2022 and must be substantially completed by August 20, 2222.
4. Final Completion for all Contract Work, including all closeout requirements, shall occur not later than twenty-one consecutive calendar days after the date of Substantial Completion.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

* * * END OF SECTION 01 10 00 - SUMMARY OF WORK * * *

SECTION 01 14 00

CONTRACTOR'S USE OF PREMISES

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. DESCRIPTION

A. Work included:

1. This Section applies to situations in which the Contractor or his representatives including, but not necessarily limited to, suppliers, subcontractors, employees, and field engineers, enter upon Owner's property.

1.3. QUALITY ASSURANCE

A. Promptly upon award of the Contract, notify all pertinent personnel regarding requirements of this Section.

B. Owner may require all personnel who will enter upon the Owner's property to certify their awareness of and familiarity with requirements of this Section.

1.4. BUILDING OCCUPANCY

A. The facility will be occupied and in use during construction. Cooperate with Owner during construction process to minimize disruptions of Owner usage.

B. Contractor is fully and solely responsible for the safety and protection of all occupants going into, leaving out of, or occupying the interior of the buildings under which work is in progress in the general vicinity. All costs associated with providing this service are to be included in the base bids.

C. Maintain existing buildings in a weather tight condition throughout the construction process. Protect buildings and occupants during all construction operations and repair any damage caused by construction operations immediately.

1.5. TRANSPORTATION AND FACILITIES

A. Driveways and Entrances: Keep driveways and entrances clear. Do not park vehicles or store materials unless specifically authorized by the Owner.

1. Schedule deliveries to minimize the use of driveways and entrances.

2. Load, unload and store materials and equipment to minimize use of space and time requirements at loading, temporary storage and set up areas.

B. Do not use handicapped parking area(s) at any time for any purpose.

C. Provide adequate protection for lawn areas, landscaped areas, site irrigation system components, curbs and sidewalks over which trucks and equipment pass to reach job site. If any damage occurs, the Contractor is responsible for repairs. Note that temporary fence posts shall not penetrate existing pavements.

D. Contractor's vehicles:

1. Require Contractor's vehicles, vehicles belonging to employees of Contractor, and all other vehicles entering upon Owner's property in performance of Work of Contract, to use only the Access Route approved in advance by Owner.
2. Do not permit such vehicles to park on any street or other area of Owner's property except in the area approved by Owner as "Contractor's Parking Area."

E. SECURITY

1. Restrict access of all persons entering upon the Owner's property to the Access Route and to the actual site of the work.

1.6. FACILITY USAGE

A. Utilities: All utilities are to remain in operation during the construction period. Contractor shall submit schedules to the Owner for review, approval and coordination prior to performing any work impacting existing utilities. Shut downs and tie-ins for all utilities shall be made at times approved by the Owner, regardless of the time directed by the Owner, the Contractor shall make no claim for overtime or premium time payments.

1. Submit schedules prior to performing any work that will affect utilities.

B. Use of Site: Limit use of site to work in areas established during pre-bid and pre-construction meetings. Do not utilize or disturb areas of the site not previously identified beyond the work area without prior written approval.

1. Do not store materials inside building areas, including penthouses.

C. Safety: Do not block fire exits or doorways. Allow for egress of traffic at all times. Keep driveways and entrances serving the premises open and clear for use by the Owner, Owner’s employees and emergency vehicles at all times.

D. Provide adequate protection for all interior and exterior portions of the building during set-up and construction. If any damage occurs the Contractor is responsible for repairs as designated by the Owner.

E. Restrooms and other amenities such as cafeteria and vending machines, etc. of the building shall not be used by construction personnel. Provide portable toilet facilities located at designated set-up and access area.

F. Provide exterior scaffolding stairway or ladders as appropriate to provide access to the all Building Roof areas. Interior access will not be provided and is prohibited.

G. Temporary fences and gates to be provided by the Contractor to prevent unauthorized access as specified in Section 01 50 00.

H. When providing interior deck inspections for conduits and attachments to the deck or when providing floor guards when decking is to be replaced, personnel must wear clean shoes that have not been worn during rooftop work.

I. Notify Owner at least seven (7) days in advance of areas that may be required to be restricted from public access including areas of possible deck replacement, areas of work under the deck including inspections for conduits and attachments, and areas of delivery and any parking spaces.

1.7. OWNER CONDITIONS

A. The following Owner conditions shall apply throughout the course of the work. Violation of these conditions shall be grounds for immediate and permanent removal from the site of the offending personnel, or entire crew.

1. Audio Equipment: Playing of radios, tape players, CD players, televisions, or other audio devices is prohibited everywhere on site.
2. Appropriate Clothing: Construction personnel shall dress in appropriate clothing at all times, everywhere on site. Shirts and full length pants shall be worn at all times. No article of clothing or visible body parts may have obscene or profane language or graphics displayed on it in any manner.
3. Smoking: Owners Tobacco Use Policy is to be enforced at all times (Appendix 2).
4. Language: Loud or abusive language, particularly obscene or profane language is prohibited at all times.
5. Firearms, alcoholic beverages and illegal drugs are strictly prohibited at all times.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

* * * END OF SECTION 01 14 00 * * *

SECTION 01 15 30

CHANGE ORDER PROCEDURE

1 PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2 DESCRIPTION

A. Work included:

1. Make such changes in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as are described in written Change Orders signed by the Owner and the Designated Owner's representative and issued after execution of the Contract, in accordance with the provisions of this Section.

1.3 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

1.4 SUBMITTALS

A. Make submittals directly to the Designated Owner's representative at his normal place of business.

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

1.5 PRODUCT HANDLING

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

B. Make the Register available to the Designated Owner's representative for review at his request.

1.6 PROCESSING CHANGES INITIATED BY THE OWNER

A. Should the Owner contemplate making a change in the Work or a change in the Contract Time of Completion, the Designated Owner's representative will issue a "Bulletin" to the Contractor.

1. Bulletins will be dated and will be numbered in sequence.
2. The Bulletin will describe the contemplated change, and will carry one of the following instructions to the Contractor:
    a. Make the described change in the Work at no change in the Contract Sum and no change in the Contract Time of Completion;
    b. Promptly advise the Designated Owner's representative as to credit or cost proposed for the described change. This is not an authorization to proceed with the change.

B. If the Contractor has been directed by the Designated Owner's representative to promptly advise him as to credit or cost proposed for the described change, the Contractor shall:

1. Analyze the described change and its impact on costs and time;
2. Secure the required information and forward it to the Designated Owner's representative for review.
3. Meet with the Designated Owner's representative as required to explain costs and, when appropriate, determine other acceptable ways to achieve the desired objective;

4 Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Designated Owner's representative in writing when such avoidance no longer is practicable.

1.7 **PROCESSING CHANGES INITIATED BY THE CONTRACTOR**

A Should the Contractor discover a discrepancy among the Contract Documents or other cause for suggesting a change in the Work, a change in the Contract Sum, or a change in the Contract Time of Completion, he shall notify the Designated Owner's representative as required by pertinent provisions of the Contract Documents.

B Upon agreement by the Designated Owner's representative that there is reasonable cause to consider the Contractor's proposed change, the Designated Owner's representative will issue a Bulletin in accordance with the provisions described in Article 1.6 above.

1.8 **PROCESSING BULLETINS**

A Make written reply to the Designated Owner's representative in response to each Bulletin.

1 State proposed change in the Contract Sum, if any.

2 State proposed change in the Contract Time of Completion, if any.

3 Clearly describe other changes in the Work required by the proposed change or desirable therewith, if any.

4 Include full backup data such as subcontractor's;

a Letter of proposal or similar information

b Itemized costs of material and labor to include deducts for work being eliminated and additions to perform additional work as a part of the change.

5 Submit this response in single copy.

B When cost or credit for the change has been agreed upon by the Owner and the Contractor the Designated Owner's representative will issue a "Change Order" to the Contractor.

1.9 **PROCESSING CHANGE ORDERS**

A Change Orders will be dated and will be numbered in sequence.

B The Change Order will describe the change or changes, will refer to the Bulletin or Bulletins involved, and will be signed by the Owner and the Designated Owner's representative.

C The Designated Owner's representative will issue three copies of each Change Order to the Contractor.

1 The Contractor promptly shall sign all three copies and return two copies to the Designated Owner's representative.

2 The Designated Owner's representative will retain one signed copy in his file and will forward one signed copy to the Owner.

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

1 The Contractor promptly shall return two copies of the Change Order, unsigned by him, to the Designated Owner's representative with a letter signed by the Contractor and stating the reason or reasons for the Contractor's disagreement.

2 The Contractor's disagreement with the Change Order shall not in any way relieve the Contractor of his responsibility to proceed with the change as ordered and to seek settlement of the dispute under pertinent provisions of the Contract Documents.

* * * END OF SECTION 01 15 30 - CHANGE ORDER PROCEDURE * * *

SECTION 01 22 00

UNIT PRICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.
B. Related Sections include the following:
   1. All Division 1 Sections.

1.3 DEFINITIONS

A. Unit price is a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased as approved by the Owner.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
D. List of Unit Prices: A list of unit prices is included at the end of this Section. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 LIST OF UNIT PRICES

1. Provide Unit Prices on Bid Form for the following items; include the following quantities in the base bid:
   a. Base Bid 101; High School;

2” X 8” Wood Nailer/Blocking Replacement	1,000 linear feet
Metal Roof Deck Restoration:	2,500 square feet
Metal Roof Deck Replacement:	500 square feet
Gypsum Deck and Form Board Replacement	500 square feet
Replace Lt. Wt. Fill with Iso. Insulation	500 square feet
Concrete Deck Repair	500 square feet
Through wall CF replacement	500 linear feet
Roof Drain Replacement	5 Drains

b. Base Bid 102; Middle School;

2” X 8” Wood Nailer/Blocking Replacement	500 linear feet
Metal Roof Deck Restoration:	1,500 square feet
Metal Roof Deck Replacement:	500 square feet
Through wall CF replacement	200 linear feet
Roof Drain Replacement	3 Drains

c. Base Bid 103; Base Bid 103, Munson Elementary School;

2” X 8” Wood Nailer/Blocking Replacement	500 linear feet
Metal Roof Deck Restoration:	1,000 square feet
Metal Roof Deck Replacement:	500 square feet
Replace Lt. Wt. Fill with Iso. Insulation	500 square feet
Concrete Deck Repair	500 square feet
Through wall CF replacement	100 linear feet
Roof Drain Replacement	1 Drains

d. Base Bid 104, Park Elementary School and Maple Elementary Scholl Masonry and Roof Repairs;

Brick Replacement (exterior-below third floor window heads)	50 Bricks (BMU’s) In addition to 25 BMUs in base bid
Masonry Pointing (exterior-below third floor window heads)	500 linear feet In addition to 15% of joints in base bid
Base Flashing seam re-enforcement	250 linear feet
Field seam re-enforcement	250 linear feet
Metal roof fastener replacement	1,000 fasteners

e. Combination Bid 101/102/103/104, Optional Combination, All Work included in Base bids 101, 102 and 103;

2” X 8” Wood Nailer/Blocking Replacement	2,000 linear feet
Metal Roof Deck Restoration:	5,000 square feet
Metal Roof Deck Replacement:	1,500 square feet
Gypsum Deck and Form Board Replacement	500 square feet
Replace Lt. Wt. Fill with Iso. Insulation	1,000 square feet
Concrete Deck Repair	1,000 square feet
Through wall CF replacement	800 linear feet
Roof Drain Replacement	9 Drains
Brick Replacement (exterior-below third floor window heads)	50 Bricks (BMU’s) In addition to 25 BMUs in base bid
Masonry Pointing (exterior-below third floor window heads)	500 linear feet In addition to 15% of joints in base bid
Base Flashing seam re-enforcement	250 linear feet
Field seam re-enforcement	250 linear feet
Metal roof fastener replacement	1,000 fasteners

END OF SECTION 01 22 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
   1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate. Costs listed for each alternate include costs of related coordination, modification, or adjustment.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Add Alternate 1; Add insulation adhesive and ½ inch HD isocyanurate insulation over top mechanically attached insulation on all Metal Deck areas on all schools/Bid Packages:
   1. Under the Base Bid, no cover board will be adhered over mechanically fastened insulation on metal decks.

2. Bidders shall state the cost to be added to the Base Bids to install ½ inch HD isocyanurate insulation over top of mechanically attached insulation on all Metal Deck areas.

3. All work to be as indicated in the Specifications and Drawings.

END OF SECTION 01 23 00

SECTION 01 30 00

ADMINISTRATIVE AND SPECIAL PROJECT REQUIREMENTS

1. PART 1 - GENERAL REQUIREMENTS

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. COORDINATION, SEQUENCING, AND SCHEDULING

A. Work Hours:

1. Work day is limited to the local city ordinance and Owners requirements.
2. Work week is confined to hours permitted by local codes. Overtime hours can be worked during hours permitted by local codes provided Roof Consulting Firm approves extended hours in advance. No additional compensation for premium time or over time will be allowed.
3. Tear off and deck replacement work on all buildings may be restricted to times when building is not occupied.

B. Coordinate work with all installers and subcontractors to ensure proper sequencing of related trades and efficient and orderly installation of each part of the work in a manner that minimizes inconvenience to the Owner.

C. Drainage: Coordinate all removal and replacement so that all roof areas have proper and unrestricted drainage at all times.

D. Coordinate and schedule work within 30 feet of air intakes with the Owner. Work to be performed only when fans and intakes can be shut down.

1. Install tarpaulins over intake vents after shut down occurs.
2. Remove tarpaulins daily after work is complete and inform Owner that intakes can be re-started.

1.3. ENVIRONMENTAL REQUIREMENTS

A. Do not proceed with the Work under adverse weather conditions, immediately after rainfall (for weather sensitive products), or when climatic conditions are outside manufacturer's recommended limitations for installation. Proceed with the work only when weather forecasts are favorable for proper development of the performance characteristics of the materials.

B. Do not work in rain, snow or in presence of water, dew or frost.

C. Weather delays may not extend the schedule, as defined in the terms of the Construction Documents, unless specifically approved by the Owner, at the Owner's sole discretion

1.4. HVAC AND RELATED WORK

A. The Contractor must include all costs associated with raising rooftop units, gas lines, soil stacks, conduits, etc. or with repositioning same to ensure that proper flashing heights as designed and required by the manufacturer and by industry standards are achieved. This includes costs involved in evacuating and charging HVAC units, and gas lines. Work may need to be performed during off hours to accommodate the Owner. The Contractor must also use licensed, Owner approved and proper subcontractors for all of this type of work.

B. Conduits, junction boxes, cabling, etc. that are mounted on walls or copings must be moved and remounted on masonry above the counter flashings or on proper blocking or supports on the roof. No such items may be mounted or remounted in a manner in which attachment penetrates roof membrane, flashing materials or metal components or accessories.

1.5. PROTECTION AND CLEANING

A. Protect building, property, equipment, roads, approaches, parking areas, loading dock areas, sidewalks, vehicles, and landscaping from damage due to the Work, including but not limited to contamination, soiling, staining or defacing.

B. Protect workers from radiation, including rooftop microwave antennas in accordance with OSHA regulations, ANSI standards and FCC regulations published in 47 CFR 1.1307(b).

1. Do not move or disturb roof top antennas with unqualified personnel. Use only appropriate tradesmen approved by the Owner to move or relocate antennas or dishes.

C. Clean and protect construction in process and adjoining materials in place during handling and installation. Apply protective coverings where necessary to prevent damage or deterioration.

D. Coordinate and sequence Work so that other trades do not damage completed installations.

E. The Contractor is responsible for the protection of all vegetation, persons, and property on the site and the adjoining rights of way from the Work associated with this Project. Any damaged items will be replaced or repaired to the satisfaction of the Owner.

F. The Contractor is responsible for daily clean-up of all debris and for protection of all persons and property in and around the work areas. Any soiling of or damage to vehicles, pedestrians, personal property or real property caused by Work from this Project will be the responsibility of the Contractor.

G. The Contractor shall not discontinue the job once work has begun. A full crew must be on site performing appropriate Contract Work on any day in which work can be performed.

H. ~~Unapproved Subcontractors cannot be utilized on this Project. All Subcontractors are subject to the Owners approval~~.

1.6. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. Before submitting a bid, each Bidder will, at Bidders own expense make or obtain any additional examinations, investigations, exploration, tests, and studies and obtain any additional information and data which pertain to the physical conditions at or contiguous to the site or otherwise which may affect cost, progress performance or furnishing of the Work and which the Bidder deems necessary to determine that its Bid for performing and furnishing the Work is in accordance with the time, price and other terms and conditions of the Contract Documents.

B. On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for the submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former conditions upon completion of such exploration.

C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of the Construction Documents and that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing the Work.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION

3.1. GENERAL

A. Measurements: Independently verify dimensions shown on Drawings or in these specifications. Contractor is responsible for all measurements and dimensions including dimensional variations from place to place on the building, or variations between actual field dimensions and those that may be indicated in these specifications and drawings.

B. Moisture: Contractor is responsible for the consequences of moisture in or on substrates that may interfere with the Work. Perform testing as necessary to determine if moisture that will interfere with the Work is present. Remove moisture or remove and replace moisture containing materials before completing installation of the Work.

END OF SECTION 01 30 00 - ADMINISTRATIVE AND SPECIAL PROJECT REQUIREMENTS

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General Project Coordination.
2. Conservation.
3. Cleaning and Protection.

1.2 GENERAL PROJECT COORDINATION

A. Coordination: The Contractor shall coordinate the construction operations of all the installers and Subcontractors to ensure the efficient and orderly installation of each part of the Work.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with Subcontractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: The Contractor shall coordinate scheduling and timing of required administrative procedures with all other construction activities and activities of other Subcontractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Installation and removal of temporary facilities and controls.
2. Delivery and processing of submittals.
3. Progress meetings.
4. Pre-construction meetings.
5. Project closeout activities.

C. Inspection of Conditions: Contractor shall inspect both the substrate and conditions under which Work is to be performed. Installers shall not proceed until unsatisfactory conditions have been corrected in a manner acceptable to the Installer as well as the manufacturer of the product, material, or equipment. Proceeding with an installation shall be considered prima facie evidence that the substrates and conditions under which the Work is to be performed are completely satisfactory and acceptable to the installer, and that they will not adversely affect the installation in any way.

D. Contractor shall coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

E. Leaks: It is understood that this project will be weather tight and free from leaks of any type. All leaks that occur during construction, or the Warranty period shall be immediately and properly repaired within twenty four (24) hours of its reported occurrence at no cost

to the Owner unless as a result of specific warranty exclusions or if leak was a documented pre-existing condition in an area not yet worked on by the Contractor.

F. Manufacturer's Instructions: Where installations include manufactured products or equipment, comply with manufacturer's applicable instructions and recommendations for installation, only to the extent that these instructions or recommendations are more explicit or more stringent than other requirements shown in the Contract Documents.

G. Contractor shall install each unit of Work during weather conditions and Project status which will assure the best possible results in coordination with the entire Work. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.

H. Understanding that the introduction of moisture into the building spaces during construction can foster the growth of mold, mildew and fungi, Contractor shall be responsible for taking whatever steps necessary to prevent moisture infiltration into the building spaces during construction.

1.3 CONSERVATION

A. Conservation: Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

B. Salvage materials and equipment involved in performance of, but not actually incorporated into, the work.

1.4 CLEANING AND PROTECTING

A. Contractor shall clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B. Contractor shall clean and provide maintenance on completed construction as frequently as necessary though the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

C. Limiting Exposures: Contractor shall supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures may include, but are not limited to, the following;

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Sunlight (UV)
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.

16. Bacteria.
17. Rodent and insect infestation.
18. Combustion.
19. Electrical current.
20. High-speed operation.
21. Improper lubrication.
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

SECTION 01 31 10

PROJECT MEETINGS

1. PART 1 - GENERAL REQUIREMENTS

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

B. Related section: Section 01 77 00 – Contract Close-Out.

1.2. SUMMARY

A. This section specifies requirements for meetings and administrative procedures that include but are not limited to the following:

1. Preconstruction conference.
2. Progress meetings.
3. Substantial Completion inspection.
4. Final Completion inspection and Project Close-out

1.3. SUBMITALS

A. See Related Sections: Section 01 10 00 – Summary and Section 01 33 00 – Submittals.

1.4. PRECONSTRUCTION CONFERENCE

A. The Preconstruction Conference will be scheduled within 5 working days after the Owner has issued the Notice to Proceed, but prior to actual start of the Work. All submittals must be received prior to time of the Conference.

B. Attendance: Roof Consulting Firm, roofing manufacturer/supplier, and Contractor's Representative.

1. Minimum agenda: Data will be distributed and discussed on:

a. Organizational arrangement of Contractor's forces and personnel, and those of Subcontractors, materials suppliers, and the Roof Consulting Firm.

b. Channels and procedures for communication.

c. Review set-up area and storage areas.

d. Review all required permits.

e. Construction schedule, including sequence of critical work.

f. Designation of responsible personnel.

g. Contract Documents, including distribution of required copies of Drawings and revisions.

h. Processing of Shop Drawings and other data submitted to the Roof Consulting Firm for review.

i. Processing of field decisions and Change Orders.

j. Rules and regulations governing performance of the work including working hours, use of premises, Owner rules and requirements.

k. Parking availability.

l. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

1.5. PROGRESS MEETINGS

A. Will be scheduled by Roof Consulting Firm and/or the Owner as required.

B. Minimum Attendance: Owner, Contractor's Representative, Job Superintendent, Roof Consulting Firm, and Sub-Contractors, as appropriate.

1. Minimum Agenda:

a. Review and correct minutes of the previous progress meeting.

b. Review of Work progress.

c. Field observations, problems, and decisions.

d. Identification of problems which impede planned progress.

e. Maintenance of progress schedule.

f. Corrective measures to regain projected schedules if construction is behind schedule.

g. Planned progress during succeeding work period.

h. Coordination of projected progress.

i. Maintenance of quality and work standards.

j. Effect of proposed changes on progress, schedule, and coordination.

k. Interface requirements.

l. Status of any incomplete submittals.

m. Deliveries.

n. Change orders.

o. Documentation of information for payment requests.

p. Other business relating to work.

C. Reporting: Distribute minutes of meetings no later than three working days after each meeting to each party present and to parties who should have been present.

1.6. SUBSTANTIAL COMPLETION INSPECTION

A. Related section: Section 01 77 00 – Contract Close-Out.

1.7. FINAL INSPECTION

A. Related section: Section 01 77 00 – Contract Close-Out

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END OF SECTION 01 31 10 - PROJECT MEETINGS

SECTION 01 33 00
SUBMITTALS

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. The submittals specified in this section must be submitted at the times specified in this Section and as referenced in related sections of the Construction Documents.

B. These requirements are in addition to Submittals required in the Owner's Bidding Requirements.

1.3. SUBMITTAL PROCEDURES

A. Coordination of submittals:

1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
3. By affixing the Contractor's signature or approval stamp to each submittal, he/she certifies that this coordination has been performed.

1.4. SUBMITTAL DOCUMENTS

A. All Bidders must submit the following documentation for this Project prior to the award of the bid;

1. Letter from material manufacturer confirming that all bidding documents have been approved, that the site has been inspected and meets the requirements for suitability, that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied, and that the specified warranty shall be provided upon satisfactory completion of the project

a. If details for any manufacturer's systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer's reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements.

b. No deviation is to be made from this Specification without prior written approval by the manufacturer; submit such approval to the Roof Consulting Firm.

B. Contractor must submit the following documentation for this Project no later than 5 days before start of Work:

1. Copy of the roofing manufacturer's warranty which meets all requirements of the specified warranty.
2. Individual product identification, including manufacturer's literature and MSDS sheets for all products to be used.

3. Shop Drawings:
    a. Tapered insulation layouts for each roof area to receive tapered insulation.
    b. Metal Fascia and Copings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
    c. Shop drawings of each item specified that differ from the basis of design specified in the Construction Documents showing layout, profiles, methods of attachment, and joining methods.
    d. Color samples of metal finishes and sealants for approval by the Roof Consulting Firm and Owner
    e. Shop drawing showing fastening patterns for FMG 1-90 attachment. Show perimeter, corner and field densities of insulation fasteners and placement, type and spacing of perimeter nailer attachments, and adhesive patterns at perimeters, corners and field of the roof.
    f. Shop drawings showing lay out and attachment of conduit, electrical boxes, etc. that are to be re-mounted
    g. Roof Consulting Firm will review and comment on required changes. The Contractor may make and distribute corrected copies as are required for his purposes. Submit Product Take Off Sheets: to adequately represent field dimensions and conditions.
4. Schedule of values.
5. Construction Schedule.
    a. Submit schedules prior to performing any work.
6. Signs identifying Contractors company name that is to be posted at their set up area(s).
7. Asbestos monitoring, removal and abatement plans and procedures to be utilized.
    a. Copies of OSHA asbestos training certificates for all workers at the project
8. If temporary utilities are used submit the following:
    a. Reports of tests, inspections meter readings and similar procedures performed on temporary utilities.
    b. Implementation and Termination Schedule: submit a schedule indicating implementation and termination of each temporary utility.
9. Contractor must submit documentation as required in the following Sections:
    a. Section 01 14 00 – Contractor Use of Premises
    b. Section 01 43 0 – Quality Assurance.
    c. Section 01 73 10 - Cutting and Patching.
    d. Section 04 20 00 – Masonry Repairs.
    e. Section 05 31 00 – Steel Deck.
    f. Section 06 10 00 – Rough Carpentry.
    g. Section 07 21 00 – Roof Insulation and Base Plies.
    h. Section 07 53 00 – EPDM Adhered Roofing.

i. Section 07 58 50 – Instruction for Asbestos Removal.

j. Section 07 62 00 - Sheet Metal flashing and Trim.

k. Section 07 71 00 – Roof Specialties.

l. Section 07 72 00 – Roof Accessories.

m. Section 07 90 00 – Sealants.

n. SECTION 11 00 00 – Fall Protection

o. Section 22 00 00 – Plumbing.

p. Section 22 43 00 – Plumbing Specialties.

C. Contractor must submit the following asbestos related documentation as required:

1. Results of air monitoring tests to be submitted daily, immediately after start of work.
2. Credentials and declarations of the competent person. A written summary of safety procedures required based on the results of air monitoring shall be submitted before air monitoring activity is suspended.

D. The following submittals are required before final payment:

1. Close-out submittals as required in Section 01 77 00 – Contract Close-Out.
2. Warrantees as required in Section 01 78 30 – Warrantees.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END OF SECTION 01 33 00 - SUBMITTALS

SECTION 01 42 00

REFERENCES

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. GENERAL

A. The abbreviations and acronyms defined in this section are provided as a convenience and may not be inclusive of all abbreviations and acronyms used in the specifications.

1.3. SUBMITTALS

A. Shop drawing showing fastening patterns for FMG 1-90 attachment and evidence of UL Class A rating for roof covering materials.

1.4. DEFINITIONS AND ABBREVIATIONS

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

B. “Approved”: When used to convey Roof Consulting Firm’s action on Contractors submittals, applications, and requests, “approved” is limited to Roof Consulting Firm’s duties and responsibilities as stated in the Conditions of Contract.

C. BMV: Brick masonry unit.

D. Clean: Shall be construed to mean the level of cleanliness generally provided by skilled cleaners using commercial quality maintenance equipment and materials.

E. CMU: Concrete masonry unit.

F. “Directed”: A command or instruction by Roof Consulting Firm. Other terms including “requested”, “authorized”, “selected”, “approved”, “required”, and “permitted” have the same meaning as “directed”.

G. DL: Dead load.

H. “Experienced”: When used with an entity, “experienced” means having successfully completed a minimum of five previous projects similar in size and scope to this Project.

I. FCC: Federal Communications Commission.

J. “Furnish”: Supply, deliver, or provide to the Project site, for assembly, installation, and similar operations.

K. “Indicated”: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated”.

L. “Install”: Operations and procedures to set materials, components and details referred to in the Contract Documents and Drawings into place for final use.

M. “Installer”: Contractor or another entity engaged by the Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be

performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

N. LL: Live Load

O. PLF: Pounds per linear foot.

P. “Provide”: Furnish and install, complete and ready for intended use.

Q. “Project Site”: Space available for performing construction activities. The extent of Project Site is shown on the drawings and may or may not be identical with the description of the land on which Project is to be built.

R. PSF: Pounds per square foot.

S. PSI: Pounds per square inch.

T. “Regulations”: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

U. RFI: Requests for information.

V. Roofing Terminology: Refer to the following publications for terms related to roofing work not otherwise defined in this section.

1. ASTM D 1079: Definitions of Terms Relating to Roofing, Waterproofing, and Bituminous Materials.
2. NRCA Roofing and Waterproofing Manual.
3. Roof Consultants Institute Glossary of Terms.

W. SF: Square foot.

1.5. INDUSTRY STANDARDS

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

B. Publication dates: Comply with standards in effect as of the date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the more stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Roof Consulting Firm for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are the minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to the Roof Consulting Firm for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain

copies directly from the publication source and make them available on request.

E. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers , and web site addresses are subject to change and are believed to be accurate and up to date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities Available from Access Board www.access-board.gov	 800-872-2253 202-272-5434
CFR	Code of Federal Regulations Available from Government Printing Office www.access.gpo.gov/nara/cfr	888-293-6498 202-512-1530
FS	Federal Specification Available from Defense Automated Printing Services //astimage.daps.dla.mil/online Available from General Services Administration www.fss.gsa.gov/pub/fed-specs.cfm Available from National Institute of Building Sciences www.nibs.org	 215-697-6257 202-619-8925 202-289-7800

1.6. ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in the Gale Research's "Encyclopedia of Associations" or in the Columbia Books' "National Trade and Professional Associations of the US".

B. Industry Organizations: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in the following list. Names, telephone numbers , and web site addresses are subject to change and are believed to be accurate and up to date as of the date of the Contract Documents.

AAMA American Roof Consulting Firmural Manufactures Association

ACI	American Concrete Institute/ACI International www.aci-int.org	248-848-3700
AIA	American Institute of Roof Consulting Firms (The) 202-626-7300 www.e-Roof Consulting Firm.com	
AISC	American Institute of Steel Construction www.aisc.com	800-644-2400 312-670-2400
ALSC	American Lumber Standard Committee	301-972-1700
ANSI	American National Standards Institute www.ansi.org	202-293-8020
APA	APA- The Engineered Wood Association www.apawood.org	253-565-6600

ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers www.ashrae.org	800-527-4723 404-636-8400
ASTM	American Society for Testing and Materials www.astm.org	610-832-9585
AWPA	American Wood Preservers Association www.awpa.com	817-326-6300
AWS	American Welders Society www.aws.org	800-443-9353 305-443-9353
BIA	Brick Industry Association (The) www.bia.org	703-620-0010
CISPI	Cast Iron Soil Pipe Institute www.cispi.org	423-892-0137
CRSI	Concrete Reinforcing Steel Institute	
FM	Factory Mutual System (See FMG)	
FMG	Factory Mutual Global www.fmglobal.com	401-275-3000
ICRA	International Concrete Repair Institute (The) www.icri.org	703-450-0016
LPI	Lightning Protection Institute www.lightning.org	800-488-6864 847-577-7200
MFMA	Metal Framing Manufacturers Association	312-644-6610
MHIA	Material Handling Industry of America www.mhia.org	800-345-1815 704-676-1190
NAAMM	National Association of Roof Consulting Firmural Metal Manufactures www.naamm.org	312- 332-0405
NACE	National Association of Corrosion Engineers www.nace.org	281-228-6200
NAIMA	North American Insulation Manufacturers Association (The) www.naima.org	703-684-0084
NCMA	National Concrete Masonry Association www.ncma.org	703-713-1900
NECA	National Electrical Contractors Association www.necanet.org	301-657-3110
NEMA	National Electrical Manufacturers Association	703-841-3200

	www.nema.org	
NFPA	National Fire Protection Association www.nfpa.org	800-344-3555 617-770-3000
NLGA	National Lumber Grades Authority www.nlga.org	604-524-2393
NRCA	National Roofing Contractors Association www.nrca.net	800-323-9545 847-299-9070
NRMCA	National Ready Mixed Concrete Association www.nrmca.org	888-846-7622 301-587-1400
PCA	Portland Cement Association	
PCI	Precast Concrete Instititute	
PDI	Plumbing and Drainage Institute www.pdionline.org	800-589-8956 508-230-3516
SDI	Steel Deck Institute www.sdi.org	847-462-1030
SJI	Steel Joist Institute www.steeljoist.org	843-626-1995
SMACNA	Sheet Metal and Air Conditioning Contractors National Association www.smacna.org	703-803-2980
SPIB	Southern Pine Inspection Bureau www.spib.org	850-434-2611
SPRI	SPRI (Single Ply Institute) www.spri.org	781-444-0242
SSPC	Society for Protective Coatings www.sspc.org	800-837-8303 412-281-2331
SWRI	Sealant, Waterproofing, and Restoration Institute www.swronline.org	816-472-7974
UL	Underwriters Laboratories www.ul.com	800-704-4050 847-272-8800

C. Code Agencies: Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in the following list. Names, telephone numbers , and web site addresses are subject to change and are believed to be accurate and up to date as of the date of the Contract Documents.

BOCA	BOCA International, Inc. www.boca.org	708-799-2300

IAPMO	International Association of Plumbing and Mechanical Officials (The) www.iapmo.org	909-595-8449
ICBO	International Conference of Building Officials www.icbo.org	800-284-4406

D. Federal Government Agencies

CPSC	Consumer Protection Agency www.cpsc.gov	800-638-2772 310-504-0990
EPA	Environmental Protection Agency www.epa.gov	202-260-2090
FCC	Federal Communications Commission	
GSA	General Services Administration www.gsa.gov	202-708-5082
NIST	National Institute of Science and Technology www.nist.gov	301-975-6478
OSHA	Occupational Safety and Health Administration	202-693-1999

1.7. REFERENCE STANDARDS

A. General: Standards listed by reference, including revisions by issuing authorities, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviations, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referenced to by authority abbreviation and standard designation

B. American Society of Civil Engineers - Reference Document ASCE 7-95, Minimum Design Loads for Buildings and Other Structures.

C. ACI 530 ACI 530-02/ASCE 5-02/TMS 402-02 “Specification for Masonry Structures”, published by the American Concrete Institute, American Society of Civil Engineers, and the Masonry Society.

D. ACI 530.1 ACI 530.1-02/ASCE 6-02/TMS 602-02 “Specification for Masonry Structures”, published by the American Concrete Institute, American Society of Civil Engineers, and the Masonry Society

E. American Society of Testing and Materials (ASTM).

1. ASTM A 366 - Standard specification for Commercial Steel (CS), Carbon (0.15 Maximum percent) Cold-rolled.
2. ASTM A 653 – Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galannealed) by the hot dip process.
3. ASTM A 924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the hot dip process.
4. ASTM C 90 – Hollow Load Bearing Concrete Masonry Units
5. ASTM C 144 – Standard Specification for Aggregate for Masonry Mortar

6. ASTM C150 – Standard Specification for Portland Cement
7. ASTM C 165 - Compressive strength
8. ASTM C 203 - Flexural strength
9. ASTM C 207 – Standard Specification for Hydrated Lime for Masonry Purposes
10. ASTM C 216 – Standard Specification for Facing Brick
11. ASTM C 270 – Standar Specification for Mortar for Masonry Unit
12. ASTM C 355 - Water vapor permeance
13. ASTM C 404 – Aggregates for Masonry Grout
14. ASTN C 476 – Grout for Reinforced and Non-reinforced Masonry
15. ASTM C 518 - Thermal resistance
16. ASTM C 1177 - Water Absorption
17. ASTM D 41 - Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
18. ASTM D 312 - Specification for Asphalt Used in Roofing
19. ASTM D 610 – Standard Test Method for Evaluating Degree of Rusting on Painted Steel Surfaces.
20. ASTM D 714 - Standard Test Method for Evaluating Degree of Blistering of Paints.
21. ASTM D 1621 - Standard Test Method for Compressive strength of Rigid Cellular Plastics.
22. ASTM D 1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
23. ASTM D 1623 – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
24. ASTM D 1654 – Standard Test Method for Evaluation of Painted or Corrosive Specimens Subjected to Corrosive Environments.
25. ASTM D 1970 - Specification for Sheet Materials, Self-Adhering Polymer Modified Bituminous, Used as Steep Roofing Underlayment for Ice Dam Protection
26. ASTM D 2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
27. ASTM D 2626 - Specification for Asphalt Saturated and Coated Organic Base Sheet Used in Roofing
28. ASTM D 2863 – Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index).
29. ASTM D 4586 - Specification for Asphalt Roof Cement, Asbestos Free
30. ASTM D 5147 - Test Method for Sampling and Testing Modified Bituminous Sheet Material
31. ASTM E 84 - Flame spread
32. ASTM E 96 - Water vapor transmission
33. ASTM E 108 – Spread of flame

F. FMG

1. FMG - Loss Prevention Data Sheets 1-7; 1-28; 1-28R; 1-29; 1-29R; 1-49.

2. FMG - (FMRC) Approval Guide - Roof Coverings.

3. FMG Standard 4470 - Approval Standard for Class I Roof Covers.

1.8. CODE AND TEST REQUIREMENTS

A. The roof system which is bid shall have been tested in compliance with the following codes and test requirements.

1. Underwriters Laboratories Class or Warnock Hersey [‘A’] external fire classification.

2. FMG Listing: Provide Roofing Membrane, Base Flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG’s “Approval Guide” for Class I construction.

a. Fire/Winstorm Classification: Class 1A-90

b. Hail Resistance: SH

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END OF SECTION 01 42 00 - REFERENCES

SECTION 01 43 00

QUALITY ASSURANCE

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. COMMUNICATIONS

A. Requests for information: Contractor shall issue requests for information (RFI's) to Roof Consulting Firm in a timely manner, in writing, preferably by e-mail.

1. Number each RFI.
2. Indicate the latest date by which a response is needed so as not to delay the Work. Allow at least two business days after receipt for a response (complex issues may require longer to research).
3. Maintain a log of RFI's showing status of each.
4. If practicable, include a proposed solution to each issue raised in an RFI.

1.3. CONTRACTOR AND MANUFACTURER

A. Contractor shall:

1. Be experienced in modified bitumen roofing as required in Section 01 10 00.
2. Be acceptable by Owner and roofing material manufacturer.
3. Maintain an effective quality assurance program, independent of the activities by the Owner, Roof Consulting Firm, Observers, or manufacturers. Contractor may not rely on Roof Consulting Firms monitoring or on observation services provided by others as a substitute for performing Contractor's own quality assurance program.
4. Accept sole responsibility for the quality of the work.
5. Notify Roof Consulting Firm orally, followed in writing, of conditions that the Contractor believes will yield unsatisfactory performance, or of items of non-conformity between these Contract Documents and manufacturers specifications or instructions, or of discovered errors and omissions. Failure of Contractor to submit written notification shall be construed as a representation by Contractor that the Contract Documents are acceptable to Contractor, that they are sufficient in scope and detail to indicate and convey understanding of the terms and conditions for performance and furnishing of the Work, and that Contractor reasonably believes the work will perform as intended.
6. Correct Work reported to be defective with no increase in cost to the Owner. Once defective Work is reported to the Contractor, that Work shall be considered to require correction until it is actually corrected, regardless of whether it is mentioned again. When a portion of the Work is reported as defective, the Contractor shall promptly investigate the extent to which similar Work has the same conditions. All similar Work shall be considered defective until the full extent of the defective conditions are documented to the Roof Consulting Firm's satisfaction.

B. Roofing manufacturer shall:

1. Be an Associate Member in good standing with National Roofing Contractor's Association (NRCA).
2. Notify Roof Consulting Firm of planned site visits in a timely manner so Roof Consulting Firm can coordinate his site visits to correspond.
3. Material manufacturer must supply a representative to perform periodic observations throughout the course of the Project. Written reports must be submitted to the Roof Consulting Firm and copies to the Contractor. Each site visit must be accompanied by a written report.
4. Provide written reports to Roof Consulting Firm summarizing any communication with Contractor regarding any aspect of the Work.
5. Must have a minimum of 15-year experience manufacturing the specified roofing membranes.
6. Provide a factory trained technician to attend site meetings and to perform final observations of the roofing system.

C. Provide specified Warranty upon completion of satisfactory installation of the roofing system.

1.4. TESTING AND RANDOM SAMPLING

A. Upon request from the Roof Consulting Firm, the membrane manufacturer shall supply, at their expense, the results of Testing performed on the materials supplied.

B. The tests may be performed to certify compliance with the standards referenced under this section.

C. Any deficiencies noted during observations must be corrected by the Contractor and approved in writing by the Roof Consulting Firm prior to scheduling inspection for Final Completion.

1.5. SUBMITTALS

A. Submit certification by the manufacturer of the system materials used that these Specifications and the Drawing Details are acceptable to them for the deck and surfacing to which they are to be applied.

1. If details for any manufacturer’s systems proposed in the Contract Documents are not acceptable to the manufacturer, submit corresponding details proposed for the particular application, together with the manufacturer’s reasons for not accepting the conditions depicted in the Specifications or Drawings. No alternate details will be considered without evidence of valid objections on the part of the manufacturer to the Contract requirements.
2. No deviation is to be made from this Specification without prior written approval by the manufacturer; submit such approval to the Roof Consulting Firm.

2. PART 2 - PRODUCTS

2.1. GENERAL

A. Comply with Quality Control, References, Contract Documents, and Manufacturer's data. Where conflict may exist, more stringent requirements govern.

B. Provide Primary Roofing Products, including each type of roofing sheet, adhesives, primers, base flashings, and miscellaneous flashing materials from a single manufacturer, which has produced that type of product successfully for not less than fifteen (15) years. Provide secondary products (insulation, mechanical fasteners, lumber, etc.) only as recommended and/or required by manufacturer of the roof membrane as required for the specified warranty.

3. PART 3 – EXECUTION

3.1. Contractor to maintain a daily job log to be kept on site at all times from the pre-roofing conference through project close-out. The job log shall include:

1. Copies of all submittals.
2. Safety coordinator appointment with emergency telephone numbers; fall protection plan and material safety data sheets for all products.
3. Daily crew attendance and time records.
4. A summary of each day's work including any photographs or detail revisions.
5. A field sketch showing areas of work for the day.
6. Accident reports.
7. Material delivery records; and a visitor register.
8. Complaint log, listing complaints received from any party of any nature, and the actions taken and resolution, with dates and names of individuals involved

END OF SECTION 01 43 00 - QUALITY ASSURANCE

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1. PART 1 – GENERAL

1.1. RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. Work included: provide for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection. All temporary facilities shall be provided by the Contractor.

B. Temporary utilities include, but are not limited to, the following:

1. Water: provided by Owner where available.
2. Electric power: 120 V power only will provided by Owner where available in sufficient amperage, to be distributed by the Contractor. If amperage is insufficient as distributed by the Contractor, the Contractor must re-distribute power or provide his own supplementary power to prevent disrupting power services due to tripped breakers.
3. Sanitary facilities: provided by the Contractor.

C. Support Facilities include, but are not limited to, the following:

1. Waste disposal services to be provided by the Contractor.
2. Field office, document storage, and miscellaneous services and facilities to be provided by the Contractor, if needed.

D. Security and Protection facilities include, but are not limited to, the following:

1. Temporary fire protection to be provided by the Contractor.
2. Barricades, warning lights and warning signs to be provided by the Contractor.
3. Environmental protection to be provided by the Contractor.
4. Temporary fences and gates to be provided by the Contractor.
5. Temporary pavements, walkways and ground protection to be provided by the Contractor.
6. Temporary scaffolding providing outside stairway access to roof, if used, to be provided by the Contractor.

1.3. SUBMITTALS

A. Within five days prior to commencement of Work, submit schedule for delivery and set up of each temporary facility.

B. If temporary utilities are used submit the following:

1. Reports of tests, inspections meter readings and similar procedures performed on temporary utilities.

2. Implementation and Termination Schedule: submit a schedule indicating implementation and termination of each temporary utility.

1.4. QUALITY ASSURANCE

A. Regulations: If temporary utilities are utilized, comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations

B. Standards: Comply with NFPA 241 “standard for Safeguarding Construction, Alteration, and Demolition Operations,” ANSI A10 Series standards for “Safety Requirements for Construction and Demolition,” and NECA Electrical Design Library “Temporary Electrical Facilities”.

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electrical service. Install service in compliance with NFPA “National Electric Code”.

C. Inspections: If temporary utilities are used, arrange for Authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not allow hazardous, dangerous or unsanitary conditions or public nuisances to develop or persist on site.

1.5. PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as necessary as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

2. PART 2 – PRODUCTS

2.1. MATERIALS AND EQUIPMENT

A. General: Provide new equipment. If acceptable to the Roof Consulting Firm, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended

1. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

B. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

C. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

3. PART 3 – EXECUTION

3.1. INSTALLATION

A. Use qualified personnel for installation of temporary facilities and utilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work and the Owners use of the site.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities

3.2. TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company and a licensed electrician to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company requirements.

1. Arrange with utility company and the Owner for a time when service can be interrupted, if necessary, to make connections for temporary services.

B. Toilets: Provide temporary toilet facilities for use during construction. Use of Owner facilities is not permitted.

C. Scaffolds, exterior stairway access: If used, use qualified personnel to construct exterior scaffolding to provide stairway access to roof levels. Use of interior access by Contractor personnel is not permitted. Secure access to scaffolding inside fencing to prevent unauthorized use.

D. Waste Collection and Disposal: Collect waste from construction and staging areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.3. SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Roof Consulting Firm

B. Temporary Fire Protection: Unless fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations”:

1. Remove propane tanks from roof daily and place in secure cages. Cages to be located within secure barricades and fencing.
2. Locate fire extinguishers at not less than one extinguisher on each roof at each point of access and near all convenient and effective points where torches are in use.
3. Store combustible materials in fire safe locations.
4. Do not obstruct access to fire hydrants, fire lanes or emergency vehicle access routes, temporary fire-protection facilities, stairways, fire exits, doorways or other emergency exit routes. Do not impede operation of smoke hatches or fire suppression systems. No smoking is allowed on site except in designated areas.
5. Provide supervision of welding operations, heat-producing electrical devices, combustion-type temporary heating units, and similar sources of fire ignition.
6. Provide fire watch whenever torches, welding devices or open flame are in use. Maintain fire watch for one hour after torches are extinguished. Fire watch to include interior and exterior inspection and use of hand held heat detection device to detect any hot spots.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Fencing: Provide non penetrating fence posts for concrete and asphalt surfaces. Drive posts into soil at lawn areas and erect six foot high temporary chain link fencing with appropriate gates and locks to fence off the following:

1. Access to scaffolding, propane storage cages, all hazardous and combustible materials, and any materials or equipment that are of value and that are attractive for theft or vandalism.
2. All fencing to be removed at completion of Project.
3. Signs: Install sign indicating name of Contractors Company, company address and company phone number on fencing at set up area to facilitate deliveries. Subcontractors are to post signs containing the same information.

E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

F. Temporary Pavements: Provide temporary construction pavements, at unpaved staging areas, consisting of graded and compacted crushed stone materials of size and thickness capable of supporting loads of all construction vehicles, traffic without deforming and rutting. Maintain surface as required.

1. Wider construction vehicles must cross over a public sidewalk and/or curb, provide a temporary concrete ramp (sloped on three sides) from street pavement to top of curb across the width of the construction vehicle access, and replace a portion of the concrete sidewalk with 7” thick reinforced concrete (6.5 sack mix; 5,000 psi; 7% air content; finish to match existing sidewalk) across the width of the vehicle access.

G. Temporary Signs: Provide temporary weatherproof signs to indicate construction vehicle access and the building it serves.

3.4. OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintain facilities in a neat and orderly fashion and keep in good operating condition during the progress of the Work.

C. Termination and Removal: Unless the Roof Consulting Firm requests that it be maintained longer, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired

1. Materials and facilities that constitute temporary facilities are the Contractor's property. The Owner reserves the right to take possession of project identification signs.

END SECTION 01 50 00 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

SECTION 01 61 00

MATERIAL AND EQUIPMENT

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials

1. Contractor shall have personnel available for unloading, handling, and delivery to the Work of all materials, equipment, and products. Should materials, equipment, or products arrive at the site without the Contractors personnel being present for unloading, handling, and delivery to the work, the Owner may reject the delivery of these items. All costs incurred because of such rejection of receipt, including returns, storage, re-delivery, etc., shall be borne solely by the Contractor.
2. Deliver materials to job-site in new, dry, unopened and well-marked containers showing product and manufacturer's name.
3. Deliver materials in sufficient quantity to allow continuity of work.
4. Quantities of weather sensitive materials that exceed a seven calendar day supply must be stored in enclosed weatherproof, locked trailers.

B. Storage of Materials

1. Tarpaulins: Provide waterproof, fire resistant, UL labeled tarpaulins with a flame spread rating of 15 or less.
2. Neatly arrange materials in storage to provide access for inspection.
3. Store roofing materials in dry area protected from water or extreme humidity.
4. Stack insulation on pallets.
5. Remove plastic packing shrouds. Cover all stored materials with tarpaulin top to bottom. Secure tarpaulin.
6. Rooftop storage: Disperse material on roof to avoid structure overloading. No storage of material or equipment will be permitted on completed roofing.
7. Secure all installed and/or stored materials and equipment daily.
8. Ensure that containers of those materials that have a critical shelf life bear the expiration date of the material. Remove from site material for which the listed shelf life has expired.

C. Material Handling

1. Handle all materials on site to avoid bending, tearing, or other damage during transportation and installation.
2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or situate material handling equipment in locations that will hinder smooth flow of vehicular or pedestrian traffic.
3. Provide lifts, cranes or hoists to load materials to the roof. Secure ground based equipment left on site inside secure barricades or fencing.

D. Color Selection

1. For each material requiring color selection, submit standard color chart to Roof Consulting Firm and Owner for selection.

E. Environmental Requirements

1. Do not work in rain, snow or in presence of water.
2. Do not work in weather conditions prohibited by manufacturer's guidelines and requirements.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END OF SECTION 01 61 00 - MATERIAL AND EQUIPMENT

SECTION 01 73 10

CUTTING AND PATCHING

1. PART 1 – GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. Procedures for cutting and patching building surfaces necessary for installation or completion of the Work.

B. Related Sections include the following:

1. All Divisions 1 through 16.

1.3. DEFINITIONS

A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work

1.4. SUBMITTALS:

A. Submit a proposal for prior approval, with shop drawings if necessary, describing the procedures for any cutting and patching that is to be performed according to requirements in Section 01330 - Submittals. Provide the following information as a minimum;

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they are necessary.
2. Changes to Existing Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Roof Consulting Firm’s and Owner’s Approval: Obtain approval of cutting and patching proposal before performing cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5. QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1. Structural concrete.

2. Structural steel.
3. Lintels.
4. Structural decking.
5. Miscellaneous structural metals.
6. Exterior curtain-wall construction.
7. Equipment supports.
8. Piping, ductwork, vessels, and equipment.
9. Structural systems of special construction.

B. Operational Elements: Do not cut and patch the following operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-protection systems.
4. Control systems.
5. Communication systems.
6. Conveying systems.
7. Electrical wiring systems.
8. Operating systems of special construction.

C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.
6. Noise- and vibration-control elements and systems.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence that cutting and patching were performed. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Roof Consulting Firm's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
    a. Processed concrete finishes.
    b. Stonework and stone masonry.
    c. Ornamental metal.
    d. Matched-veneer woodwork.
    e. Preformed metal panels.
    f. Roofing.
    g. Firestopping.
    h. Window wall system.
    i. Stucco and ornamental plaster.
    j. Terrazzo.
    k. Aggregate wall coating.
    l. Wall covering.

m. HVAC enclosures, cabinets, or covers.

B. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.6. WARRANTEES

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

2. PART 2 – PRODUCTS

2.1. Materials

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

3. PART 3 – EXECUTION

3.1. EXAMINATION

A. Examine surfaces to be cut and patched; apply sample materials if necessary to confirm color and texture matching before proceeding.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2. PREPARATION

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

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

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3. EXCAVATION

A. When excavating for new drainage lines, use caution to not damage existing underground sprinkler systems and utilities.

3.4. ASPHALT SURFACES

A. Saw cut asphalt and replace as indicated on the drawing.

3.5. PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 10 - CUTTING AND PATCHING

SECTION 01 74 00
CLEANING AND WASTE MANAGEMENT

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. HOUSEKEEPING

A. Provide required personnel, equipment, and materials needed to maintain the site in a clean condition throughout the project duration.

B. Use only cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer of the cleaning materials.

C. Provide adequate storage for items awaiting removal from the site, with appropriate measures for fire and environmental safety.

D. No not store flammable or odor-causing materials or rubbish overnight or near air intakes for the building.

E. Do not allow rubbish, trash or debris to remain on the site beyond a reasonable length of time. No rubbish, debris or trash may be allowed to accumulate or be stored on the roof overnight.

F. Do not drop or throw rubbish, trash or debris from one level to another.

G. Immediately after unpacking materials, collect and remove packing case lumber or other packing materials, wrappings and other similar flammable wastes.

H. Assume sole responsibility for leaving Work, including that performed by Subcontractors or vendors, in a clean and proper condition, satisfactory to the Owner.

I. Conduct cleaning and disposal operations to comply with local ordinances and anti pollution regulations.

1. Do not burn or bury rubbish, trash or debris on the site.
2. Do not dispose of volatile wastes, such as mineral spirits, oil, paint, gasoline, thinners, solvents, etc. into storm or sanitary drains.
3. Do not dispose of any wastes into streams or waterways.

1.3. FINAL CLEANING

A. Refer to related Section 01770.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END SECTION 01 74 00 - CLEANING AND WASTE MANAGEMENT

SECTION 01 77 00

CONTRACT CLOSE-OUT

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. DESCRIPTION

A. Work included:

1. Provide an orderly and efficient transfer of the completed Work to the Owner.

1.3. SUMMARY

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

1. Inspection procedures.
2. Project Record Documents.
3. Operation and Maintenance manuals.
4. Warrantees.
5. Instruction of Owner personnel.

B. Related Sections include the following:

1. All Divisions 1 through 16.

1.4. QUALITY ASSURANCE

A. Prior to requesting inspection by the Roof Consulting Firm, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.5. PROCEDURES

A. Comply with procedures listed in this section before submitting final payment.

1.6. SUBSTANTIAL COMPLETION:

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, maintenance service agreements, as-built drawings and documents, final certifications, and similar documents.
4. Where applicable, obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include approval of Authorities having jurisdiction, operating certificates, and similar releases.

5. Prepare and submit Project Record Documents, operation and maintenance manuals (as needed), and similar final record information.
6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
7. Submit information related to Owner's occupancy, use, operation, and maintenance.
8. Complete final cleaning requirements, including touch-up painting.
9. Touch-up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
10. Replant grass lawn on graded topsoil at removed temporary pavement and set up areas.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Roof Consulting Firm will either proceed with inspection or notify Contractor of unfulfilled requirements. Roof Consulting Firm will prepare a punch list letter after inspection of items that must be completed or corrected before the retainage can be billed.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion

1.7. FINAL COMPLETION:

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment.
2. Submit copy of Roof Consulting Firm's punch list letter of items to be completed or corrected (punch list), endorsed and dated by Roof Consulting Firm. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Roof Consulting Firm will either proceed with inspection or notify Contractor of unfulfilled requirements. Roof Consulting Firm will prepare a final letter after inspection or will notify Contractor of construction that must be completed or corrected before the retainage can be billed.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8. PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Roof Consulting Firm’s reference during normal working hours.

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

C. Miscellaneous submittals include, but are not necessarily limited to:

1. Project Record Documents:

    a. Contractors Daily Job Log.

2. Evidence of payment and release of liens.

3. List of Subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.

1.9. WARRANTEES

A. Submittal Time: Submit written warranties on request of Roof Consulting Firm for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated

B. Warranty Requirements:

1. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty.

3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

4. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

5. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

6. Ensure that roofing Manufacturer’s total system warranty will comply with the project/specification requirements.

C. Refer to Section 01783 for list of Warrantees.

2. PART 2 – PRODUCTS

2.1. MATERIALS

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

3. PART 3 – EXECUTION

3.1. FINAL CLEANING

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

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

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

    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

    d. Remove tools, construction equipment, machinery, and surplus material from Project site.

    e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

    f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

    g. Sweep concrete floors broom clean in unoccupied spaces.

    h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

    i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

    j. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

        i. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

    k. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully

END OF SECTION 01 77 00 - CONTRACT CLOSE-OUT

2021 Roofing Project

SECTION 01 78 30

WARRANTEES

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. GENERAL

A. Provide Warrantees on products and installations as specified in the Contract Documents.

B. All warrantees must be approved by Owner before final payment is released.

1.3. SUBMITTALS

A. All warrantees must be submitted with request for inspection for final completion.

1.4. LIST OF WARRANTEES

A. Section 07 53 00 EPDM Adhered Roofing

1. Roofing System Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
    a. Warranty includes roofing membrane system, base flashings, roofing accessories, roof insulation, attachment products, cover boards, substrate board and vapor retarder (if applicable), roof-related metal trims and edges, walkway products and other roofing system manufacturer-branded components of membrane roofing system.
    b. The material manufacturer will issue the warranty to the owner upon material manufacturer acceptance of the project completion and full payment of all bills related to the project
2. Warranty Period: 20 years from date of Substantial Completion with a 72 mph wind speed limit.

B. Section 04 20 00 - Masonry:

1. The Contractor shall furnish a written two- (2) year Warranty covering labor and materials used in the repairs/replacement against leaks and/or faulty workmanship or materials. All costs for any of the above shall be absorbed by the Contractor and material manufacturer.

C. Section 07 90 00 - Sealant:

1. The Contractor shall furnish a written two- (2) year Warranty covering labor and materials used in the repairs/replacement against leaks and/or faulty workmanship or materials. All costs for any of the above shall be absorbed by the Contractor and material manufacturer.

D. Sections 15 00 00 and 15 43 00 – Plumbing and Plumbing Specialties:

1. The Contractor shall furnish a written two- (2) year Warranty covering labor and materials used in the repairs/replacement against leaks and/or faulty workmanship or materials. All costs for any of the above shall be absorbed by the Contractor and material manufacturer

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 – EXECUTION (Not Used)

END OF SECTION 01 78 30 - WARRANTEES

SECTION 02 22 50

SELECTIVE DEMOLITION AND SALVAGE

1. PART 1 GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. This portion of the specification governs the demolition, salvaging (to the extent specified by building owner), and disposal of materials resulting from the demolition.

B. Applicable Areas:

1. Base Bid 101; High School:

a. Roof Areas to be covered under this section: All.

b. Masonry areas:

i. All control and expansion joints on exterior Walls extending above roof level.

ii. All masonry where new through wall counter flashings need to be installed.

2. Base Bid 102, Middle School:

a. Roof Areas to be covered under this section: All.

b. Masonry areas:

i. All control and expansion joints on exterior Walls extending above roof level.

ii. All masonry where new through wall counter flashings need to be installed.

3. Base Bid 103, Munson Elementary School:

a. Roof Areas to be covered under this section: All.

b. Masonry areas:

i. All control and expansion joints on exterior Walls extending above roof level.

ii. All masonry where new through wall counter flashings need to be installed.

4. Base Bid 104, Park Elementary School and Maple Elementary school:

a. Roof Areas to be covered under this section: Repair areas as designated on the drawings, re-flash Park elementary school where masonry wall is replaced.

b. Masonry areas:

i. Remove and replace masonry and install through wall flashings as indicated on the drawings.

1.3. QUALITY ASSURANCE

A. Protect all adjacent construction including roof areas adjacent to masonry work from damage.

B. Provide Roof Consulting Firm written notification of any adverse conditions which might affect the performance of the Work or the safety of occupants.

C. Contractor to maintain structural stability and safety during all phases of construction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Perform Work according to applicable industry standards and comply with local, State and EPA regulations.

1.4. SEQUENCING AND SCHEDULING

A. Masonry repair above roof surfaces to proceed before roof work commences in immediately adjacent areas.

B. Coordinate removal of all roofing with temporary protection over pedestrian doorways.

1.5. SITE CONDITIONS

A. Accept the conditions of the jobsite as it exists and perform the Work accordingly.

1.6. ASBESTOS REMOVAL

A. As Required by CTG reports contained in Appendix 1 of these specifications.

B. Roof and flashing removal shall follow EPA and OSHA requirements for cutting and removal of asbestos materials. Air monitoring and proper marking of area as an asbestos removal site shall be utilized as required. Competent persons must be used for monitoring and all other requirements as required by EPA and OSHA.

2. PART 2 – PRODUCTS (Not Used)

3. PART 3 - EXECUTION

3.1. GENERAL

A. 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 Roof Consulting Firm

B. Remove materials to be re-installed in a manner to prevent damage. Store materials in an appropriate manner.

C. Demolition operations shall be performed in such a manner that no damage to existing facilities or injury to persons will result from the performance of the Work.

D. The use of equipment or wrecking devices shall be subject to the approval of building Owner; however, such approval does not relieve the Contractor of responsibilities described in this section.

E. When structural elements are involved or encountered, consult with a structural engineer before removing any element that might cause a structural deficiency. Cost of structural engineer to be borne by the Contractor.

F. Temporarily relocate mechanical systems, electrical systems, signage or other encumbrances in the work area to prevent damage or loss of function.

3.2. SHORING

A. Provide shores as required to support masonry and decking, control deflections and maintain structural integrity. Place shores to support dead load and live load. Provide shores as required to support brick masonry during removal and replacement of brick masonry and lintel repairs.

3.3. INSPECTION AND EXAMINATION

A. The Contractor shall review and visually survey areas specified for demolition before beginning demolition.

1. Inspect masonry walls and mark areas requiring removal of brick or other masonry units not identified on the Drawings. Obtain approval of Roof Consulting Firm before any Work proceeds. Protect roof areas and complete demolition and repair prior to performing roof work.
2. Inspect underside of decking where visible seven (7) days prior to removal of roofing for potentially bad decking and for the presence of conduits, junction boxes, duct supports or other items that may be attached directly to the deck.
3. Notify Roof Consulting Firm seven (7) days in advance of removing any areas where deck may have to be replaced or where above ceiling work may have to be performed to mark or detach conduits, wires, cables, electrical boxes, duct or ceiling supports, etc. from the underside of the deck before removing decking or installing insulation fasteners.

3.4. PREPARATION

A. Protection:

1. Dangerous Materials: Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.
2. Contractor shall be responsible for protection of property during course of work. Lawns, shrubbery, paved areas, and building shall be protected from damage. Repair damage at no extra cost to owner.
3. Provide waterproof scaffolding protection over all pedestrian entry doors in areas where work is being performed overhead on all buildings while work is in process.
4. Cover and protect walls ceilings, floors and other interior elements including building contents and furnishings in demolition areas.
5. Install insulation and plywood over roof areas under masonry work to protect roof from puncture. Secure Plywood to 2” X 4” frame over the insulation and hold in place with ballast to prevent displacement by wind.
6. Openings in decking must be covered when work is not in process at the opening.
7. Roofing, flashings, and insulation shall be installed and sealed in a watertight manner on same day of installation or before arrival of inclement weather.
8. At start of each workday, drains within daily work area shall be plugged. Plugs to be removed at end of each workday or before arrival of inclement weather.
9. At end of each working day, partial installation shall be sealed with water stops and dead man insulation fillers along edges to prevent water entry.
10. Preparation work shall be limited to those areas that can be covered with installed roofing material on same day or before arrival of inclement weather.
11. Do not use Owners trash disposal system or dumpsters.
12. Provide at site, prior to commencing removal of debris, a dumpster or dump truck to be

located where directed by Owner. Construct an enclosed chute from roof for removal of debris from roof area. Protect building surfaces at chute/set-up areas with tarpaulin. Remove dumpster from premises when full and empty at approved dumping or refuse area. Deliver empty dumpster to site for further use. Upon job completion, dumpster/chute shall be removed from premises. Spilled or scattered debris shall be cleaned up immediately. Removed material to be disposed from roof as it accumulates.

13. Arrange work sequence to avoid use of newly constructed roofing for storage, walking surface, and equipment movement. Move equipment and ground storage areas as work progresses.

3.5. POLLUTION CONTROLS

A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.

B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent

3.6. SELECTIVE DEMOLITION

A. High School; All roof areas:

1. Remove/repair masonry and masonry control joints as specified in section 04 20 00.

2. Remove sealants from control and expansion joints on all walls. Replace joint sealants as indicated in the Specifications and Drawings

3. Remove brick and salvage for re-use. Install through wall receiver and counter flashing where indicated on Drawings and where new flashing heights will be less than 8" on Brick masonry walls that have existing through wall flashings below the new 8" flashing height. Re-install salvaged BMU's

4. Remove existing roof membrane, insulation, cover board, original roof, base flashings, counterflashings where indicated, deteriorated or damaged wood blocking, walkway pads, and all other roof system components and features to bare structural deck surface, including metal coping, edge metal including fascia extenders and any other metal fascia components, and any residual adhesive.

5. Remove and dispose of unused equipment designated by Owner

6. Remove existing flashings, including rusted or deteriorated metal sleeves and hoods from existing vent stacks, curbs, exhaust stacks, and other roof top features

7. Properly dispose of all materials as specified.

8. Remove steel decking as specified in Section 05 31 00.

9. Remove gypsum decking and form board as specified in Section 03 52 00

10. Sweep roof deck clean. Dirt, gravel, and foreign materials within flutes of metal deck is not acceptable.

B. Middle School; All roof areas:

1. Remove/repair masonry and masonry control joints as specified in section 04 20 00.

2. Remove sealants from control and expansion joints on all walls. Replace joint sealants as indicated in the Specifications and Drawings
3. Remove brick and salvage for re-use. Install through wall receiver and counter flashing where indicated on Drawings and where new flashing heights will be less than 8" on Brick masonry walls that have existing through wall flashings below the new 8" flashing height. Re-install salvaged BMU's
4. Remove existing roof membrane, insulation, cover board, original roof, base flashings, counterflashings where indicated, deteriorated or damaged wood blocking, walkway pads, and all other roof system components and features to bare structural deck surface, including metal coping, edge metal including fascia extenders and any other metal fascia components, and any residual adhesive.
5. Remove and dispose of unused equipment designated by Owner
6. Remove existing flashings, including rusted or deteriorated metal sleeves and hoods from existing vent stacks, curbs, exhaust stacks, and other roof top features
7. Properly dispose of all materials as specified.
8. Remove steel decking as specified in Section 05 31 00.
9. Sweep roof deck clean. Dirt, gravel, and foreign materials within flutes of metal deck is not acceptable.

C. Munson Elementary School:

1. Remove/repair masonry and masonry control joints as specified in section 04 20 00.
2. Remove sealants from control and expansion joints on all walls. Replace joint sealants as indicated in the Specifications and Drawings
3. Remove brick and salvage for re-use. Install through wall receiver and counter flashing where indicated on Drawings and where new flashing heights will be less than 8" on Brick masonry walls that have existing through wall flashings below the new 8" flashing height. Re-install salvaged BMU's
4. Remove existing roof membrane, insulation, cover board, original roof, base flashings, counterflashings where indicated, deteriorated or damaged wood blocking, walkway pads, and all other roof system components and features to bare structural deck surface, including metal coping, edge metal including fascia extenders and any other metal fascia components, and any residual adhesive.
5. Remove and dispose of unused equipment designated by Owner
6. Remove existing flashings, including rusted or deteriorated metal sleeves and hoods from existing vent stacks, curbs, exhaust stacks, and other roof top features
7. Remove steel decking as specified in Section 05 31 00
8. Remove louvers from wall indicated on Drawings on roof area 02 l, re-install on same day after installation wall flashings and counterflashings.
9. Properly dispose of all materials as specified.
10. Sweep roof deck clean. Dirt, gravel, and foreign materials within flutes of metal deck is not acceptable.

3.7. HAZARDOUS MATERIALS

A. Meet all rules and regulations pertaining to the handling and disposal of materials which contain hazardous materials, including asbestos.

3.8. SALVAGE

A. Material as specified and recovered from demolition operations shall remain the property of building owner. With the owner's permission, other materials shall become the property of the Contractor. Material salvaged for building owner shall be placed in storage areas designated by building owner. Material that is not salvaged for building owner shall be removed from the site or discarded in an on-site disposal area designated by building owner.

END OF SECTION 02 22 50 - SELECTIVE DEMOLITION AND SALVAGE

2021 Roofing Project

SECTION 03 52 00

GYPSUM DECK REPLACEMENT

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY:

A. This Section provides a guideline for replacement of deteriorated gypsum decking only. Prior to proceeding with any gypsum deck replacement, Contractor must engage a structural engineer, at Contractors expense, to review and approve any modifications to the existing deck.

B. Gypsum deck replacement shall be done as required to create a sound substrate for new roof installation. Deck repairs or replacement may only be done with the written approval of the Roof Consulting Firm.

1. Base Bid 101; High School:
    a. Roof Areas to be covered under this section: Roof Areas labeled as P2, P3, appropriate portions of P4 on Drawing sheet A1.1.

C. Scope of Work:

1. Special safety requirements: Existing roof membrane covering gypsum decks provide an element of support and safety for workers on badly deteriorated gypsum deck. Once roof is removed there may be an increased risk to workers. All workers should be made aware of the potential hazard. COMPLY WITH ALL OSHA SAFETY REQUIREMENTS.

    a. Inspect underside of deck for signs of damage such as sagging or missing form board, and areas of excessive staining or wetness to determine areas of potential replacement before removing roof system.

    b. Mark off top surface of roof membrane to denote possible areas of concern.

2. Perform fastener pull out tests.

3. Remove all deteriorated decking and associated form board as required in PART 3 of this Specification Section.

4. The Contractor is fully and solely responsible to map out all electrical components or other obstructions that may be secured to the underside of the deck. These components shall be moved or re-secured to the structural steel members as appropriate, and the Contractor must ensure that they are not damaged. If these components need to be disconnected to replace deck, it must be done by a licensed, Owner approved Contractor at no additional cost to the Owner.

5. Furnish all materials, labor, equipment, and services necessary for and incidental to the execution and completion of all work.

1.3. SUBMITTALS

A. Product data for each type of deck, accessory and product indicated.

B. Shop drawings:

1. Formboard type and thickness.
2. Gypsum fill.
3. Wire mesh.
4. Accessory materials and related details required for proper installation of the decking.

1.4. QUALITY ASSURANCE

A. Fastener pull resistance testing to meet manufactures requirements.

1.5. DELIVERY, STORAGE, AND HANDLING

A. Protect materials as specified in Section 01 61 00

2. PART 2 - PRODUCTS

2.1. MATERIALS

A. Formboard: Match existing

B. Gypsum: PYROFILL or equal.

C. Wire mesh: Keydeck 2160-2-1619 or equal.

2.2. ACCESSORIES

A. Cross tees: Galvanized steel to match existing.

3. PART 3 – EXECUTION

3.1. GENERAL

A. Inspect underside of deck where visible seven (7) days prior to removal of roofing for signs of damage such as sagging or missing form board, and areas of excessive staining or wetness to determine areas of potential replacement before removing roof system.

B. When deck replacement occurs, the Contractor must perform the following as a minimum:

1. Notify Owner seven (7) days in advance that deck replacement may occur. If unexpected deck replacement is discovered that was not detectable from underside inspections, temporary roofing will have to be installed if the occupied area beneath cannot be vacated during the work.
2. If conduits, wires, cables, electrical boxes, duct or ceiling supports, etc. are attached to the bottom of the deck to be replaced, they must be removed before deck removal and reinstalled after deck replacement.
3. Cordon off the interior area under the area to be replaced.
4. Maintain a floor guard in the interior area during all deck replacement activity to keep all pedestrians from entering the area.
5. Floor guard to be in communication with roofing crew above at all times.
6. All cordoning materials and debris must be removed from the interior of the building after completion of roof deck installation. Clean up must meet with Owner’s satisfaction

C. When removing roofing in the marked areas of potentially deteriorated decking, install 4 ft. by 8 ft. ¾” (inch) plywood over the marked areas making sure they span over three bulb T’s to provide a safe walking surface.

D. Test exposed areas of gypsum by performing pull out tests of the specified base sheet fasteners. Test results must be reported to the Roof Consulting Firm.

1. The number of tests required is to be dependent on conditions present and meet the Material Manufacture's requirements for their warranty.
2. If Pull out resistance does not meet a minimum of 70 lbs. then the area must be replaced as specified unless an alternate fastener can be utilized to meet the specified standard.
3. Pull out testing may be performed by the fastener supplier.

3.2. GYPSUM DECK REMOVAL AND REPLACEMENT

A. Deck Removal;

1. Starting with the wettest gypsum area, remove top surface of gypsum to expose the wire mesh.
    a. If wire mesh is not rusted through and is intact, discontinue removal and install new fill material as specified over existing wire mesh to repair the deck.
    b. Where wire mesh is found to be rusted through, continue removing gypsum top surface in all directions down to the wire mesh until wire mesh that has not rusted through is found.
2. Where wire mesh has rusted through, remove the remaining gypsum fill from inside one complete formboard panel.
3. Cut the wire mesh leaving at least a three inch length of intact wire mesh next to the buld tees. This length of wire is required to tie in the new wire mesh after reinstalling the form board.
4. Remove the existing formboard.

B. Deck Replacement:

1. Install new form board to match existing. Install galvanized cross tees at the ends of formboards that do not fall on joists for support.
2. Tie new Keydeck 2160-2-1619 galvanized wire mesh into the existing three inch wire mesh at each bulb tee.
3. Mix US Gypsum PYROFILL gypsum, or equal as required by the manufacturer.
4. Install gypsum slurry on all flanges of bulb tees and cross tees. Add a two inch wide line of gypsum across the diagonals of each form board and allow to set for 30 to 60 minutes.
5. Once the slurry has set, mix additional gypsum and slowly pour the wet mix into the new form board and screed off to the desired thickness. Always maintain a minimum gypsum pour of two inches above the formboard. Allow to set before installing base sheet and fasteners.

END OF SECTION 03 52 00 - GYPSUM DECK REPLACEMENT

2021 Roofing Project

SECTION 03 52 10

LIGHT WEIGHT CONCRETE DECK REPAIR

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY:

A. This Section provides a guideline for repair of deteriorated light weight concrete (LWC) decking over concrete, gypsum or steel substrates.

B. Light weight concrete repair shall be done as required to create a sound substrate for new roof installation. Deck repairs may only be done with the written approval of the Roof Consulting Firm.

1. Base Bid 101; High School:
    a. Roof Areas to be covered under this section: Roof Areas labeled as P2, and appropriate portions of P4 on Drawing sheet A1.1. may have light weight concrete decking over the structural deck materials.

C. Scope of Work:

1. Perform fastener pull out tests.
2. Remove all deteriorated decking to the structural decking below. Remove and replace structural decking if required.
3. Install tapered isocyanurate insulation to match thickness and slope of material removed and adhere or fasten to the substrate.
4. Furnish all materials, labor, equipment, and services necessary for and incidental to the execution and completion of all work.

1.3. QUALITY ASSURANCE

A. Fastener pull resistance testing to meet manufactures requirements.

1.4. DELIVERY, STORAGE, AND HANDLING

A. Protect materials as specified in Section 01 61 00

2. PART 2 - PRODUCTS

2.1. MATERIALS

A. Insulation and adhesives or fasteners as specified in Section 07 21 00.

3. PART 3 – EXECUTION

3.1. GENERAL

A. Test exposed areas of gypsum by performing pull out tests of the specified base sheet fasteners. Test results must be reported to the Roof Consulting Firm.

1. The number of tests required is to be dependent on conditions present and meet the Material Manufacture’s requirements for their warranty.
2. If Pull out resistance does not meet a minimum of 70 lbs. then the area must be replaced

as specified unless an alternate fastener can be utilized to meet the specified standard.

3. Pull out testing may be performed by the fastener supplier.

3.2. LIGHT WEIGHT CONCRETE REMOVAL AND REPLACEMENT

A. LWC Removal;

1. Remove deteriorated LWC where fastener pullout is inadequate to me pull out strength requirements.

B. LWC Repair:

1. Install new tapered insulation and attach or adhere to underlying substrate as specified in Section 07 21 00.

END OF SECTION 03 52 10 – LIGHT WEIGHT CONCRETE DECKS

SECTION 04 20 00

MASONRY REPAIRS

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. Applicable sections:

1. Areas to be covered under this section:
    a. All roof to masonry wall flashing locations on all roof areas at High School, Middle School and Munson Elementary School where existing through wall flashing installations exist and new eight (8) inch minimum flashing heights extend above existing through wall elevation.
    b. Remove and replace sealant and backer rods from all masonry control joints and expansion joints in walls that intersect roof areas from above on all roof areas at High School, Middle School and Munson Elementary School.
    c. Re-point and replace damaged brick on Middle School Chimney as indicated on Drawings.
    d. Park Elementary: follow scope of work on Drawing Sheet A2.5

1.3. QUALITY ASSURANCE

A. Employ workers or qualified subcontractors in the appropriate skilled trades to perform the Work.

B. Unit Masonry Standards: Masonry design, materials and construction shall conform to all requirements of the ACI 530.1, except as modified in this section.

C. Implement appropriate hot/cold weather procedures in compliance with ACI 530.1 to protect masonry from adverse weather conditions.

1.4. SUBMITTALS

A. Product Data: Submit product data for each different masonry unit, accessory, and other manufactured products specified.

B. MSDS: Submit Material Safety Data Sheets for each product indicated or used.

C. Samples:

1. Face Brick: Prior to final selection of face brick units, submit full sized units for each different exposed masonry unit required, showing full range of exposed colors, textures and dimensions to be expected in final construction.
2. Mortar: Submit mortar samples for required color, showing the full range of color to be expected in the final construction. Make samples using the same ingredients and proportions to be used in the production work. Label samples to indicate type and color of mortar.

D. Material Certificates: Submit material certificates for the following, signed by the manufacturer and the Contractor, certifying that each material complies with the requirements set forth in the Contract Documents.

1. Each type of masonry unit:

    a. Clay Masonry Units: Provide test results, per ASTM C 67. Include size variation of brick, verifying that the actual range of size falls within specified tolerances.

2. Each different cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.

3. Each combination of masonry unit type and mortar type. Include statement of net area compressive strength of masonry determined according to ACI 530.1.

E. Test Reports: Submit material test reports from a qualified independent testing agency, employed and paid by the manufacturer, indicating and interpreting test results relative to compliance of the following materials with requirements indicated:

1. Mortar complying with property requirements of ASTM C – 270.

1.5. DELIVERY, STORAGE AND HANDLING

A. Store masonry units on elevated platforms in a dry location to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes. If units are not stored in an enclosed location, cover tops and sides of stacks with tarpaulins securely tied. If units become wet, do not install until they become dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oils.

1.6. ENVIRONMENTAL REQUIREMENTS

A. Cold/Hot Weather Procedures: Comply with ACI 530.1 and the following:

1. Do not install masonry when temperatures of surrounding air has dropped below 45 degrees Fahrenheit (F), unless it is rising: and at no time when it has dropped below 40 degrees F.

2. Maintain air temperatures above 45 degrees F on both sides of masonry for 72 hours after placement.

3. Protect masonry construction from direct exposure to wind and sun when erected in ambient air temperatures of 90 degrees F with relative humidity of less than 50%. Maintain temperatures of mortar and grout below 120 degrees F. Maintain mortar consistency by retempering with cool water.

4. Do not apply mortar to surfaces above 90 degrees F.

1.7. PROJECT CONDITIONS

A. Protection of Masonry: During erection, cover tops of walls, projections and sills with waterproof sheeting at the end of each days work. Cover partially completed masonry when work is not in progress.

B. Prevent mortar, adhesives or grout from staining surrounding masonry. Remove spills immediately. Prevent mortar used in pointing and repair work from staining face of surrounding masonry.

C. Immediately remove grout, mortar and adhesives that come in contact the face of exposed masonry. Protect sills, ledges, projections, etc. from mortar droppings.

1.8. WARRANTY

A. The Contractor is to supply a written two year Warranty covering labor and material used in the Work against leaks and faulty workmanship or materials.

2. PART 2 – PRODUCTS

2.1. GENERAL

A. Comply with referenced unit masonry standard and other requirements specified in this section applicable to each material. The following material requirements are in addition to ACI 530.1.

2.2. BRICK

A. ASTM C – 216, grade SW, type FBS to match existing size, color and texture as closely as possible.

2.3. MORTAR MATERIALS

A. General: Do not use admixtures, including color pigments, air entraining agents, accelerators, barriers, antifreeze compounds, or other admixtures.

1. Do not use calcium chloride in mortar or grout.
2. Do not use cold-weather admixtures in mortar or grout.

B. MORTAR

1. Type N, ASTM C – 270, proportion specification. Mix in proportion to Schedule in Ohio State Building Code, Chapter BB35-18. Submit samples for color match selection.
2. Obtain mortar ingredients of uniform quality and color:
    a. Cement: Non-staining grey or white (as appropriate) Portland Cement, ASTM C – 150, Type I.
    b. Sand: ASTM C – 144, clean, fine round edge sand to match color of sand in original mortar.
    c. Hydrated Lime: ASTM C – 207, Type S.
3. Water: Clean, potable, and free of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to the performance of the masonry.

2.4. ACCESSORIES

A. Thru-wall flashing: Refer to Section 07 62 00 – Sheet Metal, Flashing and Trim.

B. Adjustable anchors at replacement masonry:

1. General: Provide 2 piece assemblies that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to the plane of the wall.
2. Connection to Masonry Backup: Provide Dur-O-Wal D/A 213 Veneer Anchor Plates with DA 213 Pintels. Fasten to masonry backup with Hilti epoxy anchor system HY 150 or HY20 and stainless steel Hilti HIT Anchors ¼ inch by 1 ½ inch , or equal. Wall Ties Dur-O-Wall D/A 5213
3. Connection to Structural Steel Frame: Provide Dur-O-Wall DA 207 Veneer Anchor Strip with DA 700 Triangular Ties.
4. Vents: UV Resistant polypropylene, thickness equal to that of mortar joint.

5. Cleaning Agents: Test multiple cleaning agents as necessary to satisfactorily remove stains and surface discoloration.

3. PART 3 – EXECUTION

3.1. GENERAL

A. Any mortar joint that can be scraped out without the use of grinding or cutting tools or that has one crack open against any side of a brick or that has a hole larger than ½ inch in diameter must be pointed.

B. Replace any brick unit and remove any existing mortar from surrounding joints at masonry that exhibits:

1. Chipped corners, cracks, voids or holes, or that has spalled.
2. Bearing failure.
3. Loose bricks.
4. Displaced masonry that is out of plane across bricks.

3.2. PREPARATION

A. Accept conditions of the job as they exist and perform work accordingly.

B. Provide appropriate protection for adjacent finishes by providing drop cloths, strippable liquid masking agents, etc as required.

C. Provide protection of roof surfaces with insulation/plywood protection system.

D. Remove dust and other foreign substances from joints. Clean existing brick surfaces to ensure that they are free of dust, dirt, or other foreign materials before laying brick.

3.3. INSPECTION AND EXAMINATION

A. The Contractor shall review and visually survey areas specified for demolition before beginning demolition.

1. Inspect masonry walls and mark areas requiring removal of brick or other masonry units. Protect roof areas and complete demolition and repair prior to performing roof work.
2. Mark mortar joints and bricks that are to be replaced with a removable chalk. Count the number of bricks and the linear feet of mortar to be replaced. If quantities exceed amounts in base bid, calculate total cost to replace based on the unit cost in the bid. Submit costs to Roof Consulting Firm for approval before proceeding with replacement. If quantities are less than those included in the base bid, calculate and submit credit due to the Owner based on the unit cost.

3.4. PREPARATION OF EMBEDDED STEEL ELEMENTS

A. Remove corrosion and pack rust from exposed steel elements. Notify Roof Consulting Firm of any significant section loss prior to commencement with masonry installation.

B. Clean, prime and paint exposed steel elements in accordance with paint manufacturers written application instructions.

3.5. MORTAR PREPARATION

A. Mix mortar in a mechanically operated mortar mixer. Mix dry components first before adding water. Mix long enough after all ingredients are in drum to obtain a thorough, complete intimate mix of materials.

B. Adjust consistency of mortar to satisfaction of mason; water may be added as is necessary in using the mortar. This should be done by forming a basin in the mortar, adding water and mixing in. Mortar in which final set has begun shall not be used.

3.6. INSTALLATION - GENERAL

A. Comply with reference unit masonry standard and other requirements applicable to each type of installation.

B. Thickness: Match existing construction.

C. Cut masonry units with motor driven saws to provide clean, sharp, un-chipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Where possible, use full sized units without cutting. Allow units cut with water cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces, and where possible, with cut edges concealed.

D. Support and protect remaining masonry that surrounds removal area.

E. Pre-wet clay masonry prior to placement to prevent improper mortar cure. Units should be surface dry at the time of placement. Do not pre wet concrete masonry units.

F. Butter, as required, with mortar the appropriate surfaces of the existing surrounding masonry.

G. Provide full mortar coverage. Ensure head joints, bed joints and collar joints are completely filled.

1. Provide collar joints installed with grout having an integral water repellant admixture. Ensure collar joints are filled solidly and are free of voids and cracks.

H. At cavity walls, bevel beds away from cavity to minimize mortar protrusions into the cavity. As work progresses, trowel mortar fins protruding into the cavity flat against the cavity face of the brick.

I. Remove excess mortar from interior and exterior with a trowel after units have been laid.

J. Keep drainage cavities and grout cavities clean of mortar drippings and other materials during construction.

K. Do not pound or move units after they are set into position. Where an adjustment must be made after mortar has started to hardened, remove mortar and replace with fresh mortar.

3.7. CONSTRUCTION TOLERANCES

A. Comply with tolerances specified in ACI 530.1

3.8. FLASHING, WEEP HOLES, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at counterflashings, shelf angles, lintels, ledges, and other obstructions to water flow.

B. Flashing: See Section 07 62 00.

C. Weep Holes: Install weep holes in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing. Space weep holes twenty four (24) inches on center.

3.9. BRICK MASONRY REPLACEMENT

A. Carefully chip out brick units and remove existing mortar from surrounding joints.

B. For large areas, do not remove existing masonry in quantities that could detrimentally affect structural integrity of wall.

C. Pre-wet clay masonry prior to placement.

D. Install anchors into backup such that lateral support is provided at 16 inches on center horizontally and vertically.

1. Provide new and supplemental anchors as required to ensure proper anchorage of the new and adjacent existing exterior brick masonry wythe.

E. Ensure that brick masonry replacement work is laid out plumb, level, and true to line and corners. Ensure that all angles are square.

1. Use line blocks whenever possible. When it is absolutely necessary to use a line pin, rake out the hole in the joint and fill with mortar during subsequent work.
2. Accurately execute pattern work, bonds, or special details to match existing masonry.

F. Completely fill head joints of replacement units with mortar.

G. Tool exposed joints to concave profile when mortar is “thumbprint hard”, using a jointer larger than the joint thickness.

H. Allow mortar droppings sticking to face units to dry, then remove with trowel and scrub surfaces lightly with bristled brush.

3.10. CONTROL AND EXPANSION JOINTS

A. Existing joints;

1. Remove sealants and backer rods from joints.
2. Install new replacement water stops at expansion joint locations.
3. Install compressible joint backer and sealant as specified in Division 7 Section 07 90 00 “Sealants”.

3.11. POINTING MASONRY

A. Rake or cut out mortar until sound mortar is reached but not less than 2 ½ times joint width or ¾ inch whichever is greater.

B. Remove mortar from masonry surfaces within raked out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joint clean.

C. Do not spall edges of masonry units or widen joints. Replace damaged masonry units.

D. Rinse masonry joint surfaces and allow to dry.

E. Apply first layer of pointing mortar in thickness not to exceed 3/8 inch and allow to dry “thumbprint hard” before applying next layer.

F. Install and compact successive 3/8 inch layers and allow to dry “thumbprint hard” before applying next layer.

G. Tool exposed joints to concave profile when mortar when mortar is “thumbprint hard”, using a jointer larger than the joint thickness.

3.12. MASONRY CLEANING

A. Clean work from top to bottom of each scaffold width and from bottom to top of each scaffold drop.

B. Perform cleaning as needed to result in a uniform appearance without staining or damaging brick or other surfaces.

C. Final Cleaning: After mortar has fully hardened, clean exposed surfaces of excess mortar and foreign matter using stiff nylon brushes and clean water applied at low pressure.

END SECTION 04 20 00 - MASONRY REPAIRS

SECTION 04 73 00

CONCRETE REHABILITATION

1 PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2 SUMMARY:

A. Concrete deck repairs shall be done as required to create a sound substrate for new roof installation. Deck repairs may only be done with the written approval by Owners representative.

B. APPLICABLE ROOF SECTIONS:

1. Roof Areas to be covered under this section: All concrete roof areas on High School and Munson Elementary School.

2 PART 2 - PRODUCTS

2.1 CONCRETE DECK REPAIRS

A. One-component, chemical action concrete

B. Below 80 °F.: Set-45 by Master Builders Division, Martin Marietta Corp., Cleveland, OH.

C. Above 80 °F.: Set-45 Hot Weather Formula by Master Builders Division, Martin Marietta Corp., Cleveland, OH.

3 PART 3 - EXECUTION

3.1 CONCRETE DECK JOINT REPAIRS

A. Where deck joints are open, remove loose materials, install backer rod under 30% compression and grout joint with quick set grout.

B. Where deck panels are offset by more than 1/8” install quick set grout to feather out the offset at 1/8” per foot.

3.2 CONCRETE DECK REPAIRS

A. Remove spalled/deteriorated deck areas until sound base is reached.

B. Wire brush flaking rust from exposed reinforcing bar. Apply rust inhibitive paint. Allow to dry.

C. Fill prepared area flush with one-component, chemical action concrete according to manufacturer’s directions. Allow to set.

D. Mixing order:

1. Water.
2. Aggregate (repairs deeper than 1/2 inch).
3. One-component, chemical action concrete.

* * * END SECTION 04 73 00 * *

SECTION 05 31 00

STEEL ROOF DECK

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY:

A. Metal deck repairs shall be done as required to create a sound substrate for new roof installation. Deck repairs may only be done with the written approval of the Roof Consulting Firm.

B. Applicable roof sections:

1. All metal deck areas on High School, Middle School and Munson Elementary School.

C. Scope of Work:

1. Remove or restore all deteriorated decking.

a. Deteriorated decking to be restored is defined as: unattached decking, unattached side or end laps and/or presence of minor surface rust not severe enough to require replacement. Each roof area has a specified area of deck restoration included in the base bid. These areas will be added to or subtracted from by a single unit price.

b. Deteriorated decking to be replaced is defined as: If any rusted openings exist in any deck section, or if any rust scale exists in any deck section, replace deck. Each roof area has a specified area of deck replacement included in the base bid. These areas will be added to or subtracted from by a single unit price.

2. Remove all abandoned projections on steel roof deck areas, install new decking as specified.

3. The Contractor is fully and solely responsible to map out all electrical components or other obstructions secured to the underside of the deck. These components shall be moved or re-secured to the structural steel members as appropriate, and the Contractor must ensure that they are not damaged. If these components need to be disconnected to replace deck, it must be done by a licensed, Owner approved Contractor at no additional cost to the Owner.

4. Furnish all materials, labor, equipment, and services necessary for and incidental to the execution and completion of all work.

1.3. SUBMITTALS

A. Product data for each type of deck, accessory and product indicated.

B. Shop drawings:

1. Deck profile and gage.

2. Methods, types and locations of fasteners.

3. Accessory materials and related details required for proper installation of the decking.

C. Evidence of steel decks compliance with OBC and FMG.

D. Manufacturers coating certification.

1.4. QUALITY ASSURANCE

A. Design, fabrication and erection shall conform to:

1. AISI “Specifications for the design of Cold Formed Steel Structural Members”.

2. SDI “Basic Design Specifications”.

B. The steel deck manufacturer shall be a member of the Steel Deck Institute and shall not have less than five (5) years experience in the fabrication of steel deck.

C. FMG Listing: Provide steel deck evaluated by FMG and listed in FMG’s “Approval Guide, Building Materials” for Class I fire rating and Class I – I 90 windstorm ratings.

1.5. DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation and other damage during delivery, storage and handling.

B. Stack steel deck on platforms and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

C. Follow all delivery, storage and handling requirements in SDI “Manual of Construction with Steel Deck, 2nd Edition”.

2. PART 2 - PRODUCTS

2.1. METAL ROOF DECK

A. FOR ALL AREAS;

1. Galvanized Sheet Steel: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating.

2. Metal roof deck: 22 Gage, rib depth, rib configuration - match existing; three span.

3. Side laps: Overlapped.

4. Color: to be selected by Owner.

B. Butt and finish strips: 18-gage sheet steel.

C. Acceptable manufacturers:

1. Wheeling Corrugating Co.

2. United Steel.

3. Vulcraft.

2.2. ACCESSORIES

A. Metal roof deck fastener shall be corrosion resistant coated, self tapping carbon steel screws, No. 12 minimum diameter. Fastener shall project through supporting metal a minimum of ¼ inch and a maximum of ¾ inch.

B. Side lap fasteners shall be corrosion resistant coated, self tapping carbon steel screws, No. 10 minimum diameter. Fastener shall project through supporting metal a minimum of ¼ inch and a maximum of ¾ inch.

C. Column Closures, End Closures, Z-Closures, and Cover Plates: Sheet Steel shall be of the same materials, finish and thickness as deck, unless otherwise indicated.

D. Recessed sump pans: Single piece sheet steel, 0.0747 inch thick of same material and finish as deck with 3 inch wide flanges and sloped recessed pans of 1-1/ inch minimum depth. For drains cut holes in the field.

E. Miscellaneous accessories: To be of same material, finish and thickness as deck, unless otherwise indicated.

F. Rust inhibitive paint: SSPC – Paint with dry film containing minimum of 94 percent zinc.

3. PART 3 – EXECUTION

3.1. GENERAL

A. Locate decking bundles to prevent overloading of structural members.

B. Remove areas of deteriorated deck. Cut deck so opening is square and so new piece of deck is structurally supported at three points.

C. Install temporary shoring before placing panels, if required to meet deflection limitations.

D. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

E. Cut and neatly fit deck panels and accessories around openings and other work projecting through the deck.

F. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking and support of other work.

G. Position deck panels so that fasteners penetrate end laps no more than 2 inches and not less than one inch from end of overlapping metal. End laps shall not be less than 3 inches.

H. The threads of self drilling screws shall penetrate through supporting members a minimum of ¼ inch and a maximum of ¾ inch.

I. Screws with stripped threads shall be removed and discarded. Removed screws will be replaced with a larger screw of the same material and thread characteristics as that specified.

3.2. STEEL DECK REPAIR AND INSTALLATION

A. Inspect underside of decking where visible seven (7) days prior to removal of roofing as specified in Section 02 05 00.

B. When deck replacement occurs, the Contractor must perform the following as a minimum:

1. Notify Owner seven (7) days in advance that deck replacement may occur. If unexpected deck replacement is discovered that was not detectable from underside inspections, temporary roofing will have to be installed if the occupied area beneath cannot be vacated during the work.

2. If conduits, wires, cables, electrical boxes, duct or ceiling supports, etc. are attached to the bottom of the deck to be replaced, they must be removed before deck removal and reinstalled after deck replacement.

3. Cordon off the interior area under the area to be replaced.

4. Maintain a floor guard in the interior area during all deck replacement activity to keep all pedestrians from entering the area.

5. Floor guard to be in communication with roofing crew above at all times.

6. All cordoning materials and debris must be removed from the interior of the building after completion of roof deck installation. Clean up must meet with Owner's satisfaction.

C. Deck Restoration;

1. Deck Protection: Scrape or wire brush to remove all rust from deck panels and underlying support members when exposed during replacement. Apply rust inhibitive paint over removed surface rust.
2. Deck Reinforcement: After deck protection is completed; install sheet steel reinforcement profiled to existing decking configuration over all rusted areas.
3. Deck Reattachment:
    a. Mechanically reattach loose sections of deck to steel support members twelve inches on center.
    b. Side laps: Nestable side lap: Mechanically fasten 18 inches on center.

D. Deck Replacement: Deteriorated decking to be replaced is defined as: If any rusted openings exist in any deck section, or if any rust scale exists in any deck section, replace deck. Each roof area has a specified area of deck replacement included in the base bid. These areas will be added to or subtracted from by a single unit price.

1. Saw cut at bar joist/beam center, remove decking. Cut decking so that opening is squared off. Minimum length: Three spans.
2. Examine supporting frame for compliance with conditions that may affect performance. Wire brush or scrape all rust off framing members and paint with rust inhibitive paint.
3. Remove all abandoned projections on steel deck areas. Cut decking to be removed so that remaining hole will be squared off and so that new decking will be supported by at least three points. Unit removal included in base bid.
4. Erect metal decking according to SDI Design Manual.
5. Mechanically fasten end laps 12 inches on center across the width of the panel. One fastener shall always be placed in a side lap as a minimum. End laps shall always be a minimum of 2 inches and shall always occur over a supporting member.
6. Mechanically fasten side laps 18 inches o.c.
7. Fasten deck to steel support members at ends and intermediate supports with mechanical fasten twelve inches o.c. maximum.
8. Install six inch wide sheet steel butt strip where deck ends butt. Mechanically fasten butt strips to steel deck six inches o.c.
9. Accessory material shall be fastened not more than 12 inches on center. Sump pans shall be properly fastened to adjacent sheets to properly reinforce the opening.
10. Roof deck shall be installed so that all deck sheets will lie true in line with all interlocking edges parallel. When the edge of a 4 foot long straight edge is placed on the deck perpendicular to the ribs, the straightedge must contact all or part of the top surfaces of the deck.
11. Roof deck shall be set in place against the supporting steel and holes shall be installed perpendicular to the panels, through both the panels and the supporting steel simultaneously.

3.3. REPAIRS AND PROTECTION

A. Galvanizing repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturers written instructions.

END OF SECTION 05 31 00 - STEEL ROOF DECK

SECTION 06 10 00

ROUGH CARPENTRY

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY:

A. This portion of the specification sets forth the general requirements, including the quality and type of materials required for the installation of all lumber used for wood curbs, nailing strips, miscellaneous blocking material, unexposed fillers, fascia's, edging strips, etc.

B. APPLICABLE ROOF SECTIONS:

1. Roof Areas to be covered under this section: all.

C. Scope of Work:

1. Wood Nailers/blocking replacement at High School, Middle School, Munson Elementary School:
    a. Remove and replace damaged or deteriorated perimeter nailers and blocking and anchor to substrate as indicated in the Specifications and Drawings. Each building has a specified amount of wood nailer/blocking replacement included in the base bid. These areas will be added to or subtracted from by a single unit price.
2. New lumber installation included in base bid at High School, Middle School, and Munson Elementary School:
    a. Raise all existing curbs to remain to minimum height specified.
    b. Install new curbing to provide specified eight inch (8") minimum flashing height at equipment that do not have supports anchored to the deck.
    c. Install new perimeter nailers under all copings and at all metal edges as required to accommodate new insulation thickness.
    d. New limber required to meet all detail requirements as indicated in the Drawings.
3. Install new plywood cap on Roof Area 2 on Munson Elementary as indicated in Drawings.

1.3. STORAGE:

A. All material specified herein shall be stored (after delivery to the site) so that it will be fully protected from damage and weather, and shall be piled to prevent warpage. All lumber shall be fully protected to maintain the original required moisture content as specified in item titled "Moisture Content".

1.4. SUBMITTALS

A. Submit product data and MSDS sheets on each product supplied

B. Submit certificates from processing plant for each type of fire retardant product showing compliance with specified standards.

1.5. PERFORMANCE REQUIREMENTS

A. Installation of wood blocking and nailers must comply with FM Global requirements listed below:

1. ASCE 7
2. ANSI/SPRI WD-1
3. OBC.
4. FMG 1-90 standards as indicated in FMG data sheet 1-49

B. Minimum withdrawal resistance of wood blocking and perimeter nailes fasteners will be 180 lbs. per fastener.

1.6. OTHER REQUIREMENTS:

A. Dimensions indicated on the drawings are nominal dimensions (except where details show actual sizes) and shall be subject to the standard reductions required for surfacing or tolerances permitted by the grading rules.

1.7. PROTECTION:

A. All finished work shall be adequately protected against damage from any source.

2. PART 2 - PRODUCTS

2.1. WOOD PRODUCTS – GENERAL

A. Certified Wood: Lumber and plywood shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship

2.2. WOOD – PERIMETER NAILERS, FRAMING AND CURBS

A. Lumber: Southern Pine, yellow pine, Douglas fir, spruce, ponderosa pine, larch or Hemlock and shall meet the following minimum grade requirement of construction standard (75% #1 and 25% #2); free from warping and visible decay. Lumber shall be graded according to the standard grading rules of the Southern Pine Inspection Bureau, the West Coast Lumber Inspection Bureau, or the Western Wood Products Association.

2.3. MOISTURE CONTENT

A. All lumber shall be air-dried or kiln-dried before treatment, so that the moisture content is not more than 19%. After treatment, it shall be kiln-dried at temperatures not exceeding 160 degrees F. (71 degrees C) so that the moisture content is not more than 19% at time of shipment.

2.4. GRADE STAMPS

A. Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grades, species, moisture content at time of surfacing and mill.

2.5. PLYWOOD

A. Grade: APA B-C EXT – Douglas Fir – four ply.

B. Description: 3/4" thick.

2.6. FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners"
   1. Power-Driven Fasteners: NES NER-272.
   2. Wood Screws: ASME B18.6.1.

D. Screws for Fastening to Metal Framing: ASTM C 1002 ASTM C 954, length as recommended by screw manufacturer for material being fastened.

E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6).

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

H. WOOD TO MASONRY WALL AT PERIMETER

1. 1/2” Lag bolts screws to penetrate 1 ¼” set into epoxy grout.
2. 5/8” Stainless steel washers.

I. WOOD PERIMETER NAILER TO WOOD BLOCKING SUBSTRATE

1. #10 screws.
2. 5/8” steel washers.

J. WOOD TO WOOD:

1. Blocking and nailers:
   a. Type: Galvanized, common, annular ring nail, 3/16” minimum diameter head.. Length: Sufficient to penetrate underlay blocking 1-1/4 inches.
   b. Acceptable Manufacturers:
      I Buildex Div. of ITW Itasca, IL.
      ii Olympic Manufacturing Group Inc. Agawam, MA

3. PART 3 - EXECUTION

3.1. REMOVAL

A. Remove all damaged or deteriorated lumber and all perimeter wood located over perimeters that are to receive a new metal edge/fascia system.

B. All lumber to be installed as specified and as indicated on the Drawings.

3.2. GENERAL

A. Install all lumber plumb, true and level.

B. Trim and fit all carpentry to other construction, fasten and anchor securely as required to meet specified standards.

C. All lumber must be attached to support applied loads and to resist movement in any plane.

D. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following;

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

3.3. INSTALLATION - GENERAL

A. At roof edge to receive metal fascia or copings, around all roof top penetration perimeters, and under any flashing component that is to have a roof flange mechanically fastened to roofing substrate;

1. Mechanically attach wood blocking. Blocking thickness: Equal to final insulation thickness. Width: Six inches nominal, or as otherwise required.
2. Fasteners attaching wood to substrate shall be installed to conform to FMG 1-90 standards as indicated in FMG data sheet 1-49.
3. Where required, offset blocking layers twelve inches, weave corners.
4. Lumber shall be accurately cut to the work requirements.
5. Bolted fastenings shall have washers of adequate size under both heads and nuts. Nails shall be of correct size and quantity for proper fastening. Oversized nails that will result in splitting shall not be used. All fasteners shall be galvanized per ASTM A 153 or stainless steel where indicated in the Construction Documents and Drawings

B. All lumber to be covered with waterproofing materials at end of each day's work.

3.4. PERIMETER EDGE AND COPINGS

A. Install new lumber according to ASCE 7, ANSI/SPRI WD-1 or FMG 1-90 standards as indicated in FMG data sheet 1-49.

B. Install lumber with sufficient width to accommodate fascia installation according to fascia manufacturer's requirements. If necessary to accommodate nailer width, install vertical support framing and plywood on inside of wall.

C. Install new lumber to conform to Drawings.

D. Secure, fasten, support and brace lumber as necessary to completely stabilize and prevent movement in any plane as indicated in the Drawings.

1. Secure upright supports with lag bolts as indicated in the Drawings.
    a. Countersink bolts.
    b. Bolts to be installed straight and true into the upright piece so that no side of the lumber is split or weakened.
2. Secure additional lumber to base supports anchored to structural steel with 16 D galvanized nails in two rows set 16 inches on center and staggered from nails in layer below.

3.5. WOOD CURBS AND RAISING OF UNITS

A. Raise all curbs and supports to achieve a minimum 8 inch flashing height above the finished roof surface:

1. Disconnect all electrical conduits, condensate lines, etc. Hire licensed HVAC and electrical subcontractors to perform all work, including reconnection work. If HVAC or gas lines need to be drained and recharged, those costs shall be included in the contract. Coordinate with Owner for times when equipment can be shut down.
2. All lumber to be fire treated.
3. Wood shall be cut to size to match up with existing curb. Secure all new lumber to existing curb. Space fasteners 8 inches on center. Where multiple layers are required, offset blocking layers twelve inches, weave corners. Install nailers at base of curb as required by manufacturer.

END SECTION 06 10 00 – ROUGH CARPENTRY

SECTION 07 21 00

ROOF INSULATION, BASE SHEETS AND VAPOR RETARDERS

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY:

A. This portion of the specification describes materials and workmanship required for the installation of insulation, base sheets and vapor retarders on deck types as indicated on Detail Sheet A2.0.

1. Deck Types:
    a. Metal: All insulation layers to be mechanically attached. Add alternate 1 is to adhere a ½" HD board as the top layer.
    b. Gypsum: Base sheet is to be mechanically attached with all insulation layers adhered.
    c. Light weight concrete fill: Base sheet is to be mechanically attached with all insulation layers adhered.
    d. Concrete, concrete plank: vapor retarder is to be fully adhered with all insulation layers adhered.

B. All materials described herein shall be furnished and installed by the roofing Contractor unless specifically noted otherwise.

C. Roof Areas covered under this section: All roof areas on High School, Middle School and Munson Elementary School.

1.3. PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Insulation shall be delivered to the site in an undamaged and dry condition. Material received that is not dry or is otherwise damaged shall be rejected.

B. Proper storage on or off the site shall be the responsibility of the roofing Contractor.

C. Any unused insulation remaining on the roof at the end of the workday shall be returned to storage.

1.4. INSULATION - GENERAL

A. Conceptual tapered insulation design has not been done except for isolated areas where crickets/saddles are currently known to exist. The Contractor is to ensure that each roof area that will not have the roof surface sloped with new insulation will positively drain after the new roof system is installed. The Contractor shall conform all new insulation to the slopes of the existing deck and saddles to ensure that drainage is not impaired by the roof system installation.

B. All insulation materials must be approved by the manufacturer of the primary roof membrane materials. Samples should be provided to the manufacturer and written approval from the manufacturer is required before ordering these materials for the project.

C. Insulation boards shall be full size except when cutting is required at roof edges and openings. Boards that are broken, cracked, have been exposed to moisture, or are otherwise damaged shall not be used.

D. The proper installation and fit of wood nailers, blocking, and other rough carpentry in appropriate locations shall be verified prior to installation of roof insulation.

E. Caution shall be exercised with construction traffic to avoid damage to new insulation. Breaking or crushing of insulation is unacceptable and any damaged insulation shall be replaced at the roofing Contractor's expense.

F. Insulation shall be laid with end joints staggered and all joints tight; however, boards shall not be forced into place.

G. No more insulation shall be installed during any work period than can be covered by the base ply of roofing during the same work period. At the end of the work period, temporary edge seals shall be installed to protect the roof insulation. Upon resumption of work, they must be removed. Such seals shall consist of strips of roofing felt applied and top coated with asphalt mastic.

H. Insulation surfaces shall be cleared of all debris before roofing is placed.

2. PART 2 - PRODUCTS

2.1. MECHANICALLY ATTACHED BASE SHEETS AND VAPOR RETARDERS:

A. G2 Fiberglass base sheet acceptable to Manufacturer:

1. Base sheet fasteners:
   a. Carlisle Dual Prong Base Sheet Fastener (or approved equal).
   b. Dual Prong Twin-Loc by OMG (or as approved by Manufacturer.

B. Fully Adhered Vapor Retarder:

1. SureMB 90 TG Base; Torch grade SBS Base Ply by Carlisle (or approved equal).

2.2. FLAT STOCK INSULATION:

A. Polyisocyanurate:Two layers minimum (except on Canopy roof areas) mold resistance fiberglass facer ASTM C 1289, Type II, PSI: 25; coated glass facers, type: Class 2 on both major surfaces. Maximum board size: 4’ X 4’ on all adhered layers. Minimum R value of 25 of total system

B. Tapered saddles and crickets: Polyisocyanurate Tapered at one half inch (1/4” to ½”) per foot as appropriate, ASTM C 1289, Type II, PSI: 25; coated glass facers, type: Class 2 on both major surfaces.

C. Add Alternate 1: Adhered ½” HD Top Layer-cover board over mechanically attached base layers:

1. Carlisle SecureShield HD Plus POLYISO (or equal)
   a. 4ft. by 4 ft. maximum board size, ½” thick
   b. ASTM Type II, Class 4, Grade 1 (109 psi max.)

2.3. TAPERED INSULATION;

1. Tapered Polyiso System: ASTM C 1289, Type II, PSI: 20; coated glass facers, type: Class 2 on both major surfaces; Slope equals: 1/4" per foot; **R-value = 25 average total system.**

2. Tapered saddles and crickets: Polyisocyanurate Tapered at one half inch (½”) per foot, ASTM C 1289, Type II, PSI: 25; coated glass facers, type: Class 2 on both major surfaces.
   a. Compressive Strength, ASTM D 1621, (min. 25 lbs./inch^2)

B. Add Alternate 1: Adhered ½” HD Top Layer-cover board over mechanically attached base layers:

1. Carlisle SecureShield HD Plus POLYISO (or equal)
   a. 4ft. by 4 ft. maximum board size, ½” thick
   b. ASTM Type II, Class 4, Grade 1 (109 psi max.)

C. Insulation Fasteners and plates for all metal deck areas:

1. Insulation Fasteners and plates to be acceptable to the Manufacturer:

a. The same brand fastener is to be used throughout the work.

b. Fastener and plate, number of fasteners and layout will be as required by the specified manufacturer's for specified warranted wind speed of 72mph and ASCE7 requirements.

c. Length of fastener shall be determined by the thickness of the decking and any fill, and will vary with the thickness of the insulation. Fasteners shall be of appropriate length to achieve a minimum of ¾-inch penetration.

d. Minimum Requirements:

i. #12 fastener

ii. 3" plate

iii. Pull out strength: 400 lbf (typical).

D. Insulation Adhesives for all insulation and cover board layers for all gypsum, concrete and light weight concrete deck areas:

1. Adhere all insulation layers above the base sheet or vapor retarder and all cover board layers.

2. Two part foaming adhesive as required by the specified manufacturer's and approved by FMG (application rate of ¾" to 1" wide beads spaced 12" o.c in field, 6" o.c. in perimeter & 4" o.c in corners): As required by the specified manufacturer's for specified warranted wind speed of 72mph and ASC7 requirements.

2.4. WOOD BLOCKING

1. As specified in Section 06 10 00 Wood Framing.

3. PART 3 - EXECUTION

3.1. INSPECTION AND CONDITION OF DECK

A. Prior to installing insulation, deck must be inspected and accepted by the roofing Contractor and roofing system manufacturer. Contractor must verify deck slopes and determine if insulation stops and/or back nailing is required by the manufacturer based on the system being installed and if fill insulation, tapered insulation or saddles/crickets are required to provide positive drainage of completed roofing system. All deficiencies must be corrected prior to start of work.

B. The underside of the deck must be inspected for the presence of conduits, wires, cables, junction boxes, etc that may be attached to the bottom of the deck.

1. Mark items attached to the bottom of the deck on the topside to prevent penetration of underside items by fasteners.

2. If Items must be marked from underside of deck, notify Owner seven (7) days in advance before proceeding with the Work.

3. If items must be removed or relocated, follow requirements referenced in related sections of the Construction Documents.

C. The roofing Contractor shall perform all other work of preparing the deck. When insulation is applied, the deck shall be dry and free of dew, frost, ice, and snow.

D. The roofing Contractor shall notify the Roof Consulting Firm of any improper installations.

3.2. BASE SHEET INSTALLATION

A. Base sheet is to be mechanically attached to the deck:

1. Fasten to deck with Dual prong OMG Twin-Loc fasteners or as approved by manufacturer.
2. Fastening pattern to meet wind uplift requirements as specified. Minimum three rows with spacing 6” at corners, 7” at perimeters and 9” in the field and as modified by deck ht. and deck width.

3.3. VAPOR RETARDER;

A. Torch apply vapor barrier as required by manufacturers written specifications.

1. Vapor retarder to turn up walls and be completely sealed to the wall to form a complete vapor/air barrier.
2. The vapor retarder must be installed to form a seal at the roof drain assembly.

3.4. THERMAL INSULATION

A. Adhere all layers over base sheets and vapor retarders and over mechanically attached base layers (if Add Alternate 1 has been accepted):

1. Adhere insulation according to cold adhesive manufacturer’s recommended procedures and specifications and requirements for FMG Approval.
2. Set five gallon buckets on the four corners and center of the board immediately after installing board into fresh adhesive. Remove buckets after adhesive has set. Alternate method for weighting of boards set in adhesive may be submitted and utilized if acceptable to Roof Consulting Firm and Manufacturer.

B. Tapered Crickets and Saddles:

1. Adhere insulation over top insulation layer according to cold adhesive manufacturer’s recommended procedures and specifications and requirements for wind uplift resistance.
2. Tapered saddles and crickets shown on drawings are for conceptual design. Lay out and install tapered insulation and appropriate fill insulation to insure positive drainage occurs on all roof areas.

C. Insulation installation requirements:

1. Stagger joints in all layers at least six inches.
2. Install insulation boards in courses parallel to roof edges, mopping surface up.
3. Firmly butt each insulation board to surrounding boards. Do not jam or deform boards.
4. Maximum elevation variation between boards at joints: 1/8 inch.
5. Cut and fit insulation boards where roof deck intersects vertical surfaces. Cut board 1/4 inch from vertical surface.
6. All boards installed shall be 18 inches in length or width, minimum.
7. Promptly spread any adhesive that may accumulate on insulation surface to achieve smooth surface for roofing installation.
8. If warranty supplier requires back nailing of the plies due to slope, wood insulation stops or nailers shall be provided.

    a. The wood nailer thickness shall be equal to the thickness of the insulation so that a smooth transition between the top surface of the membrane substrate and the top surface of the wood nailer is achieved.

b. Spacing of the wood nailers shall not exceed the recommendations of the manufacturer.

3.5. DEAD MAN FILLERS

A. Install “dead man” fillers at the end of each day’s work before installing temporary tie-ins.

B. Remove tie-ins and dead man fillers at the beginning of the next day’s work.

C. Replace dead man fillers with permanently installed layers to maintain consistent stagger of board joints throughout the job.

END OF SECTION 07 21 00 - ROOF INSULATION, BASE SHEETS AND VAPOR RETARDER

SECTION 07 53 00

ADHERED EPDM ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. This portion of the specification describes materials and workmanship required for the installation of insulation Adhered EPDM membrane roofing system.

a. Base Bid: 20 Year Warranty - Contractor to submit 20 year warranty details. Provide all labor, material, tools, equipment, and supervision necessary to complete the installation of a 60-mil thick reinforced EPDM membrane Fully Adhered Roofing System including flashings and insulation as specified herein in accordance with the manufacturer's most current specifications and details and provide 20 year Warranty. Basis of Design is Carlisle Design A for 60 mil reinforced EPDM membrane.

2. Roof Areas covered under this section: All roof areas on High School, Middle School and Munson Elementary School.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.

B. PERFORMANCE REQUIREMENTS

1. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

2. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.

1. Tapered insulation, including slopes, if utilized in project (refer to roof drawing and SECTION 07 21 00 ROOF INSULATION, BASE SHEETS AND VAPOR RETARDERS).

2. Insulation adhesive patterns.

C. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer's roofing system.

D. Manufacturer Approval: Signed by roofing manufacturer certifying that roofing system has been reviewed and complies with requirements specified.

E. Maintenance Data: For roofing system to include in maintenance manuals.

F. Upon completion of the installed work, submit copies of the manufacturer's final inspection report to the specifier prior to the issuance of the manufacturer's warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 EPDM ROOFING MEMBRANE

A. EPDM Roofing Membrane: ASTM D 4637, reinforced uniform, flexible sheet made from EPDM, and as follows:

1. Approved Manufacturers:
   a. Carlisle Syntec Incorporated – Basis of Design.
   b. Firestone
   c. Johns Manville
2. Base Bid Thickness: 60 mil, nominal
3. Exposed Face Color: Black.

2.2 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.

B. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.

C. Bonding Adhesive: Manufacturer's standard bonding adhesive.

D. Seaming Material:

1. In seam material: Manufacturer's standard Pressure-Sensitive splice tape (Securetape) as required by the Manufacturer and as indicated in Drawings.
2. Cover tape material: As required by the Manufacturer and as indicated in Drawings.

E. Lap Sealant: Manufacturer's standard single-component sealant, color to match roofing membrane.

F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

G. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

H. Securement Strips: Sure-Seal Pressure-Sensitive RUSS (Reinforced Universal Securement Strip) as required by the Manufacturer.

I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.3 WALKWAY PADS

A. Sure-Seal (black) or Sure-White (white) molded walkway pads with Pressure-Sensitive TAPE.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.

2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 ADHERED ROOFING MEMBRANE INSTALLATION

A. In addition to the primary membrane securement (Bonding for Adhered assemblies), additional membrane securement is required at the perimeter of each roof level, roof section, curb, skylight, interior wall, penthouse, etc., at any inside angle change where slope or combined slopes exceed 2" in one horizontal foot, and at other penetrations in accordance with the applicable Carlisle details.

B. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane without stretching and allow to relax ½ hour before installing.

C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.

E. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.

a. Apply roofing membrane with side laps shingled with slope of roof deck where possible. Tape splices must be a minimum of 2-1/2" wide using 3" wide field-applied Pressure Sensitive SecurTAPE OR 3” Factory-Applied TAPE (FAT).

b. Splice Intersections: ’T’-Joints are to be flashed with a bead of lap sealant and 6”x6” minimum (black) or 7”x9” (white) Pressure-Sensitive ‘T’-Joint Cover

F. Tape Seam Installation:

1. In Seam installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight installation.

2. Cover tape Installation: Clean and prime surface of seam area, apply cover tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to

ensure a watertight installation. Apply lap sealant and seal exposed edges of roofing membrane terminations.

G. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

H. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.

I. Install roofing membrane and auxiliary materials to tie in to existing roofing.

3.6 BASE FLASHING INSTALLATION

A. General:

1. All vertical field splices at the base of a wall or curb must be overlaid with Pressure-Sensitive “T” Joint Covers, a 6" x 6" section (with rounded corners) of Sure-Seal/Sure-White Pressure-Sensitive Uncured Elastoform Flashing centered over the field splice.

2. Pressure-Sensitive Uncured Elastoform Flashing must be limited to the overlayment of vertical seams (as required at angle changes), or to flash inside/outside corners, vent pipes, scuppers and other unusually shaped penetrations where the use of Pre-molded Pipe Seals, cured EPDM membrane or Pressure-Sensitive Cured Cover Strip or Overlayment Strip is not practical.

3. When using Pressure-Sensitive Cured Cover Strip or Overlayment Strip to overlay Seam Fastening Plates or metal edging, etc., Sure-Seal HP-250 or LOW-VOC Primer must be used to clean the membrane and metal flanges.

4. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

5. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam areas.

B. Walls, Parapets Curbs, Skylights, etc.

1. Use continuous deck membrane with Pressure-Sensitive RUSS or Seam Fastening Plates along the angle change.

2. When using Pressure-Sensitive RUSS, Manufacturers requirements for Additional Membrane Securement, for attachment criteria.

3. When Seam Fastening Plates are used to secure continuous deck membrane, use minimum 6" wide Pressure-Sensitive Cured Cover Strip or Overlayment Strip to overlay fasteners and plates.

4. When the use of continuous deck membrane for wall flashing is not feasible, a separate piece of cured EPDM membrane may be used. 60 mil cured non reinforced membrane may be used as a separate wall flashing with projects of warranty 20 years or greater. The flashing may also incorporate membrane equal of thickness to that of the EPDM membrane at the deck level.

C. **Flashing of Difficult Penetrations,** refer to Carlisle Spec Supplement G-13-20 for “LIQUISEAL Liquid Flashing” for additional information and specific requirements.

D. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

E. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

F. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner may, at their option and expense, engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to

1. Notify Consultant or Owner 48 hours in advance of date and time of final inspection

C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Consultant and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

* * * END OF SECTION 07530 ADHERED EPDM ROOFING * * *

SECTION 07 58 50

INSTRUCTION FOR ASBESTOS REMOVAL

1. PART I – GENERAL

1.1. SUMMARY

A. Roof and flashing removal shall follow EPA and OSHA requirements for cutting and removal. Air monitoring and proper marking of area as an asbestos removal site shall be utilized as required. Competent persons must be used for monitoring and all other requirements as required by EPA and OSHA.

B. This section is a guideline only. All removal operations are governed by applicable EPA and OSHA standards. Contractor is responsible for determining costs of compliance with those standards and is to include those costs in the base bid.

1.2. SCOPE OF WORK

A. Asbestos removal must comply with all Federal, State and local laws, regulations and Ordinances and as required and recommended by CTG reports contained in APPENDIX 1 - ASBESTOS TEST RESULTS AND REQUIREMENTS in the project specifications.

B. .Include in base bid air monitoring services of a certified and acceptable third party air monitoring and asbestos abatement subcontractor for interior and exterior monitoring. Monitoring may be discontinued only with written declarations by a competent person.

1.3. REQUIREMENTS

A. Protective clothing, equipment, and processes, including use of competent persons as governed by EPA and OSHA standards shall be utilized.

B. Licenses, notices, signs and postings shall conform to EPA and OSH regulations.

1.4. SUBMITTALS

A. Asbestos monitoring, removal and abatement plans and procedures to be utilized.

B. Copies of OSHA asbestos training certificates for all workers at the project

C. Results of air monitoring tests.

D. Credentials and declarations of the competent person along with a written summary of safety procedures required based on the results of air monitoring.

1.5. WASTE DISPOSAL

A. Comply with EPA and OSHA requirements.

2. PART 2 – PRODUCTS

2.1. Respirators and protective equipment: comply with EPA and OSHA standards.

3. PART 3 – EXECUTION

3.1. Provide monitoring on interior and exterior for a minimum of three days and thereafter until declaration of competent person allows monitoring to be discontinued.

3.2. Remove and dispose of asbestos containing materials according to applicable EPA and OSHA standards.

3.3. Competent Person to submit a written summary of safety procedures required based on the results of air monitoring before air monitoring activity is suspended.

END SECTION 07 58 85 - INSTRUCTION FOR ASBESTOS REMOVAL

SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. GENERAL

A. This portion of the specification sets forth the general requirements and describes materials and workmanship for installing the flashings and sheet metal on the roofing systems specified.

B. All materials described herein shall be furnished and installed by the roofing Contractor unless specifically noted otherwise.

C. This section is for work on all buildings and all areas.

D. Work shall be in accordance with Architectural Sheet Metal Manual, latest edition, as issued by Sheet Metal and Air Conditioning Contractors' National Association, Inc., (SMACNA).

E. Plastic curb covers with rubber boots are not acceptable for conduits/pipes. Utilize pitch pans with hoods, goose neck stacks, rain collars over metal sleeves, or curbs with metal caps and soldered sleeves with rain collars. Submit detail to be used to Roof Consulting Firm for approval before proceeding with the Work.

1.3. SOPE OF WORK

A. Remove all sheet metal components on all roof areas being replaced and where indicated on roof and masonry repair areas.

B. Install new sheet metal components according to the specifications and drawings or as needed to properly terminate the roof system in accordance with referenced standards or manufacturer’s requirements, whichever is more stringent.

C. When new sheet metal covers masonry components below, ensure that at least one full brick is covered unless specified or drawn otherwise. When new sheet metal extenders are required to cover existing fascia’s that were removed, install fascia extenders with appropriate stiffener breaks as required to extend to the level previously covered by existing metal.

D. Install new metal cap where indicated on the Drawings on Munson Elementary School Roof Area 02.

E. Replace soffit panels on Middle School.

F. Replace rusted stack hoods on High School, Middle School and Munson Elementary School.

1.4. PERFORMANCE STANDARDS

A. General: Install sheet metal components to withstand wind loads, structural movement, thermally induced movement and exposure to weather without failing.

1. Metal joints and closures shall conform to appropriate SMACNA details.

2. Flashings, copings and metal edges to be installed to conform to ANSI/SPRI WD-1 recommendations or FM Loss Prevention Data Sheet 1-49 for Wind Zone 2.

B. All metal installations must comply with Ohio Basic Building Code.

1.5. SUBMITTALS

A. Shop drawings:

1. Metal Fascia, fascia extenders, scuppers, gutters and downspouts, and Copings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
2. Soffit panel installation on Middle School.
3. Shop drawings of each item specified that differ from the basis of design specified in this section showing layout, profiles, methods of attachment, and joining methods.

B. Miscellaneous Penetration Flashings: Submit detail to be used to Roof Consulting Firm for approval before proceeding with the Work.

C. Color samples of finishes for approval by the Roof Consulting Firm and Owner.

1.6. QUALITY ASSURANCE

A. Perform work in accordance to ASTM A – 653 and the SMACNA Architectural Sheet Metal Manual.

B. Obtain Roof Consulting Firms approval of sheet metal details before installation.

2. PART 2 - PRODUCTS

2.1. MECHANICAL FASTENERS

A. Sheet metal to metal or wood studs;

1. Sheet metal screws 1 ¼ inch long.

B. Sheet Metal to Wood:

1. Threaded nails with 3/16” minimum diameter heads, length: to penetrate 1 ¼”.

C. Sheet Metal, plywood to Masonry:

1. Tapcon 1/4 inch diameter, Phillips flat head anchor with EPDM washer by Buildex Div. of ITW, Itasca, IL. Or equal
2. Length: Sufficient to provide 1-1/4 inch embedment.

D. Sheet Metal to Masonry at Lintels and through wall flashing locations:

1. 1 ¼ inch long “Metal HIT Anchor” expansion anchors with zinc alloy sheath and stainless steel drive nail, by Hilti Corporation.

E. Base Flashing to Masonry:

1. Masonry nail by Simplex Nail, Inc., Americus, GA.
2. Round Cap Masonry Nail by Hillwood Mfg. co., Cleveland, OH.

F. Other Fasteners: Same metal as sheet metal and as approved by the manufacturer or as indicated in the Construction Documents and Drawings.

2.2. METAL FLASHING

A. Pitch pan rain collars:

1. Stainless Steel, 24 gage.

B. Termination bar: as specified by manufacturer.

C. Equipment support rail caps, Slip Flashings, counter flashings, metal stack flashings and misc. sheet metal:
   1. ASTM B209, .040" Mill finish.

D. Fascia and coping: use Manufactures pre-manufacture coping and edge systems as indicated in the Drawings.

E. Fascia Extenders
   a. Manufacturers supplied extenders
   b. 0.040 Aluminum, Mill Finish with stiffener breaks as required and approved by Manufacturer.

F. Cleats:
   1. Same metal type and one gauge heavier than metal being attached.

G. Scuppers and collector boxes: 0.040 mill finish aluminum.

H. Soffit panels:
   1. All panels shall be factory formed .
   2. 0.032" Kynar coated Aluminum.
   3. Panel to have the integral lock and seam.

I. Metal cap on Roof Area 2 on Munson Elementary School: 0.040 mill finish aluminum

J. Downspouts;
   1. Downspout and elbows to be 0.032 mill finish aluminum.
      a. Downspout shape: Round, 5” diameter or larger as required.
   2. Downspout securement:
      a. Straps: Use 1.5” wide, 0.040 mill finish aluminum straps to enclose circumference.
      b. Bracket extender: 1.5”wide by 1/2” thick aluminum extenders to brace bracket supports to wall.

K. Splash Blocks; Pre-cast concrete splash blocks 18” X 10.5” X 3”.

L. Through wall flashings at lintels, beams, self angles, through wall flashings and counter flashings, etc:
   1. Stainless Steel Type 304 or Type 316, not lighter than 24 gage, with a standard 2B finish.
      a. Solder: ANSI/ASTM B – 32 50/50 type.

M. Weep tubes to be screened to prevent insect entry.

2.3. SEALANT

A. As specified in Section 07 90 00 – Sealants.

2.4. FLASHING PLIES

A. See Section Section 07 53 00 for Flashing Ply Product Specifications.

B. Flashing Ply at through wall counter flashing located at lintels, beams, self angles, roof to wall terminations and etc.:
   1. Perm-A-Barrier, Grace Construction Products, or equal.

2. Mastic for Membrane Flashing: Cop-R-Tite mastic by York Manufacturing, Inc, or equal.

2.5. FABRICATION

A. Form pieces in longest practical lengths.

1. Form flashing at lintels, beams, shelf angles, etc. equal to length of lintels, beams, self angles, etc.

B. Hem exposed edges of metal ½ inch, miter and seal corners.

C. Fabricate vertical faces with bottom edge formed outward ¼ inch and hemmed to form drip.

D. Form sections that are square, true and accurate in size, free of distortions or defects detrimental to appearance or performance.

E. Allow for expansion by providing space movement joints at maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped joints are not sufficiently weatherproof, form expansion joints of interlocking hooked flanges filled with sealant concealed in the joint.

F. Weld, solder, mechanically fasten or crimp metal joints and seal metal Joints. Use concealed splice plates where joints are not soldered or welded.

G. Fabricate cleats from same material, one gage heavier as material being anchored.

H. Apply self-adhering bituminous backing or asphalt mastic on surfaces in contact with dissimilar materials.

3. PART 3 - EXECUTION

3.1. EXAMINATION

A. Verify that substrates and conditions are acceptable and ready to receive flashing and sheet metal installation.

B. Installation of materials implies that Contractor has inspected and accepts the existing conditions.

C. Examine walls after removal of existing counter flashings and flashings for the presence of weep holes and/or through wall counter flashing. If weep holes and/or through wall counter flashings exist, new flashing and counter flashing must be located below the line of the weep holes and/or through wall counter flashings. If line below weep holes and/or through wall counter flashings is less than 8 inches above the finished roof surface, notify Roof Consulting Firm before proceeding.

3.2. GENERAL INSTALLATION

A. Furnish and install sheet metal work to provide weatherproof installations warranted against leaks and weather damage and to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual".

B. Anchor components of the Work securely in place with provisions for thermal and structural movement.

C. Ensure that sheet metal work presents a finished appearance which is neat, uniform and possessing aesthetic characteristics of good Architectural sheet metal work.

D. When soldering joints of any metal, thoroughly clean the parts to be joined of all grease, dirt or other foreign matter using a clean cloth and solvent. Smooth surfaces should be roughed with clean emery cloth or sand paper, do not use ordinary steel wool.

1. Perform soldering slowly with well heated base materials so as to thoroughly heat the

seam and sweat the solder through its full width.

2. Thoroughly wash acid flux with a soda solution after soldering and thoroughly rinse. Remove all soldering flux residue on exposed and painted surfaces.

3. Use ample solder and ensure that seams show at least one full inch of evenly flowed solder. Wherever possible, all soldering should be done in a flat position. Seams on slopes greater than 45 degrees should be soldered a second time.

E. Prevent dissimilar metal contact where possible. This shall include not only bi-metallic joints, but also fasteners that pass through new and existing flashing metals.

F. Set sheet metal and trim items level, true to line, and plumb.

G. Coordinate counter flashing, edge and fascia, equipment support flashing, roof penetration flashing, etc. with the installation of roofing and equipment.

3.3. SCUPPERS AND DOWN SPOUTS

A. Install sheet metal scuppers, over flow scuppers and collector boxes as indicated in the Drawings.

1. Hem metal and attach with cleats as indicated on Drawings.

2. Solder corners and joints to form continuous corners and joints as indicated on Drawings

B. Fabricate 5” diameter downspouts.

1. Attach to scupper collector boxes and other sections with aluminum pop rivets to secure in place.

2. Attach downspout to wall with strap and bracket extenders. Fasten bracket extender to wall with masonry expansion anchors.

a. Strap to enclose circumference of downspout to prevent any movement.

b. Install drain elbow at base of downspout.

3. Splash Blocks:
a. Install concrete splash blocks below the bottom of each downspout.

3.4. THROUGH WALL FLASHING.

A. Install thru-wall flashing at roof to wall flashing areas as required, on lintels, under new masonry copings, and at any shelf angle locations.

1. On Masonry back-up surfaces, cut reglet and insert metal break into reglet and fasten 8” o.c. Seal top edge of metal set into reglet with flashing membrane

B. Extend thru-wall beyond face of masonry at exterior and turn down to form a receiver to accept new counter flashing. Install sealant on underside of extension to prevent water infiltration beneath flashing.

C. Lap sections of flashing a minimum of 4 inches. Solder sheet metal laps. Seal membrane flashing laps by coating contact surfaces with approved mastic.

D. Provide stainless steel flashing end dams at discontinuous flashing ends.

1. Turn up flashing end into head joints at least 2 inches to form a dam.

2. Over openings or penetrations, extend flashing beyond jamb lines on both sides before forming end dams.

E. Provide continuous flashing without intermediate lap splices or joints along the full length of lintels, beams, self angles, etc.

F. Install Perm-A-Barrier flashing above through wall metal flashing according to manufacturer's requirements, extend above top edge of metal flashing and seal to back-up substrate.

G. Install screened weep tubes to prevent insect entry 16 inches o.c.

3.5. COUNTERFLASHING

A. Install counter flashing as indicated in the Drawings.

B. Sections to be overlapped a minimum of 3 inches.

C. Seal top edge of all counter flashing with a bead of specified sealant, do not cover weep holes.

3.6. PITCH PANS

A. Pitch pans to be fabricated to meet Manufacturers requirements.

B. Provide minimum 2-inch clearance around penetrations.

C. Fill pan with approved pourable urethane sealer acceptable to the membrane manufacturer.

1. Provide a constant slope to the outside edge of the pan on all sides.
2. Provide a metal storm collar over all pans.

3.7. RAIN COLLARS AND BOOTS

A. Install passive stainless steel rain collars and boots around hot stacks according to the Drawings. Secure rain collar with stainless steel draw band and seal top edge with a heat resistant sealant to be approved by the Roof Consulting Firm.

3.8. ROOF DRAINS

A. Provide a smooth transition from drain bowl to deck surface.

1. Taper insulation back from drain a minimum of 24-inches to provide for positive drainage.
2. Install membrane into drain as required by the Manufacturer.

B. Install base membrane with lap centered on bowl ensuring a tight seal at drain.

C. Test all drains for proper flow and water tightness. Correct defects.

3.9. CURBS

A. Inspect and verify that all curbs are properly secured to deck, are level, a minimum 8-inches above finished roof, primed and ready to receive flashings.

B. Provide metal counter flashing/slip flashing as indicated in the Drawings.

3.10. COPING / PARAPETS / METAL EDGE

A. Verify all surfaces are properly secured and fully primed, ready to receive flashings.

B. Flashing ply membrane is to run horizontally tight up to the vertical or cant as required.

C. Carry flashing over the top and down the outside face of the perimeter to extend below the bottom edge of any nailers. Fasten along outside edge at 4-inch centers using roofing nails.

3.11. AT SINGLE AND MULTIPLE PENETRATIONS-SMALL PIPES

A. Remove existing pitch pans/boots/sleeves/flashings.

B. Install flashing details as indicated in the Drawings.

C. All penetrations will receive a rain collar as shown in the Drawings.

3.12. AT HOT STACKS

A. Install curbs around base of stack and flash as indicated in the Drawings. Install Stainless steel cap as shown in Drawings and seal with high temperature resistant sealant.

3.13. AT CONDUITS, FLEXIBLE TUBING, INSULATED TUBING, WIRE OR CABLE PENETRATIONS

A. Cut or disconnect tubing, conduit, cabling, wiring, insulated tubing, etc. as appropriate after notifying and coordinating with Owner for disconnection of service.

B. Install curbing with metal cap and soldered sleeves, multiple pipe penetration detail as detailed in current NRCA Manual Drawings, or goose neck as approved by the Roof Consulting Firm. Thread tubing, conduit, cabling, wiring, insulated tubing, etc. through opening and re-connect.

C. Install rain collars as specified where appropriate, flash curbs as specified where appropriate.

3.14. CLEANING AND PROTECTION

A. Clean exposed metal surfaces, remove all contaminants.

B. Protect all installed components during the entire course of the work. Damaged components, including damage to coatings will be replaced.

END OF SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

SECTION 07 72 00

ROOF ACCESSORIES

1. GENERAL

1.1. RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. This section includes the following:

1. Remounting conduit and electrical boxes, gas lines, cabling, piping, etc.
2. Gas line and conduit supports.

B. Related Sections: The following Sections contain requirements that relate to this section:

1. All Divisions 1 through 16.

C. This section is for work on roofs: all

D. Scope of Work:

1. Roof Areas covered under this section: All roof areas on High School, Middle School and Munson Elementary School.
2. Remount electrical lines, conduit, cabling, gas lines, and piping on mounts that do not penetrate roof membrane, flashing or sheet metal components.

1.3. SUBMITTALS

A. Shop drawings showing lay out and attachment of conduit, electrical boxes, etc that are to be re-mounted.

B. Product data on components to be installed.

1.4. QUALITY ASSURANCE

A. Comply with SMACNA and NRCA standards.

B. Roofing Contractor shall be the prime contactor. Roofing Contractor will provide foreman or superintendent to be on site at all times when work in this section is being installed.

C. Installer qualifications: Use approved electrical and HVAC and gas line subcontractors for the Work.

1.5. MATERIALS GENERAL

A. Gas line supports;

1. Roof Top Mounts shall be factory fabricated supports for conduits, gas lines, etc. as approved by the manufacturer.
2. Mounts shall allow for mechanical anchoring of the lines being supported and shall be set

on walk pads or other protection as required by the manufacturer and as indicated in the Drawings.

B. Fasteners and Roof Top Mounts for Conduit:

1. Masonry anchors to be Tapcon Masonry Screws or expansion bolts.

2. PART 3 – EXECUTION

2.1. INSTALLATION – GENERAL

A. CONDUIT, GAS LINES, PIPES

1. Attach conduit, junction boxes and cabling to masonry walls or set on non-penetrating roof top supports approved by the manufacturer. Secure conduit to supports.

a. Where multiple conduit lines penetrate the roof, install through a curbed opening with separate conduit flashing boots installed for each line.

2. Set gas lines conduits and pipes on supports as approved by manufacturer. Secure gas lines to supports.

3. Install protection pads under supports as required by the Manufacturer.

B. STACK EXTENSION:

1. Stacks that are not tall enough to be 12 inches above the completed roof assembly are to be extended with no hub connections and new section of pipe that matches original.

C. CLEANING AND PROTECTION

1. Clean all exposed surfaces of contaminants.

END OF SECTION 07 72 00 - ROOF ACCESSORIES

SECTION 07 90 00

SEALANTS

1. GENERAL

1.1. RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2. SUMMARY

A. Areas of work: all.

B. Scope of Work:

1. Remove all existing sealant from masonry control and expansions joints as indicated in the Drawings on High School, Middle School and Munson Elementary School.
2. Properly prepare all joints to receive new sealant and prime according to manufacturer's requirements.
3. Install new sealant in metal to metal, metal to masonry and masonry to masonry joints as indicated in the Drawings.
4. Work includes:

    a. Wall joints, joints around metal frames at louvers on roof area 2 on Munson Elementary School.

    b. Openings around pipes, fasteners, penetrations and holes smaller than ½ inch in masonry walls.

    c. Installation of sealants as described in Detail Drawings.

1.3. QUALITY ASSURANCE

A. Perform work in accordance with technical publications of SWRI and ASTM C – 1193 and the manufacturers written recommendations.

B. Test cuts may be made in sealant to determine adhesion, cure, depth and performance of sealant. Contractor will be responsible to repair test cuts. Defective work must be replaced.

1.4. SUBMITTALS

A. MSDS sheets on all products and primers.

B. Color charts: Color to be selected by Owner.

1.5. DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials

1. Contractor shall have personnel available for unloading, handling, and delivery to the Work of all materials, equipment, and products. Should materials, equipment, or products arrive

at the site without the Contractors personnel being present for unloading, handling, and delivery to the work, the Owner may reject the delivery of these items. All costs incurred because of such rejection of receipt, including returns, storage, re-delivery, etc., shall be borne solely by the Contractor.

2. Deliver materials to job-site in new, dry, unopened and well-marked containers showing product and manufacturer's name.

3. Deliver materials in sufficient quantity to allow continuity of work.

B. Storage of Materials

1. Tarpaulins: Provide waterproof, fire resistant, UL labeled tarpaulins with a flame spread rating of 15 or less.

2. Neatly arrange materials in storage to provide access for inspection.

1.6. PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient temperatures exceed manufacturers recommendations for temperature limits.

2. When moisture of any kind is present.

3. When joint widths are less than or greater than those recommended by the manufacturer.

B. Do not proceed with priming or sealant installation until joints are cleaned and properly prepared.

2. PART 2 – PRODUCTS

2.1. Sealant for all Locations except as indicated differently on the Drawings or required by Material Manufacturer of roof membrane system;

A. Sealant: Dow Corning 795 Silicone sealant.

1. Primers:
   a. For non-pourous substrates: Dow Corning 1200 Promer.
   b. For pourous substrates: Dow Corning Primer P.

B. Sealants at hot stacks to be high temperature resistant as required by Sealant Manufacturer.

C. Primers: as recommended by the manufacturer

D. Color: to be selected by the Owner.

2.2. Accessories:

A. Backer rod: Bi-cellular cylindrical sealant backer rod complying with ASTM C -1330, type B. Size to be sufficient to achieve 25% compression in joint.

B. Masking Tape: Non-staining, non-absorbent.

C. Cloth: 100 percent cotton, lint free cloth.

D. Bond Breaker Tape: Pressure sensitive adhesive polyethylene tape as recommended by sealant manufacturer.

3. PART 3 – EXECUTION

3.1. GENERAL

A. Verify sealant and primer compatibility with substrate (non-reactive) and adhesion to substrate.

B. Remove, clean, prime and back no more area than can be sealed in the same day. Take precautions to protect building interior from infiltration of water through open joints that can not be completed due to unanticipated changes in weather.

C. Apply masking tape adjacent to joint faces.

3.2. PREPARATION

A. Remove existing sealant from specified joints. Remove existing sealant residue or exudates to joint faces until free of contamination and laitance.

B. Install backer rod in joints where required by sealant manufacturers written specifications.

C. Grind joints with power grinders to clean substrate. Avoid scratching or damaging face of surfaces. Grind edges to clean, smooth, uniform width and profile.

D. Widen narrow joints if necessary to obtain required tolerances for joint size.

E. Take precautions to avoid damaging shims and lateral anchors if encountered in the joint.

1. Grind such obstructions back from substrate surface to a uniform ¼ inch.
2. Butt backer rod up to each side of obstruction and transition between different backing materials with continuous bond breaker tape extending at least 3 inches each side of the obstruction.

3.3. CLEANING

A. Follow sealant manufacturer’s instructions for cleaning.

B. Wear protective clothing while using solvent.

C. Clean joint faces with clean cloth and solvent approved by the sealant manufacturer. Remove all dirt, grease, loose materials or water and other foreign matter that might impair adhesion of sealant.

D. Apply solvent with clean cloth, remove solvent with second clean cloth.

3.4. PRIMING

A. Apply primer to all substrates to receive sealant. Strictly adhere to sealant manufacturer’s instructions for primer.

B. Do not contaminate primer source container.

C. Apply primer with paint brush, do not over apply primer, avoid primer drips, runs, skips or voids.

D. Wipe of excess primer with second clean cloth.

E. Follow primer manufacturer’s recommendations for primer flash and/or dry times prior to sealant application. Re-prime joints that are not sealed the same day as primer application.

3.5. SEALANT APPLICATION

A. Form joint size and shape in accordance with sealant manufactures recommendations and ASTM standards.

B. Apply sealant with appropriate pressure to ensure penetration of sealant into required joint depth. Push sealant ahead of nozzle and slightly overfill joints to avoid air voids.

C. Dry tool sealants smooth and triangular. Do not tool concave.

D. After dry tooling, joints may be “slicked” with clean potable water. Do not use lubricants, solvents or detergent.

3.6. CLEANING

A. Remove masking tape immediately after tooling.

B. Scrape excess sealant off face of substrates with a single edges razor immediately after tooling and before curing, or if more effective, after tooling.

C. Clean all adjacent surfaces to Owners satisfaction.

END OF SECTION 07 90 00 - SEALANTS

SECTION 22 00 00

ROOF DRAIN CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

B. All local, city, state, or other codes required for work in this Section shall apply.

1.2 AREA OF WORK

A. Roof Areas: all.

1.3 SCOPE OF WORK

A. Roof Drainage Cleaning: Prior to beginning roof replacement work at each roof area in the scope of the Contract, provide skilled labor and proper equipment to mechanically clean existing roof drains and related storm water pipes in the building. Jet out existing exterior storm drainage system at downspouts. The existing roof drainage system shall be inspected and verified to be flowing freely and clear of any obstructions that would impede full flow capacity. Full roof drainage capacity must be maintained throughout the Project, and the Contractor is fully responsible for damages resulting from water damage resulting from failure to comply with this requirement.

B. Clean existing roof drains and verify in writing that they are flowing properly upon completion of the project

1.4 DRAWINGS

A. Roof drawings show the approximate location of the existing roof drains. All existing roof drains within the Project scope of work are to be cleaned, whether shown on the drawing(s) or not.

1.5 SUBMITTALS

A. The Contractor shall certify to the Roof Consulting Firm, in writing, that all roof drains within the Project areas are functioning properly at the beginning and the end of the Project.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 CLEANING OF ROOF DRAINAGE SYSTEM

A. The existing roof drainage system is to be cleaned by means of a high-pressure wash. Any portion of the system that is still not draining at full capacity after the pressure-washing should be cleared by means of a mechanical auger. Drainage components shall be cleaned prior to new roofing installation and new drainage component installations.

B. Each roof drainage branch shall be cleaned to the point it connects to a vertical storm water drain pipe in the building. The Contractor shall record the location and status of each roof drain on a Roof Plan of the Project area for submission to the Roof Consulting Firm and verify that the roof

drainage system has been cleaned as specified.

C. It is the Contractor's responsibility to notify the Owner and the Roof Consulting Firm immediately of any roof drainage blockage deemed un-clearable and to provide documentation of details of the attempt(s) made to unblock the system as well as an estimate of the distance from top of the roof drain to the point of blockage.

D. Re-roofing work for each roof area of the Project cannot proceed until the Contractor has completed the drain cleaning work for the affected areas. Any delay(s) to the Contractor's work as a result of the Contractor's failure to comply with the requirements of this Section 15000 shall not be a legitimate cause for any Contractor claim(s) for compensation.
The Contractor shall employ any reasonable method to clean the roof drainage system, as approved in advance by the Owner's representative, to clear any blockage without any disassembling of interior storm water plumbing. Any roof drain branch that cannot be un-plugged by the Contractor's means and methods shall be documented by the Contractor, and the Owner will then proceed to verify the blockage and obtain plumbing services to correct the drainage problem(s).

END OF SECTION 15 00 00 – ROOF DRAIN CLEANING

SECTION 15 43 00
PLUMBING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections.

1.2 SUMMARY

A. This Section includes plumbing specialties for roof drainage systems.

B. Related Sections: The following sections contain requirements that relate to this Section:

1. Section 22 00 00 Plumbing - Drain Cleaning

C. Areas of Work:

1. Roof Areas covered under this section: All roof areas on High School, Middle School and Munson Elementary School.

D. Scope of Work:

1. Replace existing roof drain assemblies, to match existing drains in size and capacity, at existing locations on existing decks where existing drains do not have conventional bowl and ring configuration and where existing bowls are cracked or damaged. Include all plumbing connections and under deck sump and pipe insulation.
2. Replace all drain bolts, strainers and clamping rings at all existing roof drain assemblies to remain.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Submit product data, including rated capacities of selected models, weights and installation. Indicate materials, finishes, dimensions, required clearances, and methods of assembly of components; and piping connections for the following plumbing specialty products:

1. Roof Drains

1.4 QUALITY ASSURANCE

A. Comply with SAME B31.9, "Building Services Piping," for materials, products, and installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Roof Drain Assembly
   a. Zurn Industries, Inc.
   b. Jay R Smith
   b. Other: Subject to Roof Consulting Firms approval.

B. Drain components;

1. Body material: Dura-Coated cast iron.
2. Dome material: Dura-Coated cast iron.
3. Bolts: Stainless steel.
4. Dimensions: Match existing dimensional requirements.

2.2 ROOF DRAINS

A. Roof Drains: SAME A112.21.2M, cast-iron body, with combination flashing ring and gravel stop, cast-iron dome except where other dome material is specified, extension collars, under deck clamp, and sump receiver.

B. Piping: Cast Iron pipe to match existing pipe, in both size and performance.

1. Schedule 40 pipe must be used as a minimum.

C. Insulation: Fiberglass Sump and Pipe wrap.

PART 3 – EXECUTION

3.0 DRAIN COMPONENT REPLACEMENT

A. Remove all existing drain bolts, clamping rings and strainers on all existing roof drains located within the areas of work awarded. Remove cracked or damaged sumps and bowls and drains that do not have conventional bowls and ring configuration.

B. Install new stainless steel drain bolts, including tapping as necessary, painted cast iron clamping rings and painted cast iron strainers on all drains located within the areas or work awarded.

3.1 ROOF DRAIN AND DRAIN REPLACEMENT

A. Install new roof drains at deck level at where broken sumps and bowls and drains that do not have have a conventional bowls and ring configuration have been removed. The vapor barrier sheet must be installed to form a seal at the roof drain assembly.

B. Install drain flashing collar or flange to form a watertight seal between roof drain assembly and adjoining roofing.

C. Install new stainless steel drain bolts, painted cast iron clamping rings and painted cast iron strainers on existing roof drains within the areas or work awarded.

D. Insulate drains bowls and four feet of drain pipe with jacketed fiberglass insulation to prevent condensation. Install new insulation at existing roof drains if insulation is missing or damaged.

E. Install under-deck clamps and framing to securely attach the roof drain assembly.

3.3 COMMISSIONING

A. Preparation: Perform the following checks before water-testing of drain assemblies:

1. Plumbing connections are complete.
2. Components specified to be replaced have been replaced and securely fastened.
3. There is clear space for repairing any leaks.

B. At project completion, perform these steps:

1. Remove and clean strainers.
2. Perform water-test to verify that new and existing roof drains are flowing properly and that drain piping is clear of obstructions and free of leaks.
3. Verify that insulation on new and existing roof drain assemblies is intact and covers drain bowl and pipe. Replace any damaged or missing insulation.

3.4 ADJUSTING

A. Adjust operation and correct deficiencies discovered during commissioning.

3.5 PROTECTION

A. Protect roof drains during the construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

B. Place temporary plugs in ends of incomplete piping at end of work day.

END OF SECTION 15 43 00 – PLUMBING SPECIALTIES

APPENDIX 1

ASBESTOS TEST RESULTS AND REQUIREMENTS

For

HIGH SCHOOL

MIDDLE SCHOOL

MUNSON ELEMENTARY SCHOOL

2021 Roofing Project

ASBESTOS TEST RESULTS AND REQUIREMENTS

For

HIGH SCHOOL

CTG Environmental

April 5, 2021

Mr. Bill Bare
Adam Bradley Enterprises
1540 Chagrin River Road
Gates Mills, Ohio 44040

Re: Visual evaluation, bulk sampling, and polarized light microscopy (PLM) analysis of suspect asbestos-containing roofing materials performed on the roofs of Chardon High School located at 151 Chardon Avenue in Chardon, Ohio
(CTG Project #20582-1)

Dear Mr. Bare,

On January 12 and March 22, 2021, Mr. David Meyer, Mr. Matt Swihart, and/or Mr. David Brenner, all Environmental Protection Agency (EPA) trained asbestos inspectors and State of Ohio licensed Asbestos Hazard Evaluation Specialists, representing CTG Environmental, LLC (CTG), evaluated the roofs for suspect asbestos-containing materials (ACMs) on Chardon High School located at 151 Chardon Avenue in Chardon, Ohio. The purpose of this project was to perform bulk sampling of suspect ACMs prior to the roof tear-off and replacement.

The roof consisted of numerous roof areas that were slightly different in makeup, elevation, and date of installation and application. The Client provided CTG with location drawings and information that grouped certain roof areas together based on knowledge of past roof work. CTG's on-site point of contact, Chris of Chardon High School, provided CTG personnel with a ladder to access the roof. The top, visible roofing system for the majority of Chardon High School consisted of smooth-surfaced modified bitumen roofing with aluminum roof coating applied to the top surface. The modified bitumen roofing was applied over built-up roof felts with gravel on the surface. CTG observed perlite roof insulation board, fiberboard roof panels, polyiso rigid foam insulation (ISO), fiberglass roof insulation, and/or polyethylene vapor barriers between the built-up roofing and roof decks. Corrugated metal "B-deck" was the most common structural roof deck observed when coring the various roof areas; however, CTG also observed concrete and wood roof decks.

The modified bitumen roofing was applied up the masonry walls and various roof penetrations to create a perimeter flashing. The older composite base flashing, backer felts, and wood fiber cant strips were typically still in place under the modified roofing. Roof cement was observed at all perimeter flashings, seams and penetrations. One roof (#24) had transite vents.

CTG performed the sampling in accordance with the protocol established by the Environmental Protection Agency (EPA) in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E). This protocol requires the collection of at least two samples of each "miscellaneous" material, in order to prove a suspect material is not an ACM. All the materials sampled were considered "miscellaneous" materials. Prior to renovation projects, the Occupational Safety and Health Administration (OSHA) requires that buildings be surveyed to identify ACMs, utilizing the previously mentioned protocol, as stipulated in OSHA 29 CFR 1926.1101(k)(5). CTG's licensed asbestos inspectors submitted one hundred thirteen (113) bulk samples of suspect asbestos-containing roofing materials.

CTG made the required core cuts and subsequent repairs to the roof. Samples of suspect ACM were collected with a coring tool, which was driven through the roofing materials to the roof deck substrate (where possible) as to obtain a sample containing all discrete layers. Each individual layer was placed in "zip-close" bags and assigned unique identifiers that were recorded on the bag and the bulk sampling survey sheets. Samples were submitted to Batta Laboratories, LLC in Newark, Delaware. Samples of bulk material were analyzed using PLM following the EPA Method 600/R-93/116. Batta Laboratories, LLC is a participant in the U.S. Department of Commerce, National Institute of Standards and Technology through the National Voluntary Laboratory Accreditation Program (NVLAP) for Bulk Asbestos Analysis, NVLAP No. 101032 and accreditation by the American Industrial Hygiene Association (#100448).

PLM is an optical microscopic technique used to distinguish the different types of asbestos fibers by their shape and unique optical properties. The technique is based on observing the refraction of light from the various crystalline asbestos structures and identifying the corresponding color changes through the microscope. Analytical results of greater than 1% asbestos classify a material as asbestos containing according to the EPA and State of Ohio The EPA defines a "*friable asbestos material*" *as "any material containing greater than one percent asbestos as determined using the method specified in appendix A, subpart F, 40 CFR part 763, section 1, PLM, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.*" The samples were originally quantified by visual estimation. Twenty-one (21) samples were re-analyzed utilizing the point method of quantification. Refer to Table 1, which is attached to this letter report for a list of the bulk samples, their locations, and laboratory results.

Based upon the results of the bulk sample analysis the following materials were determined to contain asbestos:

- **Built-up roof (main field of 01, 06, 11, 12, 13, 19, & 26)**
  (assume main field of 5 & 9 – not sampled due to height/access)
- **Modified roofing (main field of 17)**
- **Composite base flashing materials including felts and roof cement (all roof areas with flashings apart from the exception below)**
- **Transite vent pipes (not a roofing material).**

These roof materials were in good condition at the time of the survey. These materials were located throughout the various roof areas; however, the Client provided CTG with roof information that grouped certain roof areas together. Based on this information and the results of the field observations, **CTG considers all flashings to be asbestos-containing EXCEPT**:

- Roof areas 02, 03, 03A (different roof associated with 03 observed in the field, but not on drawing), and 04 are grouped together with no asbestos found in any of the sampled roofing materials.
- Roof area 27 (on the Client provided drawing) was sampled by CTG as "27A" and consisted of brown granular-surfaced asphalt-base roof shingles and tar paper. The shingles and tar paper were on a plywood deck and contained no asbestos.

The identified asbestos-containing roofing materials are classified by the EPA as Category I non-friable ACMs. Category I non-friable ACMs are considered non-regulated ACMs, when intact and in good condition, by the EPA and State of Ohio, per the definition contained within the EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M), which is as follows: *Regulated asbestos-containing material (RACM) means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart...* The identified asbestos-containing roofing materials were non-friable and considered non-regulated ACMs, per the NESHAPs, at the time of the survey. The asbestos-containing gray transite vent pipes are considered Category-II nonfriable ACMs and are also not RACMs in their current condition.

EPA/NESHAP asbestos notifications will be required for this roof replacement project, because the square footage of the asbestos-containing roof areas is greater than the NESHAP 5,580 square feet minimum. If a powered roof cutter is used to remove the asbestos-containing roof materials, NESHAPS states that if 5,580 square feet of asbestos-containing roofing materials are removed using a powered roof cutter, 160 square feet of RACM will be generated, therefore an EPA/NESHAP notification would be required, because these roof areas add up to greater than 5,580 square feet. The State of Ohio does not require notifications for projects, which only involve roofing materials.

In OSHA 29 CFR 1926.1101, work involving the removal of asbestos-containing "miscellaneous" materials is defined as Class II work. When the transite vent pipes and roofing materials are removed/disturbed, it must be done while meeting the requirements for Class II work.

The OSHA considers roofing materials as "miscellaneous" ACMs. In 29 CFR 1926.1101, OSHA requires workers to be trained for asbestos-containing roofing work. The installing, repairing, maintaining or removal of asbestos-containing roof cement and flashing felt are defined as "incidental" roof work. The roofing contractor must comply with 29 CFR 1926.1101(g)(11) "Alternative methods of compliance for installing, removal, repair and maintenance of certain roofing and pipeline coating materials". These requirements are summarized below:

1. At the beginning and during the work a "competent person" who is capable of identifying asbestos hazards in the work place shall conduct an inspection of the worksite and determine that the roofing material is intact and will remain intact during removal.

2. The workers performing that work must be trained in accordance with 29 CFR 1926.1101(k)(9)(viii).

3. The material shall not be sanded, abraded or ground. Manual methods, which do not render the material non-intact, shall be used.

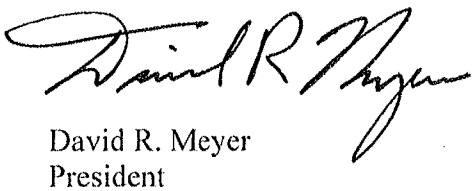
4. All material removal from the roof shall be lowered to the ground by a dust tight chute, crane or hoist by the end of the workday.

5. The contractor shall notify the building owner of the presence and location of newly discovered ACMs.

The asbestos-containing roof cement and aluminum roof coating (asphalt based) was deregulated by the OSHA on June 29, 1998 and removed from 29 CFR 1926.1101. This is one of only a few products categorized as such. Therefore, the OSHA asbestos regulations are not applicable to these two types of roofing materials. The State of Ohio, does not regulate non-friable ACMs or roofing materials.

Enclosed, please find copies of the laboratory certificates of analysis, chains of custody, roof drawings, field notes, and personnel licensing. If you have any questions regarding this report, please contact our office.

Sincerely,



David R. Meyer
President

Enclosures

Table 1
Asbestos Bulk Sampling Results
Chardon High School – Roof Areas
151 Chardon Avenue, Chardon, OH
Collected: January 12 & March 22, 2021

Sample #	Material	Location	Type & % Asbestos
58211221 01	Aluminum roof coating	Roof area 10, core #1, main field	No asbestos found
58211221 02	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 10, core #1, main field	No asbestos found
58211221 03	Gypsum roof board	Roof area 10, core #1, main field	No asbestos found
58211221 04	Built-up roof ply felt	Roof area 10, core #1, main field	No asbestos found
58211221 05	Felt (backer of roof insulation)	Roof area 10, core #1, main field	No asbestos found
58211221 06	Aluminum roof coating	Roof area 10, roof cut #2, south masonry wall flashing	Sample not submitted
58211221 07	Roof cement	Roof area 10, roof cut #2, south masonry wall flashing	No asbestos found
58211221 08	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 10, roof cut #2, south masonry wall flashing	Sample not submitted
58211221 09	Black EPDM (like vinyl)	Roof area 10, roof cut #2, south masonry wall flashing	No asbestos found
58211221 10	**Base flashing backer felt**	**Roof area 10, roof cut #2, south masonry wall flashing**	**4.25% Chrysotile**
58211221 11	Aluminum roof coating	Roof area 11, core #3, main field	Sample not submitted
58211221 12	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 11, core #3, main field	No asbestos found
58211221 13	**Built-up roof ply felt**	**Roof area 11, core #3, main field**	**5% Chrysotile**
58211221 14	Aluminum roof coating	Roof area 11, roof cut #4, north flashing to masonry wall	Sample not submitted
58211221 15	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 11, roof cut #4, north flashing to masonry wall	Sample not submitted

Sample #	Material	Location	Type & % Asbestos
58211221 16	**Composite base flashing**	**Roof area 11, roof cut #4, north flashing to masonry wall**	**4.75% Chrysotile**
58211221 17	Base flashing backer felt	Roof area 11, roof cut #4, north flashing to masonry wall	No asbestos found
58211221 18	**Roof cement**	**Roof area 11, roof cut #4, north flashing to masonry wall**	**5.75% Chrysotile**
58211221 19	Aluminum roof coating	Roof area 10, core #5, main field	Sample not submitted
58211221 20	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 10, core #5, main field	Sample not submitted
58211221 21	Backer (of Perlite roof insulation)	Roof area 10, core #5, main field	No asbestos found
58211221 22	Built-up roof ply felt	Roof area 10, core #5, main field	No asbestos found
58211221 23	Gypsum	Roof area 10, core #5, main field	No asbestos found
58211221 24	Aluminum roof coating	Roof area 16, core #6, main field	Sample not submitted
58211221 25	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 16, core #6, main field	Sample not submitted
58211221 26	Built-up roof ply felt	Roof area 16, core #6, main field	No asbestos found
58211221 27	**Roof cement**	**Roof area 16, roof cut #7, flashing to wood box of vent**	**6% Chrysotile**
58211221 28	Aluminum roof coating	Roof area 16, roof cut #7, flashing to wood box of vent	No asbestos found
58211221 29	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 16, roof cut #7, flashing to wood box of vent	No asbestos found
58211221 30	Backer felt	Roof area 16, roof cut #7, flashing to wood box of vent	No asbestos found
58211221 31	Composite base flashing	Roof area 16, roof cut #7, flashing to wood box of vent	No asbestos found
58211221 32	**Base flashing backer felt**	**Roof area 16, roof cut #7, flashing to wood box of vent**	**2% Chrysotile**
58211221 33	**Roof cement**	**Roof area 16, roof cut #7, flashing to wood box of vent**	**6.5% Chrysotile**
58211221 34	Composite base flashing	Roof area 16, roof cut #7, flashing to wood box of vent	No asbestos found

Sample #	Material	Location	Type & % Asbestos
58211221 35	**Base flashing backer felt**	**Roof area 16, roof cut #7, flashing to wood box of vent**	**10% Chrysotile**
58211221 36	Aluminum roof coating	Roof area 16, core #8	No asbestos found
58211221 37	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 16, core #8	Sample not submitted
58211221 38	Aluminum roof coating	Roof area 15, core #9	Sample not submitted
58211221 39	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 15, core #9	Sample not submitted
58211221 40	Built-up roof ply felt	Roof area 15, core #9	No asbestos found
58211221 41	Felt	Roof area 15, core #9	No asbestos found
58211221 42	**Roof cement**	**Roof area 14, roof cut #10, flashing to south masonry wall**	**3.25% Chrysotile**
58211221 43	Aluminum roof coating	Roof area 14, roof cut #10, flashing to south masonry wall	Sample not submitted
58211221 44	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 14, roof cut #10, flashing to south masonry wall	Sample not submitted
58211221 45	Backer felt	Roof area 14, roof cut #10, flashing to south masonry wall	No asbestos found
58211221 46	**Base flashing backer felt**	**Roof area 14, roof cut #10, flashing to south masonry wall**	**3% Chrysotile**
58211221 47	Aluminum roof coating	Roof area 14, core #11, main field	Sample not submitted
58211221 48	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 14, core #11, main field	Sample not submitted
58211221 49	Built-up roof ply felt	Roof area 14, core #11, main field	No asbestos found
58211221 50	Aluminum roof coating	Roof area 13, core #12, main field	No asbestos found
58211221 51	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 13, core #12, main field	No asbestos found
58211221 52	**Built-up roof ply felt**	**Roof area 13, core #12, main field**	**10% Chrysotile**

Sample #	Material	Location	Type & % Asbestos
58211221 53	Black visqueen vapor barrier	Roof area 13, core #12, main field	No asbestos found
58211221 54	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 13, roof cut # 13, flashing	Sample not submitted
58211221 55	Aluminum roof coating	Roof area 13, core #14, main field	Sample not submitted
58211221 56	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 13, core #14, main field	Sample not submitted
58211221 57	**Built-up roof ply felt**	**Roof area 13, core #14, main field**	**10% Chrysotile**
58211221 58	Black visqueen vapor barrier	Roof area 13, core #14, main field	No asbestos found
58211221 59	**Roof cement**	**Roof area 13, roof cut #15, flashing to metal box of fan**	**5% Chrysotile**
58211221 60	Aluminum roof coating	Roof area 13, roof cut #15, flashing to metal box of fan	Sample not submitted
58211221 61	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 13, roof cut #15, flashing to metal box of fan	Sample not submitted
58211221 62	**Flashing felt**	**Roof area 13, roof cut #15, flashing to metal box of fan**	**10% Chrysotile**
58211221 63	**Base flashing backer felt**	**Roof area 13, roof cut #15, flashing to metal box of fan**	**3.8% Chrysotile**
58211221 64	**Built-up roof ply felt**	**Roof area 19, core #16, main field**	**10% Chrysotile**
58211221 65	Black visqueen vapor barrier	Roof area 19, core #16, main field	No asbestos found
58211221 66	Composite base flashing – smooth surface	Roof area 19, roof cut #17, west wall flashing to masonry wall	No asbestos found
58211221 67	**Base flashing backer felt**	**Roof area 19, roof cut #17, west wall flashing to masonry wall**	**20% Chrysotile**
58211221 68	**Base flashing backer felt**	**Roof area 19, roof cut #17, west wall flashing to masonry wall**	**15% Chrysotile**
58211221 69	**Roof cement**	**Roof area 19, roof cut #17, west wall flashing to masonry wall**	**5% Chrysotile**
58211221 70	Aluminum roof coating	Roof area 06, roof cut #18, east flashing to masonry wall	No asbestos found

Sample #	Material	Location	Type & % Asbestos
58211221 71	**Roof cement**	**Roof area 06, roof cut #18, east flashing to masonry wall**	**5.75% Chrysotile**
58211221 72	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 06, roof cut #18, east flashing to masonry wall	No asbestos found
58211221 73	Vinyl backer	Roof area 06, roof cut #18, east flashing to masonry wall	No asbestos found
58211221 74	Felt/foam	Roof area 06, roof cut #18, east flashing to masonry wall	No asbestos found
58211221 75	Aluminum roof coating	Roof area 06, core #19, main field	Sample not submitted
58211221 76	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 06, core #19, main field	Sample not submitted
58211221 77	**Built-up roof ply felt**	**Roof area 06, core #19, main field**	**10% Chrysotile**
58211221 78	Black visqueen vapor barrier	Roof area 06, core #19, main field	No asbestos found
58211221 79	**Roof cement**	**Roof area 07, roof cut #20, flashing to metal box of power roof fan**	**15% Chrysotile**
58211221 80	Aluminum roof coating	Roof area 07, roof cut #20, flashing to metal box of power roof fan	Sample not submitted
58211221 81	**Modified-type, top layer**	**Roof area 07, roof cut #20, flashing to metal box of power roof fan**	**10% Chrysotile**
58211221 82	Modified-type, bottom layer	Roof area 07, roof cut #20, flashing to metal box of power roof fan	No asbestos found
58211221 83	Aluminum roof coating	Roof area 07, core #21, main field	Sample not submitted
58211221 84	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 07, core #21, main field	Sample not submitted
58211221 85	Built-up roof ply felt	Roof area 07, core #21, main field	No asbestos found
58211221 86	Aluminum roof coating	Roof area 08, core #22, main field	Sample not submitted
58211221 87	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 08, core #22, main field	Sample not submitted

Sample #	Material	Location	Type & % Asbestos
58211221 88	Built-up roof ply felt	Roof area 08, core #22, main field	No asbestos found
58211221 89	Gray lightweight concrete	Roof area 08, core #22, main field	No asbestos found
58211221 90	Black felt	Roof area 08, core #22, main field	No asbestos found
58211221 91	**Roof cement**	**Roof area 08, roof cut #23, north flashing to masonry wall**	**10% Chrysotile**
58211221 92	Aluminum roof coating	Roof area 08, roof cut #23, north flashing to masonry wall	Sample not submitted
58211221 93	Smooth-surfaced modified bitumen roof, cap sheet (same as main field)	Roof area 08, roof cut #23, north flashing to masonry wall	Sample not submitted
58211221 94	Backer felt	Roof area 08, roof cut #23, north flashing to masonry wall	No asbestos found
58211221 95	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 08, roof cut #23, north flashing to masonry wall	No asbestos found
58211221 96	Vinyl flashing	Roof area 08, roof cut #23, north flashing to masonry wall	No asbestos found
58211221 97	**Roof cement**	**Roof area 08, roof cut #23, north flashing to masonry wall**	**10% Chrysotile**
01-MF-A	Aluminum roof coating	Roof area 01, main field, over metal roof deck	No asbestos found
01-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 01, main field, over metal roof deck	No asbestos found
01-MF-C	Wood fiber RRI	Roof area 01, main field, over metal roof deck	Sample not submitted
01-MF-D	**Built-up roof ply felt**	**Roof area 01, main field, over metal roof deck**	**2.25% Chrysotile**
01-MF-E	Fiberglass RRI	Roof area 01, main field, over metal roof deck	Sample not submitted
01-MF-F	Black polyethylene vapor barrier	Roof area 01, main field, over metal roof deck	No asbestos found
02-MF-A	Aluminum roof coating	Roof area 02, main field, over metal roof deck	No asbestos found

Sample #	Material	Location	Type & % Asbestos
02-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 02, main field, over metal roof deck	No asbestos found
02-MF-C	Perlite RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
02-MF-D	ISO RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
02-MF-E	Built-up roof ply felt	Roof area 02, main field, over metal roof deck	No asbestos found
02-MF-F	Fiberglass RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
03-MF-A	Aluminum roof coating	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-C	Perlite RRI	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-D	Built-up roof ply felt	Roof area 03, main field, over metal roof deck	No asbestos found
03-MF-E	Wood fiber RRI	Roof area 03, main field, over metal roof deck	Sample not submitted
03A-MF-A	Aluminum roof coating	Roof area 03A (not listed on drawing), main field, over metal roof deck	Sample not submitted
03A-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 03A (not listed on drawing), main field, over metal roof deck	Sample not submitted
03A-MF-C	Perlite RRI	Roof area 03A (not listed on drawing), main field, over metal roof deck	Sample not submitted
03A-MF-D	Built-up roof ply felt	Roof area 03A (not listed on drawing), main field, over metal roof deck	No asbestos found
03A-MF-E	Wood fiber RRI	Roof area 03A (not listed on drawing), main field, over metal roof deck	Sample not submitted
04-MF-A	Aluminum roof coating	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-MF-C	Smooth-surfaced modified bitumen roof or built-up roof	Roof area 04, main field, over concrete roof deck	No asbestos found

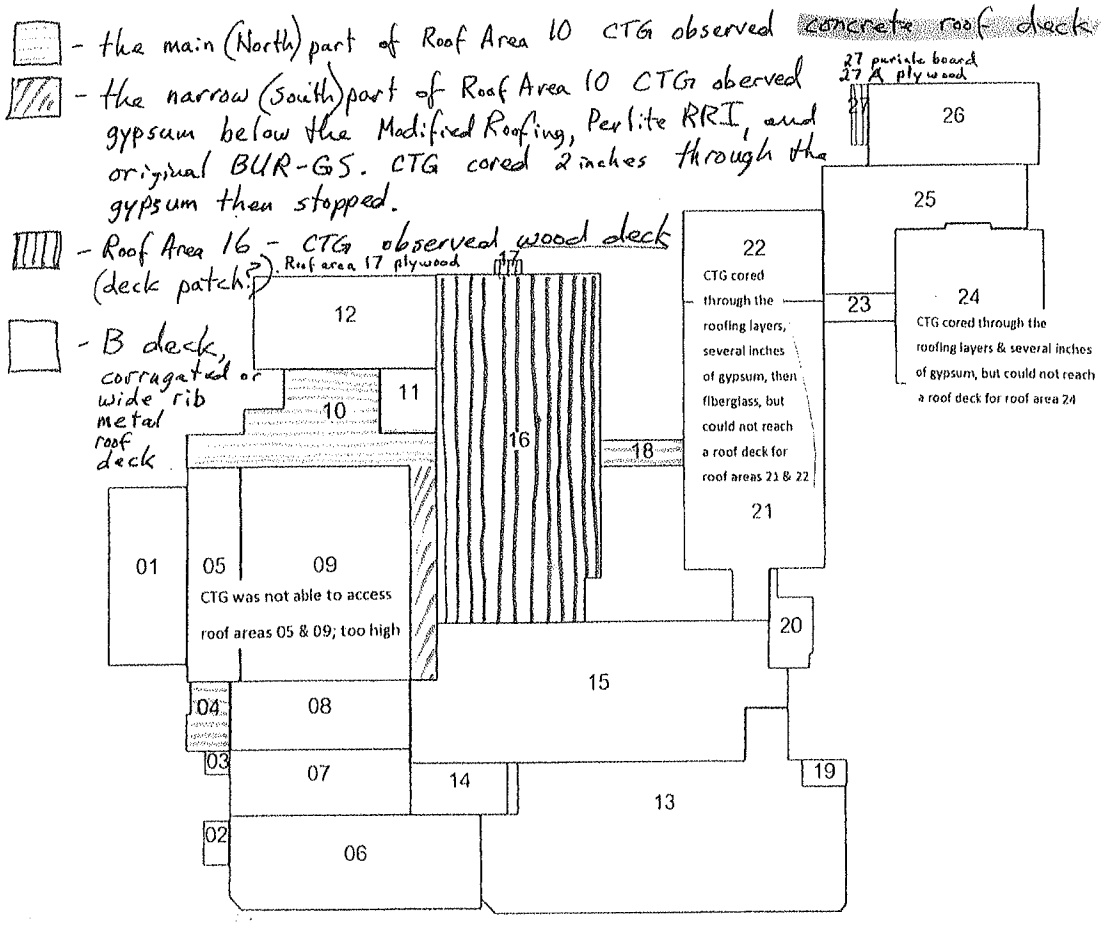
Sample #	Material	Location	Type & % Asbestos
04-MF-D	Wood fiber RRI	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-Flashing-A	Black roof cement	Roof area 04, flashing to masonry wall	No asbestos found
04-Flashing-B	Aluminum roof coating	Roof area 04, flashing to masonry wall	Sample not submitted
04-Flashing-C	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 04, flashing to masonry wall	Sample not submitted
04-Flashing-D	Smooth-surfaced modified bitumen roof, older	Roof area 04, flashing to masonry wall	No asbestos found
04-Flashing-E	Backer felt	Roof area 04, flashing to masonry wall	No asbestos found
04-Flashing-F	Backer felt	Roof area 04, flashing to masonry wall	No asbestos found
04-Flashing-G	Wood fiber cant strip	Roof area 04, flashing to masonry wall	Sample not submitted
12-MF-A	Aluminum roof coating	Roof area 12, main field	Sample not submitted
12-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 12, main field	Sample not submitted
12-MF-C	Perlite RRI	Roof area 12, main field	Sample not submitted
12-MF-D	**Built-up roof ply felt**	**Roof area 12, main field**	**8.25% Chrysotile**
12-MF-E	Fiberglass RRI	Roof area 12, main field	Sample not submitted
17-MF-A	**Smooth-surfaced modified bitumen roof, cap sheet**	**Roof area 17, main field, over plywood**	**3.75% Chrysotile**
18-MF-A	Aluminum roof coating	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-C	Wood fiber RRI	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-D	Built-up roof ply felt	Roof area 18, main field, over concrete roof deck	No asbestos found
18-MF-E	Black filler	Roof area 18, main field, over concrete roof deck	No asbestos found
20-MF-A	Built-up roof ply felt	Roof area 20, main field, over metal roof deck	No asbestos found
20-MF-B	Fiberglass RRI	Roof area 20, main field, over metal roof deck	Sample not submitted

Sample #	Material	Location	Type & % Asbestos
21-MF-A	Built-up roof ply felt	Roof area 21, main field, could not reach deck	No asbestos found
21-MF-B	Gypsum	Roof area 21, main field, could not reach deck	No asbestos found
21-MF-C	Fiberglass RRI	Roof area 21, main field, could not reach deck	Sample not submitted
21-Flashing-A	**Black roof cement**	**Roof area 21, roof cement from flashing of vent**	**6.75% Chrysotile**
22-MF-A	*Aluminum roof coating*	*Roof area 22, main field, could not reach deck*	*1.75% Chrysotile – Reanalyzed (see last 3 rows at the end of this chart)*
22-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 22, main field, could not reach deck	No asbestos found
22-MF-C	Built-up roof ply felt	Roof area 22, main field, could not reach deck	No asbestos found
22-MF-D	Gypsum	Roof area 22, main field, could not reach deck	No asbestos found
22-MF-E	Fiberglass RRI	Roof area 22, main field, could not reach deck	Sample not submitted
23-MF-A	Granular-surfaced modified bitumen roof, cap sheet	Roof area 23, main field, metal roof deck	No asbestos found
23-MF-B	Smooth-surfaced modified bitumen roof or built-up roof	Roof area 23, main field, metal roof deck	No asbestos found
23-MF-C	ISO RRI	Roof area 23, main field, metal roof deck	Sample not submitted
23-MF-D	Perlite RRI	Roof area 23, main field, metal roof deck	Sample not submitted
24-MF-A	Aluminum roof coating	Roof area 24, main field	Sample not submitted
24-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 24, main field	Sample not submitted
24-MF-C	Wood fiber RRI	Roof area 24, main field	Sample not submitted
24-MF-D	Built-up roof ply felt	Roof area 24, main field	No asbestos found
24-MF-E	Gypsum	Roof area 24, main field	No asbestos found
24-Flashing-A	**Black roof cement**	**Roof area 24, AC Unit flashing**	**3.75% Chrysotile**
24-Flashing-B	Smooth-surfaced modified bitumen roof	Roof area 24, AC Unit flashing	No asbestos found

Sample #	Material	Location	Type & % Asbestos
24-Flashing-C	Tar	Roof area 24, AC Unit flashing	No asbestos found
24-Flashing-D	Wood fiber	Roof area 24, AC Unit flashing	Sample not submitted
24-Flash 2-A	Aluminum roof coating	Roof area 24, flashing to masonry wall	No asbestos found
24-Flash 2-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 24, flashing to masonry wall	No asbestos found
24-Flash 2-C	Smooth-surfaced modified bitumen roof	Roof area 24, flashing to masonry wall	No asbestos found
24-Flash 2-D	Base flashing	Roof area 24, flashing to masonry wall	No asbestos found
24-Flash 2-E	**Backer felt**	**Roof area 24, flashing to masonry wall**	**12% Chrysotile**
24-Flash 2-F	**Backer felt**	**Roof area 24, flashing to masonry wall**	**5.5% Chrysotile**
24-Flash 2-G	Wood fiber cant strip	Roof area 24, flashing to masonry wall	Sample not submitted
24-Transite-A	**Transite vent**	**Roof area 24**	**15% Chrysotile**
25-MF-A	Aluminum roof coating	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-C	Perlite RRI	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-D	Built-up roof ply felt	Roof area 25, main field, metal roof deck	No asbestos found
25-MF-E	Perlite RRI	Roof area 25, main field, metal roof deck	Sample not submitted
26-MF-A	Aluminum roof coating	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-C	Perlite RRI	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-D	**Built-up roof ply felt**	**Roof area 26, main field, metal roof deck**	**10% Chrysotile**
26-MF-E	Perlite RRI	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-F	Black polyethylene vapor barrier	Roof area 26, main field, metal roof deck	No asbestos found

Sample #	Material	Location	Type & % Asbestos
26-Flashing-A	**Black roof cement**	**Roof area 26, flashing**	**6.25% Chrysotile**
27-MF-A	Aluminum roof coating	Roof area 27, main field, particleboard deck	Sample not submitted
27-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 27, main field, particleboard deck	Sample not submitted
27-MF-C	Granular-surfaced modified bitumen roof	Roof area 27, main field, particleboard deck	No asbestos found
27A-MF-A	Brown asphalt shingle	Roof area 27A, main field, plywood deck	No asbestos found
27A-MF-B	Tar paper	Roof area 27A, main field, plywood deck	No asbestos found
22-MF-A1	Aluminum roof coating	Roof area 22, main field	No asbestos found
22-MF-A2	Roof cement	Roof area 22, main field	No asbestos found
22-MF-B(2)	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 22, main field	No asbestos found

Roof Decks


- the main (North) part of Roof Area 10 CTG observed concrete roof deck
- the narrow (South) part of Roof Area 10 CTG observed gypsum below the Modified Roofing, Perlite RRI, and original BUR-GS. CTG cored 2 inches through the gypsum then stopped.
- Roof Area 16 - CTG observed wood deck (deck patch?)
- B deck, corrugated or wide rib metal roof deck
27 perlite board
27A plywood
Roof area 17 plywood
CTG cored through the roofing layers, several inches of gypsum, then fiberglass, but could not reach a roof deck for roof areas 21 & 22
CTG cored through the roofing layers & several inches of gypsum, but could not reach a roof deck for roof area 24
CTG was not able to access roof areas 05 & 09; too high
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09
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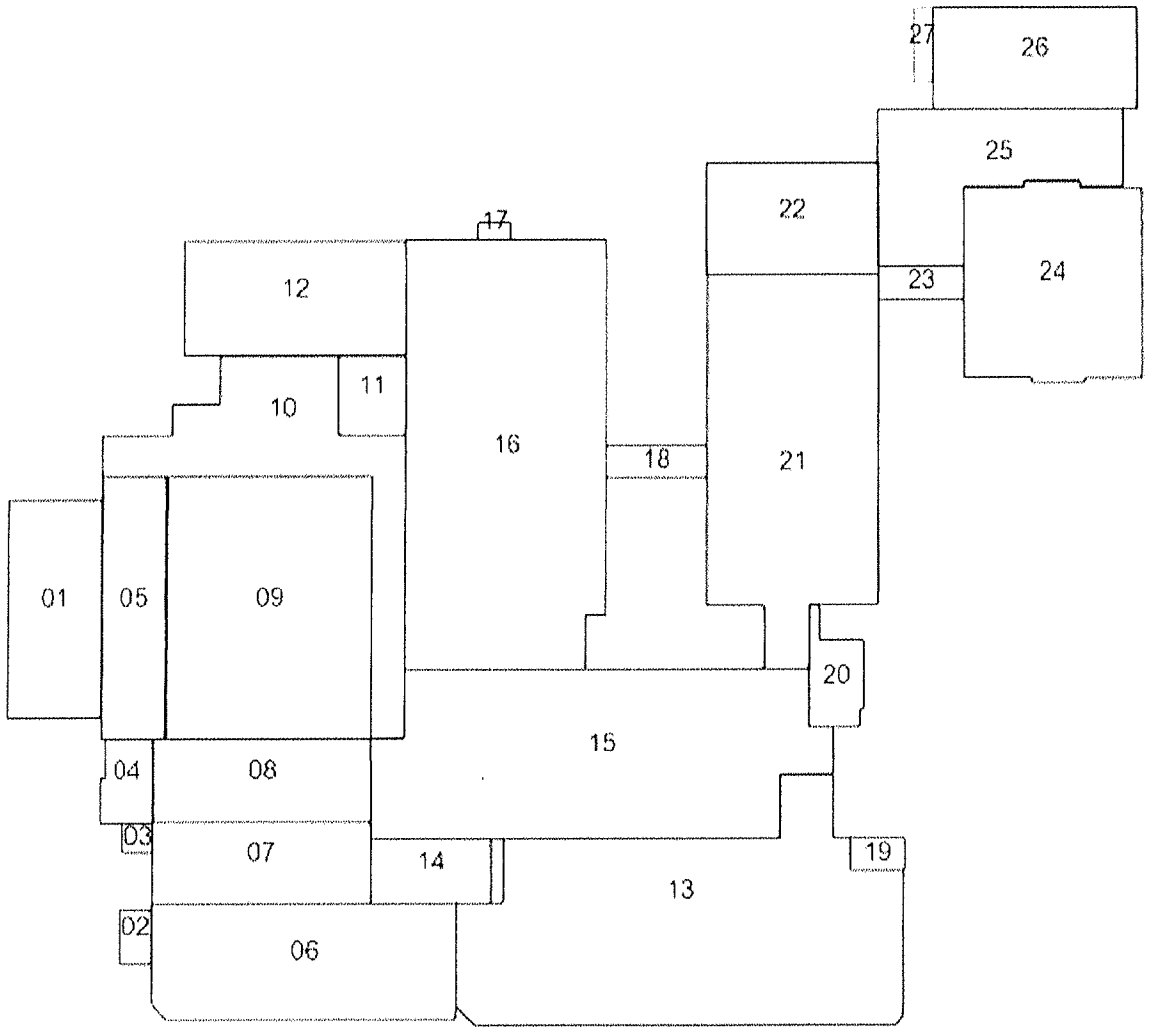
Chardon High School Roof Plan

All roof areas have asbestos-containing main fields and/or flashings **except**: 02, 03, 04, 27
Main fields contain asbestos: 01, 05, 06, 09, 11, 12, 13, 17, 19, 26
Asbestos-containing flashings: 01, 05-26
Asbestos-containing transite vent pipes observed on roof area 24



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NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/27/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582 ADAM BRADLEY, CHARDON H.S

Date Sampled: 01/12/21
Sampled By: CLIENT
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1178601	582 11221 01	Roof Area 10 Core #1	Aluminum Roof Coating	No	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1178602	582 11221 02	Roof Area 10 Core #1	Modified Roofing	No	Firm Homogeneous	Grey	5% Synthetic Fiber 3% Fiber Glass 92% Non-fibrous Material	No Asbestos Found
1178603	582 11221 03	Roof Area 10 Core #1	Gypsum Roof Board	No	Fibrous Homogeneous	Grey	5% Fiber Glass 95% Non-fibrous Material	No Asbestos Found
1178604	582 11221 04	Roof Area 10 Core #1	Built-Up Roof	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1178605	582 11221 05	Roof Area 10 Core #1	Felt	No	Fibrous Firm Homogeneous	Black	30% Fiber Glass 70% Non-fibrous Material	No Asbestos Found

NOTE 1: *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

NOTE 2: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

NOTE 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: JJF and REP

REVIEWED BY: _____

QA/QC Officer/Signatory

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Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178606	582 11221 07	Roof Area 10 Roof Cut #2	Roof Cement	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178607	582 11221 09	Roof Area 10 Roof Cut #2	EPDM	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178608	582 11221 10	Roof Area 10 Roof Cut #2	Base Flashing	No	Soft Homogeneous	Black	95.75% Non-fibrous Material	4.25% Chrysotile Total Asbestos = 4.25%	Point Count
1178609	582 11221 13	Roof Area 11 Core #3	Built-Up Roof	No	Firm Homogeneous	Black	95% Non-fibrous Material	5% Chrysotile Total Asbestos = 5%	Point Count
1178610	582 11221 16	Roof Area 11 Roof Cut #4	Base Flashing	No	Firm Homogeneous	Black	95.25% Non-fibrous Material	4.75% Chrysotile Total Asbestos = 4.75%	Point Count

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ANALYST: JJF and REP

REVIEWED BY: RLP

QA/QC Officer/Signatory

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A Certified MBE Company

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Tel. (302)737-3376 Fax (302) 737-5764

Web: http://www.battaenv.com E-mail: battaenv@battaenv.com

EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/27/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582 ADAM BRADLEY, CHARDON H.S

Date Sampled: 01/12/21
Sampled By: CLIENT
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178611	582 11221 17	Roof Area 11 Roof Cut #4	Backer Felt	No	Fibrous Homogeneous	Black	30% Cellulose 5% Fiber Glass 65% Non-fibrous Material	No Asbestos Found	
1178612	582 11221 18	Roof Area 11 Roof Cut #4	Roof Cement	No	Firm Homogeneous	Black	94.25% Non-fibrous Material	5.75% Chrysotile Total Asbestos = 5.75%	Point Count
1178613	582 11221 21	Roof Area 10 Core #5	Felt	No	Fibrous Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found	
1178614	582 11221 22	Roof Area 10 Core #5	Built-Up Roof	No	Firm Homogeneous	Black	10% Cellulose 90% Non-fibrous Material	No Asbestos Found	
1178615	582 11221 23	Roof Area 10 Core #5	Gypsum	No	Soft Homogeneous	Grey	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	

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ANALYST: JJF and REP

REVIEWED BY: RLQ

QA/QC Officer/Signatory

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Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178616	582 11221 26	Roof Area 16 Core #6	Built-Up Roof	No	Fibrous Firm Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found	
1178617	582 11221 27	Roof Area 16 Roof Cut #7	Roof Cement	No	Firm Homogeneous	Black	94% Non-fibrous Material	6% Chrysotile Total Asbestos = 6%	Point Count
1178618	582 11221 28	Roof Area 16 Roof Cut #7	Aluminum Roof Coating	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178619	582 11221 29	Roof Area 16 Roof Cut #7	Modified Roofing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178620	582 11221 30	Roof Area 16 Roof Cut #7	Backer Felt	No	Fibrous Firm Homogeneous	Black	7% Cellulose 93% Non-fibrous Material	No Asbestos Found	

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Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178621	582 11221 31	Roof Area 16 Roof Cut #7	Composite Base Flashing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178622	582 11221 32	Roof Area 16 Roof Cut #7	Backer Felt	No	Fibrous Firm Homogeneous	Black	98% Non-fibrous Material	2% Chrysotile Total Asbestos = 2%	Point Count
1178623	582 11221 33	Roof Area 16 Roof Cut #7	Roof Cement	No	Firm Homogeneous	Black	93.5% Non-fibrous Material	6.5% Chrysotile Total Asbestos = 6.5%	Point Count
1178624	582 11221 34	Roof Area 16 Roof Cut #7	Composite Base Flashing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178625	582 11221 35	Roof Area 16 Roof Cut #7	Backer Felt	No	Fibrous Homogeneous	Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	

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REVIEWED BY: PLM

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Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178626	582 11221 36	Roof Area 16 Core #8	Aluminum Roof Coating	No	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found	
1178627	582 11221 40	Roof Area 15 Core #9	Built-Up Roof	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178628	582 11221 41	Roof Area 15 Core #9	Felt	No	Fibrous Homogeneous	Black	40% Cellulose 35% Fiber Glass 25% Non-fibrous Material	No Asbestos Found	
1178629	582 11221 42	Roof Area 14 Roof Cut #10	Roof Cement	No	Firm Homogeneous	Black	10% Cellulose 86.75% Non-fibrous Material	3.25% Chrysotile Total Asbestos = 3.25%	Point Count
1178630	582 11221 45	Roof Area 14 Roof Cut #10	Flashing Backing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	

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Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178631	582 11221 46	Roof Area 14 Roof Cut #10	Base Flashing Backer Felt	No	Fibrous Homogeneous	Black	10% Cellulose 87% Non-fibrous Material	3% Chrysotile Total Asbestos = 3%	Point Count
1178632	582 11221 49	Roof Area 14 Roof Core #11	Built-Up Roof	No	Fibrous Firm Homogeneous	Black	15% Cellulose 5% Fiber Glass 80% Non-fibrous Material	No Asbestos Found	
1178633	582 11221 50	Roof Area 13 Core #12	Aluminum Roof Coating	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178634	582 11221 51	Roof Area 13 Core #12	Modified Roofing	No	Fibrous Firm Homogeneous	Black Silver	15% Synthetic Fiber 2% Cellulose 83% Non-fibrous Material	No Asbestos Found	
1178635	582 11221 52	Roof Area 13 Core #12	Built-Up Roof	No	Fibrous Firm Homogeneous	Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	

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Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178636	582 11221 53	Roof Area 13 Core #12	Vapor Barrier	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178637	582 11221 57	Roof Area 13 Core #14	Built-Up Roof	No	Fibrous Firm Homogeneous	Black	20% Cellulose 70% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	
1178638	582 11221 58	Roof Area 13 Core #14	Vapor Barrier	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178639	582 11221 59	Roof Area 13 Roof Cut #15	Roof Cement	No	Firm Homogeneous	Black Silver	3% Cellulose 92% Non-fibrous Material	5% Chrysotile Total Asbestos = 5%	Point Count
1178640	582 11221 62	Roof Area 13 Roof Cut #15	Felt Flashing	No	Fibrous Firm Homogeneous	Black	15% Cellulose 75% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	

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Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1178641	582 11221 63	Roof Area 13 Roof Cut #15	Backer Felt	No	Firm Homogeneous	Black	10% Cellulose 86.2% Non-fibrous Material	3.8% Chrysotile Total Asbestos = 3.8%	Point Count
1178642	582 11221 64	Roof Area 19 Core #16	Built-Up Roof	No	Fibrous Firm Homogeneous	Black Brown	15% Cellulose 75% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	
1178643	582 11221 65	Roof Area 19 Core #16	Vapor Barrier	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1178644	582 11221 66	Roof Area 19 Roof Cut #17	Composite Base Flashing	n/a	Firm Homogeneous	Black	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	
1178645	582 11221 67	Roof Area 19 Roof Cut #17	Base Flashing Backer Felt	n/a	Fibrous Homogeneous	Brown	20% Cellulose 60% Non-fibrous Material	20% Chrysotile Total Asbestos = 20%	

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1178646	582 11221 68	Roof Area 19 Roof Cut #17	Base Flashing Backer Felt	n/a	Fibrous Homogeneous	Brown	20% Cellulose 65% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%	
1178647	582 11221 69	Roof Area 19 Roof Cut #17	Roof Cement	No	Firm Homogeneous	Black	95% Non-fibrous Material	5% Chrysotile Total Asbestos = 5%	Point Count
1178648	582 11221 70	Roof Area 06 Roof Cut #18	Aluminum Roof Coating	No	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found	
1178649	582 11221 71	Roof Area 06 Roof Cut #18	Roof Cement	No	Soft Homogeneous	Grey Black	94.25% Non-fibrous Material	5.75% Chrysotile Total Asbestos = 5.75%	Point Count
1178650	582 11221 72	Roof Area 06 Roof Cut #18	Modified Roofing	No	Fibrous Firm Homogeneous	Black	5% Synthetic Fiber 95% Non-fibrous Material	No Asbestos Found	

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*Organically-bound, nonfriable material may interfere with the accurate and reproducible quantification of asbestos. In these cases, the EPA recommends further analysis by a matrix-reduction method. Batta recommends the NY ELAP Item 198.6/198.4 over the Chatfield method. When point count techniques are utilized on organically-bound, nonfriable materials without the EPA-recommended matrix reduction steps, Batta Laboratories assumes no responsibility regarding the accuracy or precision associated with these results. In these cases, Batta employs a modified version of the EPA point count method.

*WRTA refers to a group of fibrous Amphiboles typically associated with 'Libby Amphibole'. Within this classification are: winchite, richterite, tremolite, and actinolite.

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NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/27/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582 ADAM BRADLEY, CHARDON H.S

Date Sampled: 01/12/21
Sampled By: CLIENT
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1178651	582 11221 73	Roof Area 06 Roof Cut #18	Vinyl Backer	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1178652	582 11221 74	Roof Area 06 Roof Cut #18	Felt/Foam	No	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found
1178653	582 11221 77	Roof Area 06 Roof Cut #19	Built-Up Roof	No	Firm Homogeneous	Black	15% Cellulose 75% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%
1178654	582 11221 78	Roof Area 06 Roof Cut #19	Vapor Barrier	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1178655	582 11221 79	Roof Area 07 Roof Cut #20	Roof Cement	No	Soft Homogeneous	Grey Black	85% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%

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ANALYST: JJF 8:10 REP

REVIEWED BY: RM

QA/QC Officer/Signatory

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CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/27/21

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BLI Project #: R102515
Project Name: CTG ENVIRO-20582 ADAM BRADLEY, CHARDON H.S

Date Sampled: 01/12/21
Sampled By: CLIENT
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1178656	582 11221 81	Roof Area 07 Roof Cut #20	Modified Top Layer	No	Firm Homogeneous	Grey Silver	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%
1178657	582 11221 82	Roof Area 07 Roof Cut #20	Modified Bottom Layer	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1178658	582 11221 85	Roof Area 07 Core #21	Built-Up Roof	No	Firm Homogeneous	Black	7% Cellulose 93% Non-fibrous Material	No Asbestos Found
1178659	582 11221 88	Roof Area 08 Core #22	Built-Up Roof	No	Fibrous Homogeneous	Black	30% Fiber Glass 70% Non-fibrous Material	No Asbestos Found
1178660	582 11221 89	Roof Area 08 Core #22	Concrete	No	Cementitious Homogeneous	Grey	100% Non-fibrous Material	No Asbestos Found

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NOTE: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

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ANALYST: JJF and REP

REVIEWED BY: RM

QA/QC Officer/Signatory

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Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/27/21

Sampling Data

Date Sampled: 01/12/21
BLI Project #: R102515
Sampled By: CLIENT
Project Name: CTG ENVIRO-20582 ADAM BRADLEY, CHARDON H.S
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1178661	582 11221 90	Roof Area 08 Core #22	Felt	No	Fibrous Homogeneous	Black	30% Fiber Glass 70% Non-fibrous Material	No Asbestos Found
1178662	582 11221 91	Roof Area 08 Cut #23	Roof Cement	No	Firm Homogeneous	Grey Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%
1178663	582 11221 94	Roof Area 08 Cut #23	Backer Felt	No	Fibrous Homogeneous	Black	15% Fiber Glass 85% Non-fibrous Material	No Asbestos Found
1178664	582 11221 95	Roof Area 08 Cut #23	Modified Roofing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1178665	582 11221 96	Roof Area 08 Cut #23	Flashing	No	Fibrous Firm Homogeneous	Black	3% Synthetic Fiber 97% Non-fibrous Material	No Asbestos Found

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ANALYST: JJF and REP

REVIEWED BY: RLP

QA/QC Officer/Signatory

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Date Sampled: 01/12/21
Sampled By: CLIENT
Date Analyzed: 01/26/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1178666	582 11221 97	Roof Area 08 Cut #23	Roof Cement	No	Firm Homogeneous	Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%

NOTE: *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

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ANALYST: JJF and REP

REVIEWED BY: RLQ

QA/QC Officer/Signatory

3

batta LABORATORIES

NVLAP Lab Code: 101032-0

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AIHA LAP, LLC: 100448
NY ELAP: 11993
EPA Lab: DE004
MD Lab ID: 263

Page 1 of 1

CHAIN OF CUSTODY

BL Project # : _____

Customer Billing Information:	Shipping Information	Turnaround Times (check one; refer to notes*)	Method of Payment
Name: CTG Environmental, LLC	☐ Picked up by BATTA ☐ Delivered by customer ☑ Shipped by customer	☐ 3 Hours / Rush (Note 1) ☐ 24 Hours (Note 2) ☐ 48 Hours (Note 3) ☒ 72 Hours (Note 4) ☐ 5-10 Days (Note 5) ☐ 5 Days (For Wholesale Clients Only)	☐ Cash ☐ Visa/MasterCard/Discover ☐ Money Order ☐ Purchase Order # ☐ Check # ☐ Other
Billing Address 1: 4407 Brookpark Road			
Billing Address 2: Cleveland, Ohio 44134			
Phone: 216-661-6696			
Email: dmeyer@ctgenvironmental.com			
Results To: Dave Meyer			

* Notes Regarding Turnaround Times (TATs)
1 Specific TATs depend on the test requested. TATs may not be available for all types of analysis. Client must make arrangements with lab to guarantee TAT. Premium rate will apply.
2 Unless a specific time is requested, results are guaranteed by 5 p.m. on the following business day. The turnaround time of 24 hours may not be available with all analysis.
3 Unless a specific time is requested, results are guaranteed by 5p.m. on the 2nd business day.
4 Unless a specific time is requested, results are guaranteed by 5 p.m. on the 3rd business day.
5 Unless a specific time is requested, results are guaranteed before 5 p.m. of the 10th business day.

☐ Unit Price/Quote
☐ Total Payment
☐ Reference #:

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste ? Will results be used for disposal in NJ?	Project #:	Sampled By:
Adam Bradley	Chardon H.S.	Yes ☐ No ☒	20582	Dave Brenner / Matt Swihart

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air /Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
1178601		see bulk sampling sheets						BULK	PLM			
1178666		note: 2 samples are in one bag -89 and -90										

66 PLM Bulk

Special Instructions From Client: Only analyze material listed on Bag or Sample Sheet

Sample Relinquished By: X [signature] Date: 1-20-21 Time: 1600

Sample Received By: [signature] Date: 1/21/21 Time: 1340

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	Field Samples Acceptable ☐ Yes ☐ No ☐ On Ice
			Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402: in accordance with these NIOSH methods, two field blanks. (or 10% of the number of field samples submitted, whichever is greater) must be submitted and be analyzed with field samples.

For solid waste samples: Before solid waste materials such as soil, ash, sludge, dredge spoils, etc. are disposed in New Jersey, they must undergo analysis following TCLP protocol. BATTA Labs is not responsible for waste disposal misrepresentations on this document.
Document Control Item AM5

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 In conjunction with Batta SOP

Report Date: 03/29/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191195	01-MF-A	Roof Area 01 - Main Field - Over Metal Roof Deck	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	
1191196	01-MF-B	Roof Area 01 - Main Field - Over Metal Roof Deck	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Fibrous Soft Homogeneous	Black Silver	5% Cellulose 10% Fiber Glass 2% Synthetic Fiber 83% Non-fibrous Material	No Asbestos Found	
1191197	01-MF-D	Roof Area 01 - Main Field - Over Metal Roof Deck	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Black	10% Cellulose 87.75% Non-fibrous Material	2.25% Chrysotile Total Asbestos = 2.25%	Point Count
1191198	01-MF-F	Roof Area 01 - Main Field - Over Metal Roof Deck	Polyethylene Vapor Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1191199	02-MF-A	Roof Area 02 - Main Field - Over Metal Roof Deck	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	

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Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

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ANALYST: PMG

REVIEWED BY: AY

QA/QC Officer/Signatory

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Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1191200	02-MF-B	Roof Area 02 - Main Field - Over Metal Roof Deck	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Soft Homogeneous	Black Silver	3% Cellulose 97% Non-fibrous Material	No Asbestos Found
1191201	02-MF-E	Roof Area 02 - Main Field - Over Metal Roof Deck	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Silver	20% Cellulose 80% Non-fibrous Material	No Asbestos Found
1191202	03-MF-D	Roof Area 03 - Main Field - Over Metal Roof Deck	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Black	20% Cellulose 80% Non-fibrous Material	No Asbestos Found
1191203	04-MF-C	Roof Area 04 - Main Field - Over Concrete Roof Deck	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Fibrous Soft Homogeneous	Black	20% Cellulose 10% Fiber Glass 70% Non-fibrous Material	No Asbestos Found
1191204	04-FLASHING-A	Roof Area 04 - Flashing to Masonry Wall	Roof Cement	n/a	Soft Homogeneous	Black	10% Cellulose 90% Non-fibrous Material	No Asbestos Found

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Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191205	04-FLASHING-D	Roof Area 04 - Flashing to Masonry Wall	Smooth-Surfaced Modified Bitumen Roof - Older	n/a	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	
1191206	04-FLASHING-E	Roof Area 04 - Flashing to Masonry Wall	Backer Felt	n/a	Fibrous Soft Homogeneous	Black	10% Cellulose 30% Fiber Glass 60% Non-fibrous Material	No Asbestos Found	
1191207	04-FLASHING-F	Roof Area 04 - Flashing to Masonry Wall	Backer Felt	n/a	Fibrous Soft Homogeneous	Black	7% Cellulose 30% Fiber Glass 63% Non-fibrous Material	No Asbestos Found	
1191208	12-MF-D	Roof Area 12 - Main Field	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Black	20% Cellulose 71.75% Non-fibrous Material	8.25% Chrysotile Total Asbestos = 8.25%	Point Count
1191209	17-MF-A	Roof Area 17 - Main Field - Over Plywood	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Fibrous Soft Homogeneous	Black	96.25% Non-fibrous Material	3.75% Chrysotile Total Asbestos = 3.75%	Point Count

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Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191215	21-FLASHING-A	Roof Area 21 - Roof Cement from Flashing of Vent	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	93.25% Non-fibrous Material	6.75% Chrysotile Total Asbestos = 6.75%	Point Count
1191216	22-MF-A	Roof Area 22 - Main Field - Could not Reach Deck	Aluminum Roof Coating	n/a	Soft Homogeneous	Black	98.25% Non-fibrous Material	1.75% Chrysotile Total Asbestos = 1.75%	Point Count
1191217	22-MF-B	Roof Area 22 - Main Field - Could not Reach Deck	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Fibrous Soft Homogeneous	Black Silver	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	
1191218	22-MF-C	Roof Area 22 - Main Field - Could not Reach Deck	Built-up Roof Ply Felt	n/a	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	
1191219	22-MF-D	Roof Area 22 - Main Field - Could not Reach Deck	Gypsum	n/a	Soft Homogeneous	White	3% Fiber Glass 97% Non-fibrous Material	No Asbestos Found	

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REVIEWED BY: AY

QA/QC Officer/Signatory

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Dedicated to a Cleaner Environment Since 1982

NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

batta LABORATORIES

BATTA LABORATORIES, LLC

A Certified MBE Company

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Newark, DE19713-5817
Tel. (302)737-3376 Fax (302) 737-5764

Web: http://www.battaenv.com E-mail: battaenv@battaenv.com

EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 03/29/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191220	23-MF-A	Roof Area 23 - Main Field - Metal Roof Deck	Granular-Surfaced Modified Bitumen Roof - Cap	n/a	Fibrous Soft Homogeneous	Black	25% Synthetic Fiber 75% Non-fibrous Material	No Asbestos Found	
1191221	23-MF-B	Roof Area 23 - Main Field - Metal Roof Deck	Smooth-Surfaced Modified Bitumen Roof or Built-	n/a	Fibrous Soft Homogeneous	Black	2% Cellulose 10% Fiber Glass 2% Synthetic Fiber 86% Non-fibrous Material	No Asbestos Found	
1191222	24-MF-D	Roof Area 24 - Main Field	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found	
1191223	24-MF-E	Roof Area 24 - Main Field	Gypsum	n/a	Soft Homogeneous	White	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	
1191224	24-FLASHING-A	Roof Area 24 - AC Unit Flashing	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	96.25% Non-fibrous Material	3.75% Chrysotile Total Asbestos = 3.75%	Point Count

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: A.Y

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Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1191225	24-FLASHING-B	Roof Area 24 - AC Unit Flashing	Smooth-Surfaced Modified Bitumen Roof	n/a	Soft Homogeneous	Black	3% Cellulose 97% Non-fibrous Material	No Asbestos Found
1191226	24-FLASHING-C	Roof Area 24 - AC Unit Flashing	Tar	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1191227	24-FLASH-2-A	Roof Area 24 - Flashing to Masonry Wall	Aluminum Roof Coating	n/a	Fibrous Soft Homogeneous	Black Silver	15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1191228	24-FLASH-2-B	Roof Area 24 - Flashing to Masonry Wall	Smooth-Surfaced Modified Bitumen Roof - Cap	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1191229	24-FLASH-2-C	Roof Area 24 - Flashing to Masonry Wall	Smooth-Surfaced Modified Bitumen Roof	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found

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Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

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Rev. #: 0
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CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 03/29/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191230	24-FLASH-2-D	Roof Area 24 - Flashing to Masonry Wall	Base Flashing	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1191231	24-FLASH-2-E	Roof Area 24 - Flashing to Masonry Wall	Backer Felt	n/a	Fibrous Soft Homogeneous	Black	88% Non-fibrous Material	12% Chrysotile Total Asbestos = 12%	
1191232	24-FLASH-2-F	Roof Area 24 - Flashing to Masonry Wall	Backer Felt	n/a	Soft Homogeneous	Black	94.5% Non-fibrous Material	5.5% Chrysotile Total Asbestos = 5.5%	Point Count
1191233	24-TRANSITE-A	Roof Area 24	Transite Vent	n/a	Fibrous Homogeneous	Gray	85% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%	
1191234	25-MF-D	Roof Area 25 - Main Field - Metal Roof Deck	Built-up Roof Ply Felt	n/a	Fibrous Granular Soft Homogeneous	Black	25% Cellulose 75% Non-fibrous Material	No Asbestos Found	

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BLI Project #: R102515
Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191235	26-MF-D	Roof Area 26 - Main Field - Metal Roof Deck	Built-up Roof Ply Felt	n/a	Fibrous Soft Homogeneous	Black	30% Cellulose 60% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	
1191236	26-MF-F	Roof Area 26 - Main Field - Metal Roof Deck	Polyethylene Vapor Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1191237	26-FLASHING-A	Roof Area 26 - Flashing	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	93.75% Non-fibrous Material	6.25% Chrysotile Total Asbestos = 6.25%	Point Count
1191238	27-MF-C	Roof Area 27 - Main Field - Particleboard Deck	Granular-Surfaced Modified Bitumen Roof	n/a	Fibrous Soft Homogeneous	Black	30% Cellulose 70% Non-fibrous Material	No Asbestos Found	
1191239	27A-MF-A	Roof Area 27 - Main Field - Plywood Deck	Asphalt Shingle	n/a	Fibrous Soft Homogeneous	Black	20% Fiber Glass 80% Non-fibrous Material	No Asbestos Found	

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Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHARDON HIGH SCHOOL CHARDON,OH

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 03/29/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1191240	27A-MF-B	Roof Area 27 - Main Field - Plywood Deck	Tar Paper	n/a	Fibrous Soft Homogeneous	Brown	80% Cellulose 20% Non-fibrous Material	No Asbestos Found
1191241	03A-MF-D	n/a	Roofin Material	n/a	Fibrous Soft Homogeneous	White	10% Cellulose 20% Fiber Glass 70% Non-fibrous Material	No Asbestos Found

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ANALYST: PMG

REVIEWED BY: AY

QA/QC Officer/Signatory

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*This report does not constitute endorsement by NVLAP and/or any other US government agencies.

*The test data pertain only to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed. Furthermore, Batta Laboratories, LLC assumes no responsibility for the accuracy of results influenced by the use of improper collection techniques or equipment.

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AIHA LAP, LL: 100448
NY ELAP: 11993
EPA Lab: DE004
MD Lab ID: 263

CHAIN OF CUSTODY

BL Project # : R102515

Customer Billing Information:	
Name:	CTG Environmental, LLC
Billing Address 1:	4407 Brookpark Road
Billing Address 2:	Cleveland, Ohio 44134
Phone:	(216) 661-6696
Email:	dmeyer@ctgenvironmental.com
Results To:	Dave Meyer

Shipping Information

- ☐ Picked up by BATTA
- ☐ Delivered by customer
- ☑ Shipped by customer

Turnaround Times (check one, refer to notes *)

- ☐ 3 Hours / Rush (Note 1)
- ☐ 24 Hours (Note 2)
- ☐ 48 Hours (Note 3)
- ☑ 72 Hours (Note 4)
- ☐ 5-10 Days (Note 5)
- ☐ 5 Days (For Wholesale Clients Only)

Method of Payment

- ☐ Cash
- ☐ Visa/MasterCard/Discover
- ☐ Money Order
- ☐ Purchase Order #
- ☐ Check #
- ☐ Other
- ☐ Unit Price/Quote
- ☐ Total Payment
- ☐ Reference #:

* Notes Regarding Turnaround Times (TATs)

1 Specific TATs depend on the test requested. TATs may not be available for all types of analysis. Client must make arrangements with lab to guarantee TAT. Premium rate will apply.
2 Unless a specific time is requested, results are guaranteed by 5 p.m. on the following business day. The turnaround time of 24 hours may not be available with all analysis.
3 Unless a specific time is requested, results are guaranteed by 5p.m. on the 2nd business day.
4 Unless a specific time is requested, results are guaranteed by 5 p.m. on the 3rd business day.
5 Unless a specific time is requested, results are guaranteed before 5 p.m. of the 10th business day.

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste ? Will results be used for disposal in NJ?	Project #:	Sampled By:
Adam Bradley	Chardon High School, Chardon, OH	Yes ☐ No ☑	20582-1	Matt Swihart

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air /Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
191												
195		See bulk sampling survey sheets						Bulk	PLM			
↓		↓						↓	↓			
241												

47 PLM BULKS

Special Instructions From Client: Only ayalyze material listed on Bag or Sampling Survey Sheet

Sample Relinquished By: X [signature]	Date: 3/23/21	Time: 1600	
Sample Received By: JAA	Date: 3/24/21	Time: 10:25	

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	Field Samples Acceptable ☐ Yes ☐ No ☐ On Ice
			Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402: in accordance with these NIOSH methods, two field blanks, (or 10% of the number of field samples submitted, whichever is greater) must be submitted and be analyzed with field samples.

For solid waste samples: Before solid waste materials such as soil, ash, sludge, dredge spoils, etc. are disposed in New Jersey, they must undergo analysis following TCLP protocol. BATTA Labs is not responsible for waste disposal misrepresentations on this document.
Document Control Item AM5

3

CTG Environmental R102515

CTG Environmental, LLC.

Bulk Sampling Survey Sheet

1191

01-MF-A	Aluminum roof coating	Roof area 01, main field, over metal roof deck	1	195
01-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 01, main field, over metal roof deck	2	196
01-MF-C	Wood fiber RRI	Roof area 01, main field, over metal roof deck	Sample not submitted	
01-MF-D	Built-up roof ply felt	Roof area 01, main field, over metal roof deck	3	197
01-MF-E	Fiberglass RRI	Roof area 01, main field, over metal roof deck	Sample not submitted	
01-MF-F	Black polyethylene vapor barrier	Roof area 01, main field, over metal roof deck	4	198
02-MF-A	Aluminum roof coating	Roof area 02, main field, over metal roof deck	5	199

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4407 Brookpark Road • Cleveland, OH 44134 • 216/661-6696 • Fax 216/661-5269 • 800/486-6696 •
www.ctgenvironmental.com

R102515

Chardon High School
Asbestos Roof Survey

Sample #	Material	Location	Type & % Asbestos
02-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 02, main field, over metal roof deck	6 1191-200
02-MF-C	Perlite RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
02-MF-D	ISO RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
02-MF-E	Built-up roof ply felt	Roof area 02, main field, over metal roof deck	7 201
02-MF-F	Fiberglass RRI	Roof area 02, main field, over metal roof deck	Sample not submitted
03-MF-A	Aluminum roof coating	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-C	Perlite RRI	Roof area 03, main field, over metal roof deck	Sample not submitted
03-MF-D	Built-up roof ply felt	Roof area 03, main field, over metal roof deck	8 202
03-MF-E	Wood fiber RRI	Roof area 03, main field, over metal roof deck	Sample not submitted
04-MF-A	Aluminum roof coating	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-MF-C	Smooth-surfaced modified bitumen roof or built-up roof	Roof area 04, main field, over concrete roof deck	9 203
04-MF-D	Wood fiber RRI	Roof area 04, main field, over concrete roof deck	Sample not submitted
04-Flashing-A	Black roof cement	Roof area 04, flashing to masonry wall	10 204
04-Flashing-B	Aluminum roof coating	Roof area 04, flashing to masonry wall	Sample not submitted
04-Flashing-C	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 04, flashing to masonry wall	Sample not submitted
04-Flashing-D	Smooth-surfaced modified bitumen roof, older	Roof area 04, flashing to masonry wall	11 205
04-Flashing-E	Backer felt	Roof area 04, flashing to masonry wall	12 206

R102515

Chardon High School
Asbestos Roof Survey

Sample #	Material	Location	Type & % Asbestos
04-Flashing-F	Backer felt	Roof area 04, flashing to masonry wall	13 191-207
04-Flashing-G	Wood fiber cant strip	Roof area 04, flashing to masonry wall	Sample not submitted
12-MF-A	Aluminum roof coating	Roof area 12, main field	Sample not submitted
12-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 12, main field	Sample not submitted
12-MF-C	Perlite RRI	Roof area 12, main field	Sample not submitted
12-MF-D	Built-up roof ply felt	Roof area 12, main field	14 208
12-MF-E	Fiberglass RRI	Roof area 12, main field	Sample not submitted
17-MF-A	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 17, main field, over plywood	Sample not submitted in bag 209
18-MF-A	Aluminum roof coating	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-C	Wood fiber RRI	Roof area 18, main field, over concrete roof deck	Sample not submitted
18-MF-D	Built-up roof ply felt	Roof area 18, main field, over concrete roof deck	15 210
18-MF-E	Black filler	Roof area 18, main field, over concrete roof deck	16 211
20-MF-A	Built-up roof ply felt	Roof area 20, main field, over metal roof deck	17 212 *Not in bag but labeled 20-MF-C
20-MF-B	Fiberglass RRI	Roof area 20, main field, over metal roof deck	~~18~~ Sample Not Submitted
21-MF-A	Built-up roof ply felt	Roof area 21, main field, could not reach deck	19 213
21-MF-B	Gypsum	Roof area 21, main field, could not reach deck	20 214
21-MF-C	Fiberglass RRI	Roof area 21, main field, could not reach deck	Sample not submitted
21-Flashing-A	Black roof cement	Roof area 21, roof cement from flashing of vent	21 215
22-MF-A	Aluminum roof coating	Roof area 22, main field, could not reach deck	22 216
22-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 22, main field, could not reach deck	23 217

Chardon High School
Asbestos Roof Survey

Sample #	Material	Location	Type & % Asbestos
22-MF-C	Built-up roof ply felt	Roof area 22, main field, could not reach deck	24 11191- 218
22-MF-D	Gypsum	Roof area 22, main field, could not reach deck	25 219
22-MF-E	Fiberglass RRI	Roof area 22, main field, could not reach deck	Sample not submitted
23-MF-A	Granular-surfaced modified bitumen roof, cap sheet	Roof area 23, main field, metal roof deck	26 220
23-MF-B	Smooth-surfaced modified bitumen roof or built-up roof	Roof area 23, main field, metal roof deck	27 221
23-MF-C	ISO RRI	Roof area 23, main field, metal roof deck	Sample not submitted
23-MF-D	Perlite RRI	Roof area 23, main field, metal roof deck	Sample not submitted
24-MF-A	Aluminum roof coating	Roof area 24, main field	Sample not submitted
24-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 24, main field	Sample not submitted
24-MF-C	Wood fiber RRI	Roof area 24, main field	Sample not submitted
24-MF-D	Built-up roof ply felt	Roof area 24, main field	28 222
24-MF-E	Gypsum	Roof area 24, main field	29 223
24-Flashing-A	Black roof cement	Roof area 24, AC Unit flashing	30 224
24-Flashing-B	Smooth-surfaced modified bitumen roof	Roof area 24, AC Unit flashing	31 225
24-Flashing-C	Tar	Roof area 24, AC Unit flashing	32 226
24-Flashing-D	Wood fiber	Roof area 24, AC Unit flashing	Sample not submitted
24-Flash 2-A	Aluminum roof coating	Roof area 24, flashing to masonry wall	33 227
24-Flash 2-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 24, flashing to masonry wall	34 228
24-Flash 2-C	Smooth-surfaced modified bitumen roof	Roof area 24, flashing to masonry wall	35 229
24-Flash 2-D	Base flashing	Roof area 24, flashing to masonry wall	36 230
24-Flash 2-E	Backer felt	Roof area 24, flashing to masonry wall	37 231

Chardon High School
Asbestos Roof Survey

Sample #	Material	Location	Type & % Asbestos
24-Flash 2-F	Backer felt	Roof area 24, flashing to masonry wall	38 1191-232
24-Flash 2-G	Wood fiber cant strip	Roof area 24, flashing to masonry wall	Sample not submitted
24-Transite-A	Transite vent	Roof area 24	39 233
25-MF-A	Aluminum roof coating	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-C	Perlite RRI	Roof area 25, main field, metal roof deck	Sample not submitted
25-MF-D	Built-up roof ply felt	Roof area 25, main field, metal roof deck	40 234
25-MF-E	Perlite RRI	Roof area 25, main field, metal roof deck	Sample not submitted
26-MF-A	Aluminum roof coating	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-C	Perlite RRI	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-D	Built-up roof ply felt	Roof area 26, main field, metal roof deck	41 235
26-MF-E	Perlite RRI	Roof area 26, main field, metal roof deck	Sample not submitted
26-MF-F	Black polyethylene vapor barrier	Roof area 26, main field, metal roof deck	42 236
26-Flashing-A	Black roof cement	Roof area 26, flashing	43 237
27-MF-A	Aluminum roof coating	Roof area 27, main field, particleboard deck	44 Not in bag (Not Submitted) See Email
27-MF-B	Smooth-surfaced modified bitumen roof, cap sheet	Roof area 27, main field, particleboard deck	45 Not in bag (Not Submitted) See Email
27-MF-C	Granular-surfaced modified bitumen roof	Roof area 27, main field, particleboard deck	46 238
27A-MF-A	Brown asphalt shingle	Roof area 27A, main field, plywood deck	47 239
27A-MF-B	Tar paper	Roof area 27A, main field, plywood deck	48 240

034-MF-10 241

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 04/02/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-1 ADAM BRADLEY - CHAGRIN H.S

Date Sampled: n/a
Sampled By: CLIENT
Date Analyzed: 04/02/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1192666	22MF-A1	Roof 22	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1192667	22MF-A2	Roof 22	Roof Cement	n/a	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1192668	22MF-B2	Roof 22	Smooth-Surfaced Modified	n/a	Firm Homogeneous	Black	15% Synthetic Fiber 85% Non-fibrous Material	No Asbestos Found

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: REP

REVIEWED BY: AY

QA/QC Officer/Signatory

2021 Roofing Project

ASBESTOS TEST RESULTS AND REQUIREMENTS

For

MIDDLE SCHOOL

CTG Environmental

April 5, 2021

Mr. Bill Bare
Adam Bradley Enterprises, Incorporated
1540 Chagrin River Road
Gates Mills, Ohio 44040

Re: Bulk sampling, visual evaluation, and polarized light microscopy (PLM) analysis of suspect asbestos containing roofing materials performed on the roofs of the Chardon Middle School building located at 424 North Street in Chardon, Ohio
(CTG Project Number: 20582-2)

Dear Mr. Bare,

On January 13 and March 22, 2021, Mr. David Meyer, Mr. Matt Swihart, and/or Mr. David Brenner, all Environmental Protection Agency (EPA) trained asbestos inspectors and State of Ohio licensed Asbestos Hazard Evaluation Specialists, representing CTG Environmental, LLC (CTG) were onsite at the Chardon Middle School located at 424 North Street in Chardon, Ohio. The purpose of the site visit was to perform a visual evaluation and bulk sampling of roof materials on each roof at the school. The samples were then submitted for laboratory analysis to determine if the roofing materials were asbestos containing materials (ACMs) prior to a complete tear off and replacement of the roofing materials.

There were nine (9) roof areas evaluated and sampled. The roof areas were numbered 01 through 09 by the Client. The roofs of the building typically consisted of aluminum roof coating and smooth-surfaced modified roofing over older built-up roofs. The roof decks were corrugated metal. The 9 roof areas were grouped together based on similar materials present in the layers of the roofs and information provided by the Client. Samples were submitted with the associated layers listed in the order they were applied:

<u>Roofs 01, 02, and 03 Main Field</u>

A. Aluminum roof coating, silver
B. Modified smooth surface
C. Wood fiber insulation
D. Gravel surface built up roof (BUR)
E. Felt backer of fiberglass insulation
F. Fiberglass insulation
G. Vapor barrier
H. Metal roof deck

Roof 04 and 06: Main Field

A. Aluminum roof coating, silver
B. Modified smooth surface
C. Modified smooth surface
D. Vented base sheet
E. Gravel surface BUR
F. Fiberglass insulation
G. Vapor barrier
H. Metal roof deck

Roof 05 and 07: Main Field

A. Aluminum roof coating, silver
B. Modified smooth surface
C. Modified granular surfaced
D. Gravel surface BUR
E. Perlite insulation
F. Vapor barrier
G. Metal roof deck

Roofs 08 and 09: Main Field

A. Aluminum roof coating, silver
B. Modified smooth surface
C. Perlite or wood fiber insulation
D. Gravel surface BUR
E. Perlite of wood fiber insulation
F. Vapor barrier
G. Metal roof deck

The modified bitumen roofing was applied up the masonry walls and various roof penetrations to create a perimeter flashing. The older composite base flashing, backer felts, and wood fiber cant strips were typically still in place under the modified roofing. Roof cement was observed at all perimeter flashings, seams and penetrations.

CTG performed the sampling in accordance with the protocol established by the Environmental Protection Agency (EPA) in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E). This protocol requires the collection of at least two (2) samples of each "miscellaneous" material, in order to prove a suspect material is not an ACM. Prior to renovation and/or demolition projects, the Occupational Safety and Health Administration (OSHA) requires that buildings be surveyed to identify ACMs, utilizing the previously mentioned protocol, as stipulated in OSHA 29 CFR 1926.1101(k)(5). CTG collected core samples and other samples that were separated into forty-one (41) bulk samples to be analyzed by the laboratory.

The samples were placed in "zip-close" bags and assigned unique identifiers that were recorded on the bags. Samples were submitted to Batta Laboratories, LLC in Newark, Delaware. Samples of bulk material were analyzed using PLM following the EPA Method 600/R-93/116. Batta Laboratories, LLC is a participant in the U.S. Department of Commerce, National Institute of Standards and Technology through the National Voluntary Laboratory Accreditation Program (NVLAP) for Bulk Asbestos Analysis, NVLAP No. 101165-0 and accreditation by the American Industrial Hygiene Association (AIHA #: 100448).

PLM is an optical microscopic technique used to distinguish the different types of asbestos fibers by their shape and unique optical properties. The technique is based on observing the refraction of light from the various crystalline asbestos structures and identifying the corresponding color changes through the microscope. Analytical results of **greater than 1%** asbestos classify a material as asbestos containing according to the EPA and State of Ohio. Refer to Table 1, which is attached to this letter report for a list of the bulk samples, their locations, and laboratory results.

Based upon the results of the bulk sample analysis the following materials were determined to be asbestos containing materials and are classified as follows:

Asbestos-Containing Materials	Friable	Condition	OSHA Classification	EPA Classification
Gravel surface built-up roof (BUR)	No	Good	Miscellaneous	Category I, non-friable
Flashing felts	No	Good	Miscellaneous	Category I, non-friable
Roof cement, black	No	Good	N/A	Category I, non-friable

Refer to Table 1, which is attached to this report for a list of the bulk samples, their locations, and laboratory results.

The asbestos-containing roof cement was observed at various locations throughout all the roof areas at seams and around penetrations for equipment, fans, drains, pipes, vents, patches, flashings, etc. The asbestos-containing gravel surfaced built-up roof (BUR) associated with the main field of roofs 5, 7, 8, and 9 was located underneath of the modified smooth surface (top roof surface). The flashings of all 9 roofs had asbestos-containing felts.

ROOF	Main Field Built Up Roof	Flashing Felts	Roof Cement	Area (square feet)	Year Constructed
1		ACM	ACM	11,972	1966
2		ACM	ACM	6,046	1966
3		ACM	ACM	15,387	1966
4		ACM	ACM	1,982	1966
5	ACM	ACM	ACM	1,004	1975
6		ACM	ACM	6,987	1966
7	ACM	ACM	ACM	2,292	1975
8	ACM	ACM	ACM	6,976	Unknown
9	ACM	ACM	ACM	6,410	1966

The identified asbestos-containing roofing materials are classified by the EPA as Category I non-friable ACMs. Category I non-friable ACMs are considered non-regulated ACMs, when intact and in good condition, by the EPA and State of Ohio, per the definition contained within the EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M), which is as follows: *Regulated asbestos-containing material (RACM) means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart...* The identified asbestos-containing roof cement, flashing felts, and BURs were non-friable and considered non-regulated ACMs, per the NESHAPs, at the time of the survey.

EPA/NESHAP asbestos notifications will be required for this roof replacement project, because the square footage of roof areas 5, 7, 8, and 9 is greater than the NESHAP 5,580 square feet minimum. If a powered roof cutter is used to remove the asbestos-containing roof materials, NESHAPS states that if 5,580 square feet of asbestos-containing roofing materials are removed using a powered roof cutter, 160 square feet of RACM will be generated, therefore an EPA/NESHAP notification would be required, because these roof areas are greater than 5,580 square feet. The State of Ohio does not require notifications for projects, which only involve roofing materials.

In OSHA 29 CFR 1926.1101, work involving the removal of asbestos-containing "miscellaneous" materials is defined as Class II work. When the main field BUR is removed/disturbed, it must be done while meeting the requirements for Class II work.

The OSHA considers roofing materials as "miscellaneous" ACMs. In 29 CFR 1926.1101, OSHA requires workers to be trained for asbestos-containing roofing work. The installing, repairing, maintaining or removal of asbestos-containing roof cement and flashing felts are defined as "incidental" roof work. The roofing contractor must comply with 29 CFR 1926.1101(g)(11) "Alternative methods of compliance for installing, removal, repair and maintenance of certain roofing and pipeline coating materials". These requirements are summarized below:

1. At the beginning and during the work a "competent person" who is capable of identifying asbestos hazards in the work place shall conduct an inspection of the worksite and determine that the roofing material is intact and will remain intact during removal.

2. The workers performing that work must be trained in accordance with 29 CFR 1926.1101(k)(9)(viii).

3. The material shall not be sanded, abraded or ground. Manual methods, which do not render the material non-intact, shall be used.

4. All material removal from the roof shall be lowered to the ground by a dust tight chute, crane or hoist by the end of the workday.

5. The contractor shall notify the building owner of the presence and location of newly discovered ACMs.

The asbestos-containing roof cement and aluminum roof coating (asphalt based) was deregulated by the OSHA on June 29, 1998 and removed from 29 CFR 1926.1101. This is one of only a few products categorized as such. Therefore, the OSHA asbestos regulations are not applicable to these two types of roofing materials. The State of Ohio, does not regulate non-friable ACMs or roofing materials.

Enclosed, please find copies of the laboratory certificates of analysis, chains of custody, and the asbestos inspectors' Ohio licenses. If you have any questions regarding this report, please contact our office.

Sincerely,

David R. Meyer
President

Enclosures

Table 1
Asbestos Bulk Sampling Results
Chardon Middle School
424 North Street
Chardon, Ohio
January 13 and March 22, 2021

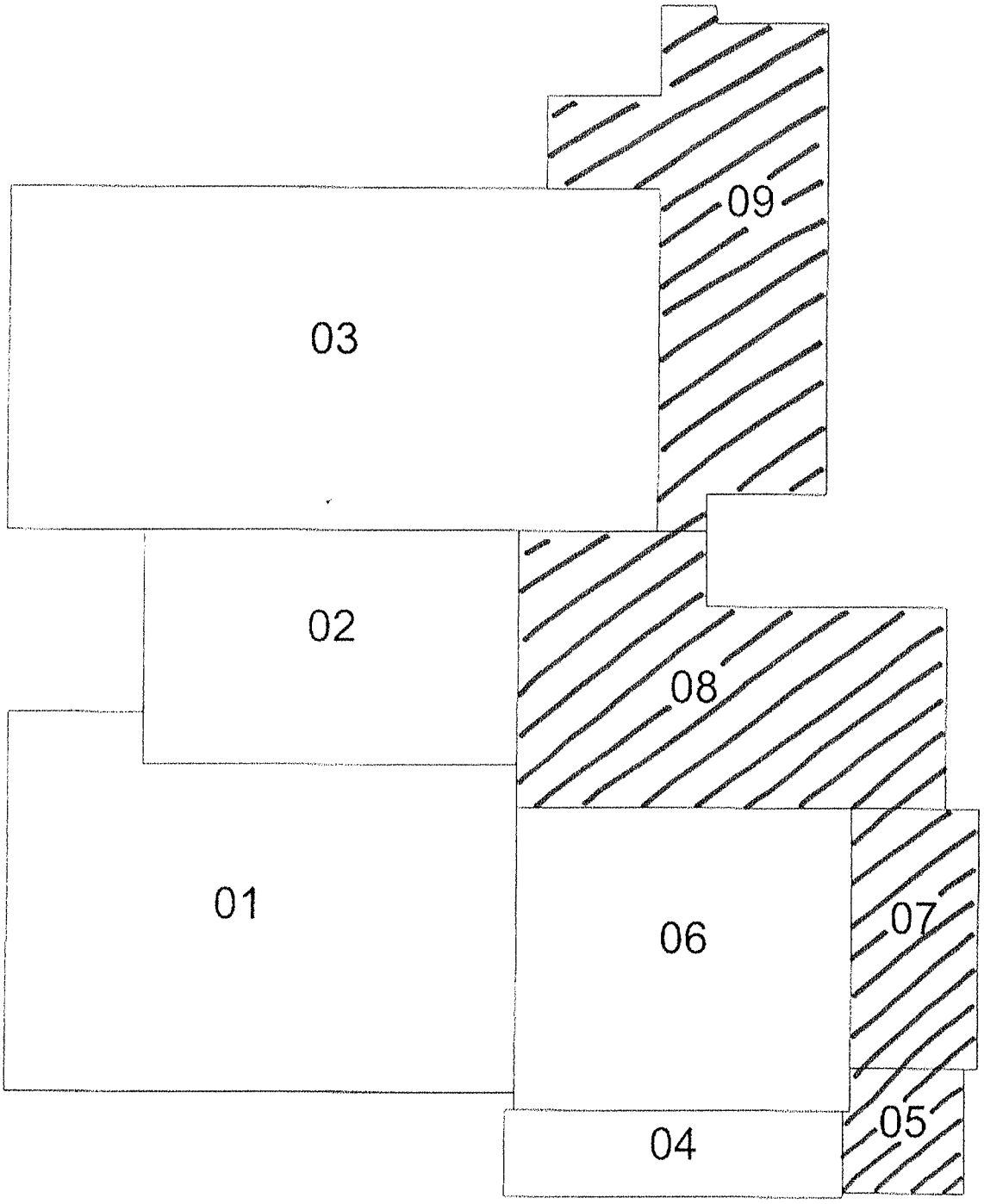
Sample Number		Material	Location	Results (%)
582-2	8MF-01 A	Aluminum roof coating, silver	Roof 8, main field	No asbestos detected
582-2	**8MF-01 D**	**Build up roof, gravel**	**Roof 8, main field**	**2 % Chrysotile**
582-2	9MF-02 B	Modified, smooth surface,	Roof 9, main field	No asbestos detected
582-2	**9MF-02 D**	**Built up roof**	**Roof 9, main field**	**15 % Chrysotile**
582-2	9MF-02 F	Vapor barrier	Roof 9, main field	No asbestos detected
582-2	3MF-03 D	Build up roof, gravel	Roof 3, main field	No asbestos detected
582-2	3MF-03 F	Vapor barrier	Roof 3, main field	No asbestos detected
582-2	**3 RC**	**Roof cement, black**	**Roof 3, main field**	**9.25 % Chrysotile**
582-2	2MF-04 A	Aluminum roof coating, silver	Roof 2, main field	No asbestos detected
582-2	2MF-04 D	Built up roof	Roof 2, main field	No asbestos detected
582-2	1MF-05 B	Modified, smooth surface,	Roof 1, main field	No asbestos detected
582-2	1MF-05 D	Built up roof	Roof 1, main field	No asbestos detected
582-2	**1 RC**	**Roof cement, black**	**Roof 1, main field**	**10 % Chrysotile**
582-2	7 MF-06 A	Aluminum roof coating, silver	Roof 7, main field	No asbestos detected
582-2	7MF-06 B	Modified, smooth surface,	Roof 7, main field	No asbestos detected
582-2	7MF-06 C	Base sheet, vented	Roof 7, main field	No asbestos detected
582-2	**7MF-06 D**	**Built up roof**	**Roof 7, main field**	**10 % Chrysotile**
582-2	7 MF-06 F	Plastic barrier	Roof 7, main field	No asbestos detected
582-2	**7RC**	**Roof cement, black**	**Roof 7, main field**	**8.25 % Chrysotile**
582-2	6MF1-07 A	Aluminum roof coating, silver	Roof 6-1, main field	No asbestos detected

Sample Number		Material	Location	Results (%)
582-2	6MF1-07 B	Modified, smooth surface,	Roof 6-1, main field	No asbestos detected
582-2	6MF1-07D	Base sheet, vented	Roof 6-1, main field	No asbestos detected
582-2	6MF1-07 E	Build up roof, gravel, with pitch	Roof 6-1, main field	No asbestos detected
582-2	**6 RC**	**Roof cement, black**	**Roof 6-1, main field**	**10 % Chrysotile**
582-2	6MF2-08 E	Build up roof, gravel, with pitch	Roof 6-2, main field	No asbestos detected
582-2	6F-09 D	Hypalon silver and black	Roof 6, flashing	No asbestos detected
582-2	**6F-09 G**	**Flashing felts**	**Roof 6, flasing**	**6.5 % Chrysotile**
582-2	7F-10 D	Hypalon silver and black	Roof 7, flashing	No asbestos detected
582-2	**7F-10 E**	**Flashing felts**	**Roof 7, flashing**	**2.25 % Chrysotile**
582-2	8F-11 D	Hypalon silver and black	Roof 8, flashing	No asbestos detected
582-2	**3F-12 E**	**Flashing felts**	**Roof 3, flashing**	**3.25 % Chrysotile**
582-2	**9F-13 E**	**Flashing felts**	**Roof 9, flashing**	**4.25 % Chrysotile**
582-2	**1F-14 D**	**Flashing felts**	**Roof 1, flashing**	**3.75 % Chrysotile**
582-2	4MF-01 A	Aluminum roof coating, silver	Roof 4, main field	No asbestos detected
582-2	4MF-01 B	Modified, smooth surface	Roof 4, main field	No asbestos detected
582-2	4MF-01 C	Build up roof, gravel, with pitch	Roof 4, main field	No asbestos detected
582-2	5MF-01 A	Aluminum roof coating, silver	Roof 5, main field	No asbestos detected
582-2	5MF-01 B	Modified, smooth surface	Roof 5, main field	No asbestos detected
582-2	5MF-01 C	Modified, granular surface	Roof 5, main field	No asbestos detected
582-2	**5MF-01 D**	**Build up roof, gravel, with pitch**	**Roof 5, main field**	**6.25 % Chrysotile**
582-2	5MF-01 E	Vapor barrier, black	Roof 5, main field	No asbestos detected

Bold – indicates material is as asbestos containing (>1%)

Chardon Middle School Roof Plan

All roof areas have asbestos-containing flashings
Main fields contain asbestos: 05, 07, 08, 09



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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/21/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL

Date Sampled: 01/13/21
Sampled By: CLIENT
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1177874	582-2-8MF-01-A	Roof #8 MF	Alum. Roof Coating	n/a	Soft Homogeneous	Silver	2% Cellulose 98% Non-fibrous Material	No Asbestos Found	
1177875	582-2-8MF-01-D	Roof #8 MF	Gravel BUR	n/a	Fibrous Soft Homogeneous	Black	98% Non-fibrous Material	2% Chrysotile Total Asbestos = 2%	Point Count
1177876	582-2-9MF-02-B	Roof #9 MF	Smooth Surface Modified	n/a	Soft Homogeneous	Black	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	
1177877	582-2-9MF-02-F	Roof #9 MF	Vapor Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1177878	582-2-3MF-03-D	Roof #3 MF	Gravel BUR	n/a	Fibrous Soft Homogeneous	Black	25% Cellulose 75% Non-fibrous Material	No Asbestos Found	

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: _____

QA/QC Officer/Signatory

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Report Date: 01/21/21

Sampling Data

Date Sampled: 01/13/21
BLI Project #: R102515
Sampled By: CLIENT
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1177879	582-2-3MF-03-F	Roof #3 MF	Vapor Barrier	n/a	Fibrous Soft Homogeneous	Black	10% Fiber Glass 3% Cellulose 87% Non-fibrous Material	No Asbestos Found	
1177880	582-2-3-RC	Roof #3 MF	Roof Cement	n/a	Soft Homogeneous	Black	90.75% Non-fibrous Material	9.25% Chrysotile Total Asbestos = 9.25%	Point Count
1177881	582-2-2MF-04-A	Roof #2 MF	Alum. Roof Coating	n/a	Soft Homogeneous	Silver	2% Cellulose 98% Non-fibrous Material	No Asbestos Found	
1177882	582-2-1MF-05-B	Roof #1 MF	Smooth Surface Modified	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1177883	582-2-1-RC	Roof #1 MF	Roof Cement	n/a	Soft Homogeneous	Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%	

Note 1: *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: RM

QA/QC Officer/Signatory

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EPA Lab ID #DE004

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Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/21/21

Sampling Data

Date Sampled: 01/13/21
BLI Project #: R102515
Sampled By: CLIENT
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1177884	582-2-7MF-06-A	Roof #7 MF	Alum. Roof Coating	n/a	Soft Homogeneous	Silver	3% Cellulose 97% Non-fibrous Material	No Asbestos Found	
1177885	582-2-7MF-06-B	Roof #7 MF	Smooth Surface Modified	n/a	Fibrous Soft Homogeneous	Black	4% Synthetic Fiber 2% Cellulose 94% Non-fibrous Material	No Asbestos Found	
1177886	582-2-7MF-06-C	Roof #7 MF	Vented Base Sheet	n/a	Fibrous Soft Homogeneous	Black	15% Synthetic Fiber 2% Cellulose 83% Non-fibrous Material	No Asbestos Found	
1177887	582-2-7MF-06-F	Roof #7 MF	Plastic Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1177888	582-2-7-RC	Roof #7 MF	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	91.75% Non-fibrous Material	8.25% Chrysotile Total Asbestos = 8.25%	Point Count

Note 1: *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: PMG

QA/QC Officer/Signatory

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*This report does not constitute endorsement by NVLAP and/or any other US government agencies.

*The test data pertain only to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed. Furthermore, Batta Laboratories, LLC assumes no responsibility for the accuracy of results influenced by the use of improper collection techniques or equipment.

*Organically-bound, nonfriable material may interfere with the accurate and reproducible quantification of asbestos. In these cases, the EPA recommends further analysis by a matrix-reduction method. Batta recommends the NY ELAP Item 198.6/198.4 over the Chatfield method. When point count techniques are utilized on organically-bound, nonfriable materials without the EPA-recommended matrix reduction steps, Batta Laboratories assumes no responsibility regarding the accuracy or precision associated with these results. In these cases, Batta employs a modified version of the EPA point count method.

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Dedicated to a Cleaner Environment Since 1982

NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

batta LABORATORIES

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/21/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL

Date Sampled: 01/13/21
Sampled By: CLIENT
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1177889	582-2-6MF1-07-A	Roof #6-1 MF	Alum. Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1177890	582-2-6MF1-07-B	Roof #6-1 MF	Smooth Surface Modified	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1177891	582-2-6MF1-07-D	Roof #6-1 MF	Vented Base Sheet	n/a	Fibrous Soft Homogeneous	Black	15% Synthetic Fiber 10% Cellulose 75% Non-fibrous Material	No Asbestos Found
1177892	582-2-6MF1-07-E	Roof #6-1 MF	Gravel BUR with Pitch	n/a	Granular Fibrous Soft Homogeneous	Black	25% Cellulose 75% Non-fibrous Material	No Asbestos Found
1177893	582-2-6-RC	Roof #6-1 MF	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	90% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%

Note 1: *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: RM

QA/QC Officer/Signatory

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Rev. #: 0
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CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/21/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL

Date Sampled: 01/13/21
Sampled By: CLIENT
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1177894	582-2-6MF2-08-E	Roof #6-2 MF	Gravel BUR with Pitch	n/a	Fibrous Soft Homogeneous	Black	15% Cellulose 5% Fiber Glass 80% Non-fibrous Material	No Asbestos Found	
1177895	582-2-6F-09-D	Roof #6 Flashing	Hypalm	n/a	Soft Homogeneous	Black Silver	20% Synthetic Fiber 80% Non-fibrous Material	No Asbestos Found	
1177896	582-2-6F-09-G	Roof #6 Flashing	Flashing Felts	n/a	Fibrous Soft Homogeneous	Black	93.5% Non-fibrous Material	6.5% Chrysotile Total Asbestos = 6.5%	Point Count
1177897	582-2-7F-10-D	Roof #7 Flashing	Hypalm	n/a	Fibrous Soft Homogeneous	Black Silver	20% Synthetic Fiber 80% Non-fibrous Material	No Asbestos Found	
1177898	582-2-7F-10-E	Roof #7 Flashing	Flashing Felts	n/a	Fibrous Soft Homogeneous	Black	97.75% Non-fibrous Material	2.25% Chrysotile Total Asbestos = 2.25%	Point Count

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ANALYST: PMG

REVIEWED BY: PMG

QA/QC Officer/Signatory

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/21/21

Sampling Data

Date Sampled: 01/13/21
BLI Project #: R102515
Sampled By: CLIENT
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY, CHARDON MIDDLE SCHOOL
Date Analyzed: 01/20/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1177899	582-2-8F-11-D	Roof #8 Flashing	Hypalm	n/a	Fibrous Soft Homogeneous	Black Silver	25% Synthetic Fiber 75% Non-fibrous Material	No Asbestos Found	
1177900	582-2-3F-12-E	Roof #3 Flashing	Flashing Felts	n/a	Fibrous Soft Homogeneous	Black	96.75% Non-fibrous Material	3.25% Chrysotile Total Asbestos = 3.25%	Point Count
1177901	582-2-9F-13-E	Roof #9 Flashing	Flashing Felts	n/a	Fibrous Soft Homogeneous	Black	95.75% Non-fibrous Material	4.25% Chrysotile Total Asbestos = 4.25%	Point Count
1177902	582-2-1F-14-D	Roof #1 Flashing	Flashing Felts	n/a	Fibrous Soft Homogeneous	Black	96.25% Non-fibrous Material	3.75% Chrysotile Total Asbestos = 3.75%	Point Count

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Note 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG

REVIEWED BY: RL

QA/QC Officer/Signatory

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NVLAP® Lab Code: 101032-0

AIHA LAP, LL: 100448
NY ELAP: 11993
EPA Lab: DE004
MD Lab ID: 263

CHAIN OF CUSTODY

BL Project # : R102515

Customer Billing Information:	Shipping Information	Turnaround Times (check one, refer to notes*)	Method of Payment
Name: CTG Environmental, LLC	☐ Picked up by BATTA	☐ 3 Hours / Rush (Note 1)	☐ Cash
Billing Address 1: 4407 Brookpark Road	☐ Delivered by customer	☐ 24 Hours (Note 2)	☐ Visa/MasterCard/Discover
Billing Address 2: Cleveland, Ohio 44134	☐ Shipped by customer	☐ 48 Hours (Note 3)	☐ Money Order
Phone: 216-661-6696		■ 72 Hours (Note 4)	☐ Purchase Order #
Email: dmeyer@ctgenvironmental.com		☐ 5-10 Days (Note 5)	☐ Check #
Results To: Dave Meyer		☐ 5 Days (For Wholesale Clients Only)	☐ Other
			☐ Unit Price/Quote
			☐ Total Payment
			☐ Reference #:

* Notes Regarding Turnaround Times (TATs)
1 Specific TATs depend on the test requested. TATs may not be available for all types of analysis. Client must make arrangements with lab to guarantee TAT. Premium rate will apply.
2 Unless a specific time is requested, results are guaranteed by 5 p.m. on the following business day. The turnaround time of 24 hours may not be available with all analysis.
3 Unless a specific time is requested, results are guaranteed by 5p.m. on the 2nd business day.
4 Unless a specific time is requested, results are guaranteed by 5 p.m. on the 3rd business day.
5 Unless a specific time is requested, results are guaranteed before 5 p.m. of the 10th business day.

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste? Will results be used for disposal in NJ?	Project #:	Sampled By:
Adam Bradley	Chardon M Sch	Yes ☐ No ☐	20582-2	DMeyer

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air/Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
1177874								BULK	PLM			
↓												
902	(89)	Sampler submitted										

Special Instructions From Client: Only analyze material listed on Bag or Sample Sheet

Sample Relinquished By: X [signature]	Date: 1/15/21	Time: 1800	
Sample Received By: JES	Date: 1/18/21	Time: 1030	

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	
JES	1/18/21	1610	Field Samples Acceptable ☑ Yes ☐ No ☐ On Ice
			Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402: in accordance with these NIOSH methods, two field blanks, (or 10% of the number of field samples submitted, whichever is greater) must be submitted and be analyzed with field samples.

For solid waste samples: Before solid waste materials such as soil, ash, sludge, dredge spoils, etc. are disposed in New Jersey, they must undergo analysis following TCLP protocol. BATTA Labs is not responsible for waste disposal misrepresentations on this document.

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 03/29/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY - CHARDON MIDDLE SCHOOL

Date Sampled: 01/22/21
Sampled By: CLIENT
Date Analyzed: 03/27/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1191130	582-24MF-01A	Roof #4 - Main Field	Aluminum Roof Coating	No	Soft Homogeneous	Black Silver	100% Non-fibrous Material	No Asbestos Found
1191131	582-24MF-01B	Roof #4 - Main Field	Modified Bitumen Roofing	No	Firm Homogeneous	Black Gray	100% Non-fibrous Material	No Asbestos Found
1191132	582-24MF-01C	Roof #4 - Main Field	Built-up Roof - Gravel Surfaced	No	Firm Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found
1191133	582-25MF-01A	Roof #5 - Main Field	Aluminum Roof Coating	No	Soft Homogeneous	Black Silver	100% Non-fibrous Material	No Asbestos Found
1191134	582-25MF-01B	Roof #5 - Main Field	Modified Bitumen Roofing	No	Firm Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: JJF

REVIEWED BY: AY

QA/QC Officer/Signatory

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EPA Lab ID #DE004

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Rev. #: 0
Batch#: N/A
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CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 03/29/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY - CHARDON MIDDLE SCHOOL

Date Sampled: 01/22/21
Sampled By: CLIENT
Date Analyzed: 03/27/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1191135	582-25MF-01C	Roof #5 - Main Field	Granular - Surfaced Modified Roofing	No	Firm Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	
1191136	582-25MF-01D	Roof #5 - Main Field	Built-up Roof - Gravel Surfaced	No	Fibrous Firm Homogeneous	Black	93.75% Non-fibrous Material	6.25% Chrysotile Total Asbestos = 6.25%	Point Count
1191137	582-25MF-01E	Roof #5 - Main Field	Polyethylene Vapor Barrier	No	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	

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Note 2: Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3: Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: JJF

REVIEWED BY: AY

QA/QC Officer/Signatory

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Web: https://battaenv.com

AIHA LAP, LLC: 100448
NY ELAP: 11993
EPA Lab: DE004
MD Lab ID: 263

CHAIN OF CUSTODY

BL Project # : R102515

Customer Billing Information:		Shipping Information	Turnaround Times (check one, refer to notes*)	Method of Payment
Name:	CTG Environmental, LLC	☐ Picked up by BATTA ☐ Delivered by customer ☑ Shipped by customer	☐ 3 Hours / Rush (Note 1) ☐ 24 Hours (Note 2) ☐ 48 Hours (Note 3) ☑ 72 Hours (Note 4) ☐ 5-10 Days (Note 5) ☐ 5 Days (For Wholesale Clients Only)	☐ Cash ☐ Visa/MasterCard/Discover ☐ Money Order ☐ Purchase Order # ☐ Check # ☐ Other
Billing Address 1:	4407 Brookpark Road			
Billing Address 2:	Cleveland, Ohio 44134			
Phone:	(216) 661-6696			
Email:	dmeyer@ctgenvironmental.com			
Results To:	Dave Meyer			

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2 Unless a specific time is requested, results are guaranteed by 5 p.m. on the following business day. The turnaround time of 24 hours may not be available with all analysis.
3 Unless a specific time is requested, results are guaranteed by 5p.m. on the 2nd business day.
4 Unless a specific time is requested, results are guaranteed by 5 p.m. on the 3rd business day.
5 Unless a specific time is requested, results are guaranteed before 5 p.m. of the 10th business day.

☐ Unit Price/Quote
☐ Total Payment
☐ Reference #:

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste ? Will results be used for disposal in NJ?	Project #:	Sampled By:
Adam Bradley	Chardon Middle School Chardon, OH	Yes ☐ No ☑	20582-2	David Meyer

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air /Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
1191												
130		See bulk sampling survey sheets						Bulk	PLM			
↓								↓	↓			
137												

8 PLM Bulks

Special Instructions From Client: Only ayalyze material listed on Bag or Sampling Survey Sheet

Sample Relinquished By: X [signature] Date: 3/23/21 Time: 1600

Sample Received By: JAA Date: 3/24/21 Time: 10:25

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	Field Samples Acceptable ☐ Yes ☐ No ☐ On Ice
			Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402; in accordance with these NIOSH methods, two field blanks, (or 10% of the number of field samples submitted, whichever is greater) must be submitted and be analyzed with field samples.

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Document Control Item AM5

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 04/02/21

Sampling Data

Date Sampled: 01/13/21
BLI Project #: R102515
Sampled By: CLIENT
Project Name: CTG ENVIRO-20582-2 ADAM BRADLEY - CHARDON MIDDLE SCHOOL
Date Analyzed: 04/02/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1192669	582-21MF-05D	Roof Area 1	Built-up roof	No	Firm Layered	Black	10% Synthetic Fiber 15% Cellulose 10% Fiber Glass 65% Non-fibrous Material	No Asbestos Found
1192670	582-22MF-04D	Roof Area 2	Built-up roof	No	Firm Layered	Black	25% Cellulose 5% Fiber Glass 70% Non-fibrous Material	No Asbestos Found
1192671	582-21MF-06D	Roof Area 7	Built-up roof	No	Firm Layered	Black Brown	20% Cellulose 5% Fiber Glass 65% Non-fibrous Material	10% Chrysotile Total Asbestos = 10%
1192672	582-29MF-02D	Roof Area 9	Built-up roof	No	Firm Layered	Black Brown	30% Cellulose 55% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%

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ANALYST: REP

REVIEWED BY: AY

QA/QC Officer/Signatory

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MD Lab ID: 263

CHAIN OF CUSTODY

BL Project # : R102515

Customer Billing Information	Shipping Information	Turnaround Times (check one, refer to notes*)	Method of Payment
Name: CTG Environmental, LLC	☐ Picked up by BATTA	☐ 3 Hours / Rush (*Note 1)	☐ Cash
Billing Address 1: 4407 Brookpark Road	☐ Delivered by customer	☒ 6-12 Hours (*Note 2)	☐ Visa/MasterCard/Discover
Billing Address 2: Cleveland, Ohio 44134	☑ Shipped by customer	☐ 24 Hours (*Note 3)	☐ Money Order
Phone: 216-661-6696		☐ 48 Hours (*Note 4)	☐ Purchase Order #
Email: dmeyer@ctgenvironmental.com AND		☐ 72 Hours (*Note 5)	☐ Check #
Results To: arothel@ctgenvironmental.com		☐ 5-10 Days (*Note 6)	☑ Other
		☐ 5 Days (For Wholesale Clients Only)	☐ Unit Price/Quote
			☐ Total Payment
			☐ Reference #:

* Notes Regarding Turnaround Times (TATs)

Specific TATs depend on the test requested. TATs may not be available for all types of analysis.

1. Client must make arrangements with lab to guarantee 3 Hour/RUSH TAT - Call 1 (855)-862-2882
2. Unless a specific time is requested, results are guaranteed by 5pm on the same business day.
3. Unless a specific time is requested, results are guaranteed by 5pm on the following business day.
4. Unless a specific time is requested, results are guaranteed by 5pm on the 2nd business day.
5. Unless a specific time is requested, results are guaranteed by 5pm on the 3rd business day.
6. Unless a specific time is requested, results are guaranteed by 5 pm of the 10th business day.

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste ? Will results be used for disposal in NJ?	Project #:	Sampled By:
Adam Bradley	Chardon Middle School	Yes ☐ No ☑	20582-2	Matt Swihart

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air/Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
1192												
669		see sampling sheets						BULK	PLM			
↓								↓	↓			
672												

4 PLM BULKS

Special Instructions From Client: ONLY ANALYZE MATERIAL LISTED ON BAG

Sample Relinquished By: X [signature] Date: 4-1-21 Time: 1800

Sample Received By: JM Date: 4/2/21 Time: 10:35

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	Field Samples Acceptable ☐ Yes ☐ No ☐ On Ice
			Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402: in accordance with these NIOSH methods, two field blanks. (or 10% of the number of field samples submitted. whichever is greater) must be submitted and be analyzed with field samples.

For solid waste samples: Before solid waste materials such as soil, ash, sludge, dredge spoils, etc. are disposed in New Jersey, they must undergo analysis following TCLP protocol. BATTA Labs is not responsible for waste disposal misrepresentations on this document. Document Control Item AM5

CTG Environmental, LLC.

Professional Consultants

DATE: 1-13-21

SITE: CHARDON M.S. 424 NORTH ST, CHARDON

CLIENT: ADAM BRADLEY ENTERPRISES

CONSULTANT DAVID MEYER & DAVID BREWNER

CTG PROJECT MANAGER: DAVID MEYER

JOB NUMBER: 20582-2

DESCRIPTION OF WORK: Perform abestor survey of roof

TIME	GENERAL OBSERVATIONS
8-MF	✓A- ARC
	✓B- SS MODIFIED
.01	C- ~~PERLITE~~
(4)	✓D- GRAVEL- BUR
	E- ~~WOOD FIBER~~ / PERLITE
	✓F- ASPHALT ADHESIVE
	G- PERLITE / ~~WOOD FIBER~~
	H- METAL DECK
9-MF	✓A- ARC
	✓B- SS MOD
.02	C- ~~WOOD FIBER~~
(4)	✓D- GRAVEL- BUR
	E- ~~PERLITE~~
	✓F- ~~METAL~~ VAPOR BARRIER
	G- METAL DECK

SIGNED: David Meyer

DATE: 1-13-21

JOB NUMBER: 20582-2

TIME	GENERAL OBSERVATIONS
3-MF (REPAIR AREA) -03 (4)	✓ A - ARC NONE PRESENT ✓ B - SS MOD C - ~~PERLITE (WOOD FIBER)~~ ✓ D - GRAVEL BUR E - ~~FG~~ ✓ F - VAPOR BARRIER G - METAL
2-MF -04 (4)	✓ A - ARC ✓ B - SS MOD C - ~~WOOD FIBER~~ ✓ D - GRAVEL BUR E - ~~FG INSUL~~ ✓ F - PAPER (ROSIN SHEET) G - METAL
1-MF -05 (4)	✓ A - ARC ✓ B - SS MOD C - ~~WOOD FIBER~~ ✓ D - GRAVEL BUR E - ~~FG INSUL~~ ✓ F - PAPER - BACKER SHT G - METAL

SIMILAR: 3-2 9-18

(Revised 5/01)

SIGNED: Daniel Thyen

DATE: 1-13-21

JOB NUMBER: 20582-2

TIME **GENERAL OBSERVATIONS**

7-MF - ✓A - ARC
✓B - SS MOD Granular
✓C - VENTED BASE SHEET (~~GRAVEL SURF MOD~~)
.06 ✓D - GRAVEL - BUR
E - ~~PERLITE~~
(5) ✓F - PLASTIC BARRIER
G - METAL

6-MF - ✓A - ARC
-1- ✓B - SS MOD
✓✓C - SS MOD W/ ARC Present
✓D - VENTED BASE SHT (GRANULAR SURF MOD)
.07 ✓E - GRAVEL BUR W/ PITCH
(1) F - ~~FG~~
✓G - VAPOR BARRIER (PLASTIC)
H - METAL

6-MF-2 ✓A - ARC
✓B - SS MOD
✓✓C - SS MOD W/ ARC Present
✓D - VENTED BASE SHT
.08 ✓E - GRAVEL BUR W/ PITCH
F - ~~FG~~
(1) ✓G - VAPOR BARRIER
H - METAL

SIGNED: Daniel Nguyen

DATE: 1-13-21

JOB NUMBER: 20582-2

TIME	GENERAL OBSERVATIONS

6-F-@ ROOF CURB - between 6 & 7
same roof A - ARC NOT collected
B - SS MOD 1
C - SS MOD
-09 (4) ✓ D - HYPALON -
✓ E - FLASHING FELTS
✓ F - BUR -
✓ G - FLASHING FELTS
H - METAL

7-F-@ ROOF CURB between 6 & 7
A-B-C - same or above NOT collected
✓ D - HYPALON
-10 (2) ✓ E - FLASHING FELTS (5)
F - METAL

8-F @ ROOF CURB between 8 & Z
✓ A-B-C Not collected
D - HYPALON
-11 ✓ E - FELTS / BUR
(3) ✓ F - RUBBER LINER
G - METAL

3-F @ ROOF CURB between 3 & 9
A - ARC, B - SS MOD (same) (no sample)
-12 (1) ✓✓ C - MESH w/ ARC
✓ D - white caulk

SIGNED: David Thayer

DATE: 1-13-21

JOB NUMBER: 210582-2

TIME **GENERAL OBSERVATIONS**

3-F- ✓ E - FLASHING FELT
F - ~~WOOD FIBER~~
X G - TAR
Tar layer

9F- A & B same - at curb between 9 & 3
✓ C - mesh w/ ARC (HYPALON)
✓ D - ~~FLASHING~~ TAR
-13 ✓ E - fl. felts
(4) ✓ F - fabric
} see sample

1F- A & B same, no sample, apart wall & roof 6
✓ C - HYPALON
-14 ✓ D - FLASHING FELT
(3) E - ~~WOOD CANT~~

2F- A & B (SSM) same (sample included) ✓ B2 - 2nd layer SSM
✓ C - roof flashing (crushed)
-15 D - ~~wood~~
(2) → 3' roof edge between 1 & 2

PAGE 5 OF 5
(Revised 5/01)

SIGNED: David Thym

DATE: 3-22-21

JOB NUMBER: 20582-2

TIME	GENERAL OBSERVATIONS

ROOF 5 - ARC

(MF) SMOOTH SURF MODIFIED

GRAVEL SURF BUR

PERLITE (2/3 LAYERS)

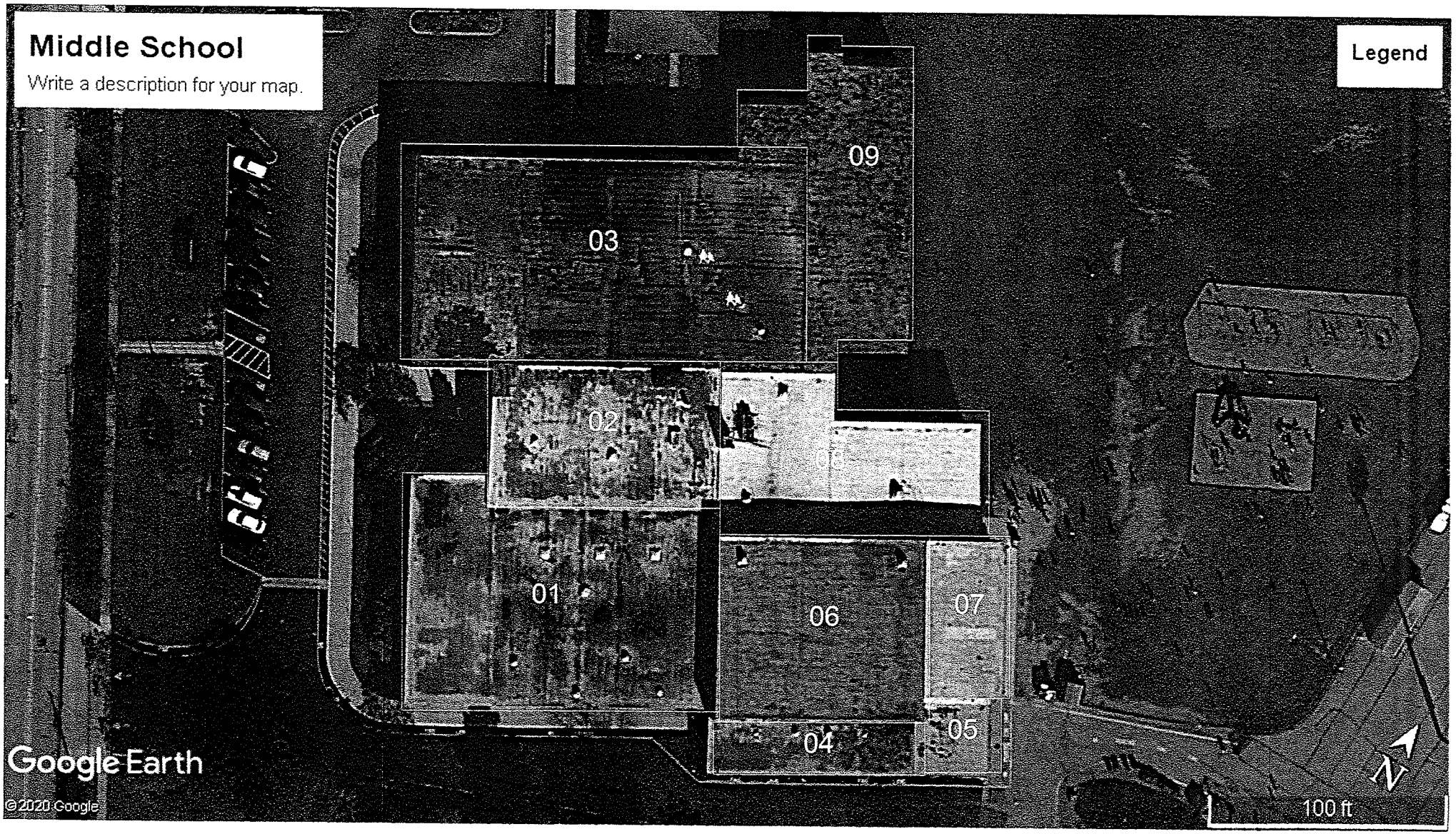
VAPOR BARRIER

METAL DECK

SIGNED: DM

(Revised 5/01)

1-15-21
20582-2


Middle School
Write a description for your map.
Legend
09
03
02
01
06
07
04
05
Google Earth
©2020 Google
100 ft

Chardon Middle School	Chardon Middle School	1	11972	Modified	22 yrs.	0 - 2 yrs	15 - Critical	2,3,4,6,9	1966
Chardon Middle School	Chardon Middle School	2	6046	Modified	22 yrs.	0 - 2 yrs	15 - Critical	1,3,4,6,9	1966
Chardon Middle School	Chardon Middle School	3	15387	Modified	22 yrs.	0 - 2 yrs	15 - Critical	1,2,4,6,9	1966
Chardon Middle School	Chardon Middle School	4	1982	Modified	22 yrs.	0 - 2 yrs	11 - Critical	maybve 1,2,3,6,9	1966
Chardon Middle School	Chardon Middle School	5	1004	Modified	18 yrs.	0 - 2 yrs	41 - Fair/Poor	7	1975
Chardon Middle School	Chardon Middle School	6	6987	Modified	20 yrs.	0 - 2 yrs	41 - Fair/Poor	maybe 1,2,3,4,9	1966
Chardon Middle School	Chardon Middle School	7	2292	Modified	20 yrs.	0 - 2 yrs	41 - Fair/Poor	5	1975
Chardon Middle School	Chardon Middle School	8	6976	Modified	20 yrs.	0 - 2 yrs	41 - Fair/Poor	unsure	
Chardon Middle School	Chardon Middle School	9	6410	Modified	22 yrs.	0 - 2 yrs	15 - Critical	1,2,3,4,6	1966

2021 Roofing Project

ASBESTOS TEST RESULTS AND REQUIREMENTS

For

MUNSON ELEMENTARY SCHOOL (ATTACHED)

CTG Environmental

January 15, 2021

Mr. Bill Bare
Adam Bradley Enterprises, Incorporated
1540 Chagrin River Road
Gates Mills, Ohio 44040

Re: Bulk sample collection, visual evaluation and polarized light microscopy (PLM) analysis of suspect asbestos-containing roofing materials (ACMs) performed on the roofs at the Munson Elementary School building located at 12687 Bass Lake Road in Chardon, Ohio
(CTG Project #: 20582-3)

Dear Mr. Bare,

On December 23, 2020, Mr. David Meyer and Ms. Ann Rothel, both Environmental Protection Agency (EPA) trained asbestos inspectors and State of Ohio licensed Asbestos Hazard Evaluation Specialists, representing CTG Environmental, LLC (CTG), evaluated the roofs at the Munson Elementary School building located at 12687 Bass Lake Road in Chardon, Ohio and collected bulk samples of suspect ACMs.

There were eleven (11) roof areas to evaluate and sample. The roofs of the building were typically comprised of smooth surface modified roofing over the original built-up roofs. The roof decks were concrete or corrugated metal. The 11 roofs were divided into 6 similar types that were installed at approximately the same time making them homogeneous. They are grouped together with their associated layers listed in the order they were applied:

Roofs #1, #3, and #4 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Wood fiber insulation
- Gravel surface built up roof (BUR)
- Perlite insulation
- Ridged foam insulation (ISO)
- Felt paper
- Fiberglass insulation
- Granular cap sheet
- Fiberglass insulation
- Concrete deck

Roof #2 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Perlite insulation
- Ridged foam insulation (ISO)
- Fiberglass insulation
- Granular cap sheet
- Fiberglass insulation
- Concrete deck

Roof #5 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Wood fiber insulation
- Gravel surface BUR
- Perlite insulation
- Ridged foam insulation (ISO)
- Gravel surface BUR
- Fiberglass insulation
- Granular base sheet
- Concrete deck

#5 Flashing

Aluminum roof coating, silver
Modified smooth surface (2 layers)
Flashing felt
Fiberglass insulation

Roofs #6, #7 and #8 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Felt paper
- Wood fiber insulation
- Gravel surface bur
- Styrofoam insulation
- Light weight concrete

#6 Flashing

Aluminum roof coating, silver
Modified smooth surface (2 layers)
Wood fiber insulation
Flashing felt
Wood fiber insulation

Roof #9 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Wood fiber insulation
- Gravel surface BUR
- Perlite insulation
- Adhesive/tar
- Perlite insulation
- Vapor barrier
- Metal deck

#9 Flashing

Aluminum roof coating, silver
Modified smooth surface
Felt paper, black
Flashing, plys
Perlite insulation

Roofs #10 and #11 Main Field

- Aluminum roof coating, silver
- Modified smooth surface
- Perlite insulation
- BUR
- Perlite insulation
- Vapor barrier
- Metal deck

#10 Flashing

Aluminum roof coating, silver
Modified smooth surface
Perlite insulation
Flashing felt

Roof cement was present throughout the 11 roof areas at seams and around penetrations for equipment, fans, drains, pipes, vents, patches, flashings, etc.

CTG performed the sampling in accordance with the protocol established by the Environmental Protection Agency (EPA) in the Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E). This protocol requires the collection of at least two samples of each "miscellaneous" material, in order to prove a suspect material is not an ACM. Prior to renovation and/or demolition projects, the Occupational Safety and Health Administration (OSHA) requires that buildings be surveyed to identify ACMs, utilizing the previously mentioned protocol, as stipulated in OSHA 29 CFR 1926.1101(k)(5). CTG's licensed asbestos inspectors collected core samples that were separated into sixty-four (64) bulk samples of the suspect asbestos-containing roof materials.

Samples of suspect ACM were collected with a utility knife, coring tool, or screwdriver, which was driven through the suspect material to the substrate as to obtain a sample containing all discrete layers. Each individual layer was placed in "whirl-pak" bags and assigned unique identifiers that were recorded on the bag and the bulk survey sampling sheets. Samples were submitted to International Asbestos Testing Laboratories (IATL) in Mount Laurel, New Jersey. Samples of bulk material were analyzed using PLM following the EPA Method 600/R-93/116. IATL is a participant in the U.S. Department of Commerce, National Institute of Standards and Technology through the National Voluntary Laboratory Accreditation Program (NVLAP) for Bulk Asbestos Analysis, NVLAP No. 101165-0 and accreditation by the American Industrial Hygiene Association (#100188).

PLM is an optical microscopic technique used to distinguish the different types of asbestos fibers by their shape and unique optical properties. The technique is based on observing the refraction of light from the various crystalline asbestos structures and identifying the corresponding color changes through the microscope. Analytical results of greater than 1% asbestos classify a material as asbestos containing according to the EPA and State of Ohio. Refer to Table 1, which is attached to this letter report for a list of the bulk samples, their locations, and laboratory results.

Based upon the results of the bulk sample analysis the following materials were determined to be ACMs and are classified as follows:

Asbestos-Containing Materials	Friable	Condition	OSHA Classification	EPA Classification
Gravel built-up roof (BUR) Roof #10 main field	No	Good	Miscellaneous	Category I non-friable
Flashing felt Roof #10 flashing	No	Good	Miscellaneous	Category I non-friable
Flashing felt Roof #9 flashing	No	Good	Miscellaneous	Category I non-friable
Flashing felt Roof #6 flashing	No	Good	Miscellaneous	Category I non-friable
Roof cement, black	No	Good	N/A	Category I non-friable

Refer to Table 1, which is attached to this report for a list of the bulk samples, their locations, and laboratory results.

The asbestos-containing roof cement was observed at various locations throughout all the roof areas at seams and around penetrations for equipment, fans, drains, pipes, vents, patches, flashings, etc. The asbestos-containing gravel surfaced built-up roof (BUR) associated with the main field of roofs #10 and #11 was located underneath of the modified smooth surface (top roof surface). The flashings of all 11 roofs had asbestos-containing felts.

ROOF #	Main Field Built Up Roof	Flashing Felts	Roof Cement
11	X	X	X
10	X	X	X
9		X	X
8		X	X
7		X	X
6		X	X
5		X	X
4		X	X
3		X	X
2		X	X
1		X	X

The identified asbestos-containing roofing materials are classified by the EPA as Category I non-friable ACMs. Category I non-friable ACMs are considered non-regulated ACMs, when intact and in good condition, by the EPA and State of Ohio, per the definition contained within the EPA's National Emissions Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M), which is as follows: *Regulated asbestos-containing material (RACM) means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by this subpart...* The identified asbestos-containing roof cement, flashing felts, and BURs were non-friable and considered non-regulated ACMs, per the NESHAPs, at the time of the survey.

EPA/NESHAP and State of Ohio asbestos notifications will be required for this roof replacement project, because roof areas 10 and 11 equal 5,680 square feet which is greater than the NESHAP 5,580 square feet minimum. If a powered roof cutter is used to remove the asbestos-containing roof materials, NESHAPS states that if 5,580 square feet of asbestos-containing roofing materials are removed using a powered roof cutter, 160 square feet of RACM will be generated, therefore an EPA/NESHAP notification would be required, because this roof area is greater than 5,580 square feet. The State of Ohio does not require notifications for projects, which only involve roofing materials.

In OSHA 29 CFR 1926.1101, work involving the removal of asbestos-containing "miscellaneous" materials is defined as Class II work. When the main field BUR is removed/disturbed, it must be done while meeting the requirements for Class II work.

The OSHA considers roofing materials as "miscellaneous" ACMs. In 29 CFR 1926.1101, OSHA requires workers to be trained for asbestos-containing roofing work. The installing, repairing, maintaining or removal of asbestos-containing roof cement, flashing felt, and BUR, are defined as "incidental" roof work. The roofing contractor must comply with 29 CFR 1926.1101(g)(11) "Alternative methods of compliance for installing, removal, repair and maintenance of certain roofing and pipeline coating materials". These requirements are summarized below:

1. At the beginning and during the work a "competent person" who is capable of identifying asbestos hazards in the work place shall conduct an inspection of the worksite and determine that the roofing material is intact and will remain intact during removal.

2. The workers performing that work must be trained in accordance with 29 CFR 1926.1101(k)(9)(viii).

3. The material shall not be sanded, abraded or ground. Manual methods, which do not render the material non-intact, shall be used.

4. All material removal from the roof shall be lowered to the ground by a dust tight chute, crane or hoist by the end of the workday.

5. The contractor shall notify the building owner of the presence and location of newly discovered ACMs.

The asbestos-containing roof cement and aluminum roof coating (asphalt based) was deregulated by the OSHA on June 29, 1998 and removed from 29 CFR 1926.1101. This is one of only a few products categorized as such. Therefore, the OSHA asbestos regulations are not applicable to these two types of roofing materials. The State of Ohio, does not regulate non-friable ACMs or roofing materials.

Enclosed, please find copies of the laboratory certificates of analysis, a copy of the chain of custody, and the asbestos inspector's Ohio licenses. If you have any questions regarding this report, please contact our office.

Sincerely,

David R. Meyer
President

Enclosures

Table 1
Asbestos Bulk Sampling Results
Munson Elementary School
12687 Bass Lake Road, Chardon, Ohio
December 2020

Sample #		Material	Location	Results
582-3	1MF-01 A	Aluminum roof coating, silver	Roof #1	No asbestos detected
582-3	1MF-01 B	Modified smooth surface, black		No asbestos detected
582-3	1MF-01 D	Gravel surface built up roof		No asbestos detected
582-3	1MF-01 G	Felt paper, black		No asbestos detected
582-3	1MF-01-I	Granular cap sheet (BUR)		No asbestos detected
582-3	1MF-01 K	Roof cement, black		No asbestos detected
582-3	5MF-04 A	Aluminum roof coating, silver	Roof #5	No asbestos detected
582-3	5MF-04 B	Modified smooth surface, black		No asbestos detected
582-3	5MF-04 G	Gravel surface BUR		No asbestos detected
582-3	5MF-04 J	Granular cap sheet		No asbestos detected
582-3	5F-03 A	Aluminum roof coating, silver		No asbestos detected
582-3	5F-03 B1	Modified smooth surface, black		No asbestos detected
582-3	5F-03 C	BUR		No asbestos detected
582-3	5F-03 B2	2nd Layer - modified smooth surface, black		No asbestos detected
582-3	2MF-05 A	Aluminum roof coating, silver	**Roof #2**	No asbestos detected
582-3	2MF-05 B	Modified smooth surface, black		No asbestos detected
582-3	2MF-05 E	BUR		No asbestos detected
582-3	2MF-05 G	Granular cap sheet		No asbestos detected
582-3	**2MF-05 I**	**Roof cement, black**		**15% Chrysotile**
582-3	10MF-11 A	Aluminum roof coating, silver	**Roof #10**	No asbestos detected
582-3	10MF-11 B	Modified smooth surface, black		No asbestos detected
582-3	**10MF-11 D**	**Gravel BUR**		**20% Chrysotile**
582-3	10MF-11 F	Vinyl barrier, black		No asbestos detected
582-3	10MF-12 A	Aluminum roof coating, silver		No asbestos detected
582-3	10MF-12 B	Modified smooth surface, black		No asbestos detected
582-3	**10MF-12 D**	**Gravel BUR**		**15% Chrysotile**
582-3	10MF-12 F	Vinyl barrier, black		No asbestos detected
582-3	10F-13 B	Modified smooth surface, black		No asbestos detected
582-3	**10F-13 D**	**Flashing felt**		**15% Chrysotile**
582-3	4MF-06 A	Aluminum roof coating, silver	Roof #4	No asbestos detected
582-3	4MF-06 B	Modified smooth surface, black		No asbestos detected
582-3	4MF-06 D	Gravel surface BUR		No asbestos detected
582-3	4MF-06 G	Felt paper, black		No asbestos detected
582-3	4MF-06 I	Granular cap sheet		No asbestos detected
582-3	9MF-10 A	Aluminum roof coating, silver	Roof #9	No asbestos detected
582-3	9MF-10 B	Modified smooth surface, black		No asbestos detected
582-3	9MF-10 D	Gravel surface BUR		No asbestos detected
582-3	9MF-10 F	Adhesive/tar		No asbestos detected
582-3	9MF-14 A	Aluminum roof coating, silver		No asbestos detected
582-3	9MF-14 B	Modified smooth surface, black		No asbestos detected

Table 1
Asbestos Bulk Sampling Results
Munson Elementary School
12687 Bass Lake Road, Chardon, Ohio
December 2020

Sample #		Material	Location	Results
582-3	9MF-14 D	Gravel surface BUR	Roof #9	No asbestos detected
582-3	9MF-14 F	Adhesive/tar		No asbestos detected
582-3	9MF-14 H	Felt paper, black		No asbestos detected
582-3	9MF-10 H	Felt paper, black		No asbestos detected
582-3	9MF-1 I	Roof cement, black		No asbestos detected
582-3	9F-15 B	Modified smooth surface, black		No asbestos detected
582-3	9F-15 C	Felt paper, black		No asbestos detected
582-3	**9F-15 D**	**Flashing felt**		**3.25% Chrysotile**
582-3	6F-16 C	2nd layer - modified smooth surface, black	Roof #6	No asbestos detected
582-3	**6F-16 E**	**Flashing felt**		**3.5% Chrysotile**
582-3	6MF-09 A	Aluminum roof coating, silver		No asbestos detected
582-3	6MF-09 B	Modified smooth surface, black		No asbestos detected
582-3	6MF-09 D	Gravel surface BUR		No asbestos detected
582-3	6MF-09 F	Light weight concrete		No asbestos detected
582-3	6MF-09 H	Felt paper, black		No asbestos detected
582-3	7MF-08 A	Aluminum roof coating, silver	Roof #7	No asbestos detected
582-3	7MF-08 B	Modified smooth surface, black		No asbestos detected
582-3	7MF-08 D	Gravel surface BUR		No asbestos detected
582-3	**7MF-08 G**	**Roof cement, black**		**5.5% Chrysotile**
582-3	8MF-07 A	Aluminum roof coating, silver	Roof #8	No asbestos detected
582-3	8MF-07 B	Modified smooth surface, black		No asbestos detected
582-3	8MF-07 D	Gravel surface BUR		No asbestos detected
582-3	8MF-07 E	Light weight concrete		No asbestos detected
582-3	8MF-07 G	Roof cement, black		No asbestos detected

Dedicated to a Cleaner Environment Since 1982

NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

batta LABORATORIES

BATTA LABORATORIES, LLC

A Certified MBE Company

Delaware Industrial Park, 6 Garfield Way
Newark, DE19713-5817
Tel. (302)737-3376 Fax (302) 737-5764

Web: http://www.battaenv.com E-mail: battaenv@battaenv.com

EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/04/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-3 ROOF SAMPLING - MUNSON ELEMENTARY SCHOOL

Date Sampled: 12/23/20
Sampled By: CLIENT
Date Analyzed: 01/04/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175200	582-3-1MF-01-A	Roof #1	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1175201	582-3-1MF-01-B	Roof #1	Modified Smooth Surface	n/a	Fibrous Soft Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1175202	582-3-1MF-01-D	Roof #1	Gravel Surface	n/a	Fibrous Soft Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1175203	582-3-1MF-01-G	Roof #1	Felt Paper	n/a	Soft Homogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1175204	582-3-1MF-01-I	Roof #1	Granular Cap Sheet	n/a	Granular Fibrous Soft Homogeneous	Black	20% Fiber Glass 80% Non-fibrous Material	No Asbestos Found

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ANALYST: PMG and MEC

REVIEWED BY: RgS

QA/QC Officer/Signatory

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EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/04/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-3 ROOF SAMPLING - MUNSON ELEMENTARY SCHOOL

Date Sampled: 12/23/20
Sampled By: CLIENT
Date Analyzed: 01/04/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175205	582-3-1MF-01-K	Roof #1	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	40% Cellulose 60% Non-fibrous Material	No Asbestos Found
1175206	582-3-5MF-04-A	Roof #5	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1175207	582-3-5MF-04-B	Roof #5	Modified Smooth Surface	n/a	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found
1175208	582-3-5MF-04-G	Roof #5	Gravel Surface	n/a	Soft Homogeneous	Black	10% Cellulose 90% Non-fibrous Material	No Asbestos Found
1175209	582-3-5MF-04-J	Roof #5	Granular Base Sheet	n/a	Fibrous Soft Homogeneous	Black	15% Fiber Glass 85% Non-fibrous Material	No Asbestos Found

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Sampled By: CLIENT
Project Name: CTG ENVIRO-20582-3 ROOF SAMPLING - MUNSON ELEMENTARY SCHOOL
Date Analyzed: 01/04/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175210	582-3-5F-03-A	Roof #5	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1175211	582-3-5F-03-B1	Roof #5	Modified Smooth Surface	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175212	582-3-5F-03-C	Roof #5	Built-Up Roof	n/a	Fibrous Soft Homogeneous	Black	5% Cellulose 15% Fiber Glass 80% Non-fibrous Material	No Asbestos Found
1175213	582-3-5F-03-B2	Roof #5	Modified Smooth Surface #2	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175214	582-3-2MF-05-A	Roof #2	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175215	582-3-2MF-05-B	Roof #2	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Black Silver	5% Synthetic Fiber 95% Non-fibrous Material	No Asbestos Found
1175216	582-3-2MF-05-E	Roof #2	Built-Up Roof	n/a	Soft Fibrous Heterogeneous	Black	15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1175217	582-3-2MF-05-G	Roof #2	Cap Sheet	n/a	Firm Fibrous Heterogeneous	Black	25% Cellulose 75% Non-fibrous Material	No Asbestos Found
1175218	582-3-2MF-05-I	Roof #2	Roof Cement	n/a	Soft Fibrous Heterogeneous	Black	85% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%
1175219	582-3-10MF-11-A	Roof #10 (W)	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175220	582-3-10MF-11-B	Roof #10 (W)	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Silver Black	5% Synthetic Fiber 95% Non-fibrous Material	No Asbestos Found
1175221	582-3-10MF-11-D	Roof #10 (W)	Built-Up Roof	n/a	Soft Fibrous Heterogeneous	Black	30% Cellulose 50% Non-fibrous Material	20% Chrysotile Total Asbestos = 20%
1175222	582-3-10MF-11-F	Roof #10 (W)	Vinyl Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175223	582-3-10MF-12-A	Roof #10 (E)	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1175224	582-3-10MF-12-B	Roof #10 (E)	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Silver Black	5% Synthetic Fiber 95% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175225	582-3-10MF-12-D	Roof #10 (E)	Gravel Built-Up Roof	n/a	Soft Fibrous Heterogeneous	Black	35% Cellulose 50% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%
1175226	582-3-10MF-12-F	Roof #10 (E)	Vinyl Barrier	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175227	582-3-10MF-13-B	Roof #10 (Flashing)	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Silver Black	5% Synthetic Fiber 95% Non-fibrous Material	No Asbestos Found
1175228	582-3-10MF-13-D	Roof #10 (Flashing)	Built-Up Roof Felt	n/a	Soft Fibrous Heterogeneous	Black	35% Cellulose 50% Non-fibrous Material	15% Chrysotile Total Asbestos = 15%
1175229	582-3-4MF-06-A	Roof #4	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175230	582-3-4MF-06-B	Roof #4	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Silver Gold	7% Synthetic Fiber 93% Non-fibrous Material	No Asbestos Found
1175231	582-3-4MF-06-D	Roof #4	Gravel Surface	n/a	Soft Fibrous Heterogeneous	Black	20% Cellulose 80% Non-fibrous Material	No Asbestos Found
1175232	582-3-4MF-06-G	Roof #4	Felt Paper	n/a	Soft Homogeneous	Black	<1% Fiber Glass 100% Non-fibrous Material	No Asbestos Found
1175233	582-3-4MF-06-I	Roof #4	Gravel Surface	n/a	Soft Fibrous Heterogeneous	Black	<1% Fiber Glass 15% Cellulose 85% Non-fibrous Material	No Asbestos Found
1175234	582-3-9MF-10-A	Roof #9 (W)	Aluminum Surface Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175235	582-3-9MF-10-B	Roof #9 (W)	Modified Smooth Surface	n/a	Soft Fibrous Heterogeneous	Black	7% Synthetic Fiber 93% Non-fibrous Material	No Asbestos Found
1175236	582-3-9MF-10-D	Roof #9 (W)	Gravel Surface	n/a	Soft Fibrous Heterogeneous	Black	30% Cellulose 70% Non-fibrous Material	No Asbestos Found
1175237	582-3-9MF-10-F	Roof #9 (W)	Adhesive / Tar	n/a	Soft Homogeneous	Black	3% Cellulose 97% Non-fibrous Material	No Asbestos Found
1175238	582-3-9MF-14-A	Roof #9 (E)	Aluminum Surface Coating	n/a	Soft Homogeneous	Silver	2% Cellulose 98% Non-fibrous Material	No Asbestos Found
1175239	582-3-9MF-14-B	Roof #9 (E)	Modified Smooth Surface	n/a	Fibrous Soft Homogeneous	Black	3% Cellulose 97% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175240	582-3-9MF-14-D	Roof #9 (E)	Gravel Surface	n/a	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found
1175241	582-3-9MF-14-F	Roof #9 (E)	Adhesive / Tar	n/a	Soft Homogeneous	Black	10% Cellulose 90% Non-fibrous Material	No Asbestos Found
1175242	582-3-9MF-14-H	Roof #9 (E)	Felt Paper	n/a	Fibrous Soft Homogeneous	Black	30% Fiber Glass 70% Non-fibrous Material	No Asbestos Found
1175243	582-3-9MF-10-H	Roof #9 (W)	Felt Paper	n/a	Fibrous Soft Homogeneous	Black	35% Fiber Glass 65% Non-fibrous Material	No Asbestos Found
1175244	582-3-9MF-14-I	Roof #9 (E)	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	40% Cellulose 60% Non-fibrous Material	No Asbestos Found

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Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1175245	582-3-9F-15-B	Roof #9 (Large Vent)	Modified Smooth Surface	n/a	Fibrous Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found	
1175246	582-3-9F-15-C	Roof #9 (Large Vent)	Felt Paper	n/a	Fibrous Soft Homogeneous	Black	35% Fiber Glass 65% Non-fibrous Material	No Asbestos Found	
1175247	582-3-9F-15-D	Roof #9 (Large Vent)	Built-Up Roof	n/a	Fibrous Soft Homogeneous	Black	5% Cellulose 91.75% Non-fibrous Material	3.25% Chrysotile Total Asbestos = 3.25%	Point Count
1175248	582-3-6F-16-C	Roof #6	2nd Layer Modified Smooth Surface	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1175249	582-3-6F-16-E	Roof #6	Built-Up Roof	n/a	Fibrous Soft Homogeneous	Black	10% Cellulose 86.5% Non-fibrous Material	3.5% Chrysotile Total Asbestos = 3.5%	Point Count

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

ANALYST: PMG and MEC

REVIEWED BY: RgS

QA/QC Officer/Signatory

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*This report does not constitute endorsement by NVLAP and/or any other US government agencies.

*The test data pertain only to the items tested. No assumptions or conclusions should be made to materials or samples not analyzed. Furthermore, Batta Laboratories, LLC assumes no responsibility for the accuracy of results influenced by the use of improper collection techniques or equipment.

*Organically-bound, nonfriable material may interfere with the accurate and reproducible quantification of asbestos. In these cases, the EPA recommends further analysis by a matrix-reduction method. Batta recommends the NY ELAP Item 198.6/198.4 over the Chatfield method. When point count techniques are utilized on organically-bound, nonfriable materials without the EPA-recommended matrix reduction steps, Batta Laboratories assumes no responsibility regarding the accuracy or precision associated with these results. In these cases, Batta employs a modified version of the EPA point count method.

*WRTA refers to a group of fibrous Amphiboles typically associated with 'Libby Amphibole'. Within this classification are: winchite, richterite, tremolite, and actinolite.

Dedicated to a Cleaner Environment Since 1982

NY ELAP LAB# 11993 for PCM, PLM, TEM & Lead

batta LABORATORIES

BATTA LABORATORIES, LLC

A Certified MBE Company

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Web: http://www.battaenv.com E-mail: battaenv@battaenv.com

EPA Lab ID #DE004

NVLAP Lab Code: 101032-0

Dept. Code: PLM

Rev. #: 0
Batch#: N/A
COC#: N/A

CERTIFICATE OF PLM ANALYSIS

Test Method: EPA/600/R-93/116 in conjunction with Batta SOP

Report Date: 01/04/21

Sampling Data

BLI Project #: R102515
Project Name: CTG ENVIRO-20582-3 ROOF SAMPLING - MUNSON ELEMENTARY SCHOOL

Date Sampled: 12/23/20
Sampled By: CLIENT
Date Analyzed: 01/04/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175250	582-3-6MF-09-A	Roof #6	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found
1175251	582-3-6MF-09-B	Roof #6	Modified Smooth Surface	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175252	582-3-6MF-09-D	Roof #6	Gravel Surface	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found
1175253	582-3-6MF-09-F	Roof #6	Light Weight Concrete	n/a	Firm Homogeneous	Gray	100% Non-fibrous Material	No Asbestos Found
1175254	582-3-6MF-09-H	Roof #6	Felt Paper	n/a	Fibrous Soft Homogeneous	Black	30% Fiber Glass 70% Non-fibrous Material	No Asbestos Found

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

Note 3 Materials containing vermiculite are not good candidates for analysis using standard EPA 600 PLM protocol. Results may be low-biased due to inherent limitations caused by the material. The EPA recommends that vermiculite attic insulation (VAI) be prepped and analyzed using EPA 600/R-04/004, known as "The Cincinnati Method".

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Date Sampled: 12/23/20
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Project Name: CTG ENVIRO-20582-3 ROOF SAMPLING - MUNSON ELEMENTARY SCHOOL
Date Analyzed: 01/04/21

Sample ID		Client-supplied Data			Analytical Data		Reported Results		
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components	
1175255	582-3-7MF-08-A	Roof #7	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found	
1175256	582-3-7MF-08-B	Roof #7	Modified Smooth Surface	n/a	Soft Homogeneous	Black	100% Non-fibrous Material	No Asbestos Found	
1175257	582-3-7MF-08-D	Roof #7	Gravel Surface	n/a	Fibrous Soft Homogeneous	Black	10% Cellulose 90% Non-fibrous Material	No Asbestos Found	
1175258	582-3-7MF-08-G	Roof #7	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	94.5% Non-fibrous Material	5.5% Chrysotile Total Asbestos = 5.5%	Point Count
1175259	582-3-8MF-07-A	Roof #8	Aluminum Roof Coating	n/a	Soft Homogeneous	Silver	100% Non-fibrous Material	No Asbestos Found	

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Note 2 Unless otherwise specified, Tr=Trace and correlates to <0.25% (based on a 400-point EPA point count).

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Sample ID		Client-supplied Data			Analytical Data		Reported Results	
Lab Sample#	Client Sample#	Sample Description	Material Type	Friable?	Texture/ Gross	Color	Non-asbestiform Components	Asbestiform Components
1175260	582-3-8MF-07-B	Roof #8	Modified Smooth Surface	n/a	Soft Homogeneous	Black	5% Cellulose 95% Non-fibrous Material	No Asbestos Found
1175261	582-3-8MF-07-D	Roof #8	Gravel Surface	n/a	Fibrous Soft Homogeneous	Black	50% Cellulose 50% Non-fibrous Material	No Asbestos Found
1175262	582-3-8MF-07-E	Roof #8	Light Weight Concrete	n/a	Firm Homogeneous	Gray	100% Non-fibrous Material	No Asbestos Found
1175263	582-3-8MF-07-G	Roof #8	Roof Cement	n/a	Fibrous Soft Homogeneous	Black	30% Cellulose 70% Non-fibrous Material	No Asbestos Found

Note 1 *Due to limitations of the EPA PLM method, floor tiles may yield false negative (<1%) results by this method. As such, the EPA recommends further analysis by electron microscopy. Batta recommends the NY 198.4 over the Chatfield method.*

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AIHA LAP, LL: 100448
NY ELAP: 11993
EPA Lab: DE004
MD Lab ID: 263

CHAIN OF CUSTODY

BL Project # : R102515

Customer Billing Information:	Shipping Information	Turnaround Times (check one, refer to notes*)	Method of Payment
Name: CTG Environmental, LLC	☐ Picked up by BATTA	☐ 3 Hours / Rush (Note 1)	☐ Cash
Billing Address 1: 4407 Brookpark Road	☐ Delivered by customer	☐ 24 Hours (Note 2)	☐ Visa/MasterCard/Discover
Billing Address 2: Cleveland, Ohio 44134	☐ Shipped by customer	☐ 48 Hours (Note 3)	☐ Money Order
Phone: 216-661-6696		☒ 72 Hours (Note 4)	☐ Purchase Order #
Email: dmeyer@ctgenvironmental.com		☐ 5-10 Days (Note 5)	☐ Check #
Results To: Dave Meyer		☐ 5 Days (For Wholesale Clients Only)	☐ Other
			☐ Unit Price/Quote
			☐ Total Payment
			☐ Reference #:

* Notes Regarding Turnaround Times (TATs)
1 Specific TATs depend on the test requested. TATs may not be available for all types of analysis. Client must make arrangements with lab to guarantee TAT. Premium rate will apply.
2 Unless a specific time is requested, results are guaranteed by 5 p.m. on the following business day. The turnaround time of 24 hours may not be available with all analysis.
3 Unless a specific time is requested, results are guaranteed by 5p.m. on the 2nd business day.
4 Unless a specific time is requested, results are guaranteed by 5 p.m. on the 3rd business day.
5 Unless a specific time is requested, results are guaranteed before 5 p.m. of the 10th business day.

Client Project Information

Project Name:	Project Location:	New Jersey Solid Waste ? Will results be used for disposal in NJ?	Project #:	Sampled By:
ROOF SAMPLING	MUNSON Elem. SCH	Yes ☐ No ☐	20582-3	DMeyer/ARother

Sample Information

Lab Use Only	Field Sample ID#	Sample Location & Description	Sampling Date & Time	Sampling Info for Air /Surface Samples: Start Time	Stop Time	Flow Rate	Volume/Area	Sample Type	Test Method	Laboratory Use Only: Results	Date of Analysis	Analyst
117500								BULK	PLM			
↓												
263	(64) Samples submitted											

Special Instructions From Client: Only analyze material listed on Bag or Sample Sheet

Sample Relinquished By: X [signature] Date: 12/28/2020 Time: 1800

Sample Received By: JES Date: 12/29/20 Time: 1045

Laboratory Use Only

Logged-in by:	Log-in Date:	Date:	Field Samples Acceptable ☑ Yes ☐ No ☐ On Ice
JES	12/29/20	1145	Sample #:
			Sample Condition:

For drinking water samples: for results to be valid, lab must receive samples on ice and within 48 hours of collection. For air samples collected by NIOSH 7400 and 7402: in accordance with these NIOSH methods, two field blanks, (or 10% of the number of field samples submitted, whichever is greater) must be submitted and be analyzed with field samples.

For solid waste samples: Before solid waste materials such as soil, ash, sludge, dredge spoils, etc. are disposed in New Jersey, they must undergo analysis following TCLP protocol. BATTA Labs is not responsible for waste disposal misrepresentations on this document.

Google Maps 12687 Bass Lake Rd

Imagery ©2020 Maxar Technologies, State of Ohio / OSIP, Map data ©2020 50 ft

APPENDIX 2

CHARDON LOCAL SCHOOLS TOBACCO POLICY

Book	Policy Manual
Section	7000 Property
Title	USE OF TOBACCO ON SCHOOL PREMISES
Code	po7434
Status	Active
Adopted	January 11, 2021

7434 - **USE OF TOBACCO ON SCHOOL PREMISES**

The Board of Education is committed to providing students, staff, and visitors with a tobacco and smoke-free environment. The negative health effects of tobacco use for both users and nonusers, particularly in connection with second hand smoke, are well established. Further, providing a non-smoking and tobacco-free environment is consistent with the responsibilities of teachers and staff to be positive role models for our students.

For purposes of this policy, "use of tobacco" means to chew or maintain any substance containing tobacco, including smokeless tobacco, in the mouth to derive the effects of tobacco, as well as all uses of tobacco, including cigars, cigarettes, pipe tobacco, chewing tobacco, snuff, any other matter or substances that contain tobacco, in addition to papers used to roll cigarettes and/or the smoking of electronic, "vapor," or other substitute forms of cigarettes, clove cigarettes and any other lighted smoking devices for burning tobacco or any other substance.

The term “tobacco” includes any product that contains tobacco, is derived from tobacco, contains nicotine, or e-cigarettes and other electronic smoking devices (including but not limited to "JUULs"), but does not include any cessation product approved by the United States Food and Drug Administration for use as a medical treatment to reduce or eliminate nicotine or tobacco dependence.

In order to protect students and staff who choose not to use tobacco from an environment noxious to them, and because the Board does not condone smoking and/or the use of tobacco, the Board prohibits the use of tobacco or tobacco substitute products at all times within any enclosed facility owned or leased or contracted for by the Board, and in the areas directly or indirectly under the control of the Board immediately adjacent to locations of ingress or egress to such facilities. This prohibition extends to any Board-owned and/or operated vehicles used to transport students and to all other Board-owned and/or operated vehicles. Such prohibition also applies to school grounds, athletic facilities, and any school-related event, except at designated times and in designated areas as defined in statute and by Ohio's Smoke-Free Workplace Program.

The Superintendent shall require the posting of signs as required by R.C. 3794.06 and as specified by the Ohio Department of Health.

Advertising/Promotion

In accordance with Policy 9700.01, tobacco advertising is prohibited on school grounds, in all school-sponsored publications, and at all school-sponsored events.

Tobacco promotional items that promote the use of tobacco products, including clothing, bags, lighters, and other personal articles are not permitted on school grounds, in school vehicles, or at school-sponsored events.

Violations of this policy may result in removal from school property or the school activity in accordance with Policy 9150 – School Visitors.

Legal	R.C. 2923.12, 3313.20, 3313.47, 3313.751, 3794 et seq. 20 U.S.C. 6081 et seq., 20 U.S.C. 7182 U.S.D.O.E. Memorandum, 1995 A.C. 3701-52