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PROJECT MANUAL
FOR

SMHA
STARK METROPOLITAN HOUSING AUTHORITY

ROOF AND RTU REPLACEMENTS AT LINCOLN, PLAZA TERRACE, AND SHORTRIDGE VILLA APARTMENTS

Shortridge Villa Roof and RTU Replacement
4533 Stephen Cir. NW
Canton, Ohio 44718

Lincoln Apartments Roof and RTU Replacement
815 Lincoln Way East
Massillon, Ohio 44646

Plaza Terrace Roof and RTU Replacement
716 30th ST. NW
Canton, Ohio 44709

TC PROJECT NO: 56A(B,C,D)23
DATE: February 9, 2024

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Refer to drawings.

APPENDIX A
Asbestos Survey Report - Lincoln Apartments
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Asbestos Survey Report - Shortridge Villa Apartments

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SECTION 00 3126
EXISTING HAZARDOUS MATERIAL INFORMATION

PART 1 - GENERAL

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. Existing asbestos reports for Project (refer to Appendix A):
   1. Asbestos Survey Report – for Lincoln Apartments, Prepared by Professional Service Industries, Inc., dated October 23, 2023.
   2. Asbestos Survey Report – for Plaza Terrace Apartments, Prepared by Professional Service Industries, Inc., dated October 23, 2023.
   3. Asbestos Survey Report – for Shortridge Villa Apartments, Prepared by Professional Service Industries, Inc., dated October 23, 2023.

C. Related Requirements:
   1. Section 02 4119 "Selective Demolition" for notification requirements if materials suspected of containing hazardous materials are encountered.

END OF SECTION 00 3126

SECTION 01 1100
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the contract including General, Supplementary and Special Conditions and other Division 01 Specification sections apply to work of this section.

1.2 SUMMARY OF WORK

A. The Project is a roof and HVAC RTU replacement at three buildings, Lincoln, Plaza Terrace, and Shortridge Villa Apartments as follows ("furnish and install" typically):

1. **Lincoln Apartments at 815 Lincoln Way East, Massillon, OH.**
   Work includes: Roof & HVAC Replacement on main roof and over mechanical penthouse enclosure and entry canopy, including but not limited to the following:
   a. Remove existing main roof system (including pea-gravel ballast) down to structure and replace existing roof membrane and insulation with new fully-adhered thermoset (EPDM) single-ply roof membrane, over coverboard, over poly-isocyanurate insulation, over self-adhering vapor barrier (over mechanically attached fiberglass matt-faced exterior sheathing where roof deck is metal decking at penthouses and entry canopy). The R-value for the new roofing system shall be 25. New roof system shall meet requirements for 30-year manufacturer's warranty and FM I-90 criteria for uplift and 115 ultimate wind speed warranty. Tapered insulation is required, including for crickets and saddles.
      i.) Replace coping, edge metal, flashing, and counterflashing.
      ii.) At the mechanical penthouse, remove existing built-up roof system, and replacement with new EPDM and insulation system, including edge metal, gutter, downspout and splashblock.
   b. Remove existing RTU and install new RTU on built-up equipment curbs at same locations (bearing points), raising curbs to accommodate additional insulation where necessary, and provide and install flashing and counterflashing of all penetrations and curbs. Replace equipment curb cap with stainless steel sheet metal.
   c. Paint existing-to-remain vents, stacks, and sheet metal ductwork with rust-preventative coating.
   d. Re-seal and/or re-flash all roof top equipment including curbs, vents, hatches, and penetrations to meet code and roofing manufacturers' standards. Extend any pipe where height is less than 8" above new roof surface.
   e. Install crickets and saddles to provide positive drainage to roof drains with min. 8'x8' drain pans.
   f. Clean and inspect existing roof drain leaders. Replace roof drains and strainers with retrofit units to accommodate additional thickness of insulation.

2. **Plaza Terrace at 716 30th St NW, Canton, OH.**
   Work includes: Same scope as above.

3. **Shortridge Villa at 4533 Stephen Circle NW, Canton, OH.**
   Work includes: Roof & HVAC Replacement on main roof and over mechanical penthouse enclosure, including but not limited to the following:
   a. <u>At sloped roofs:</u> Remove roof system down to roof sheathing, and install new asphalt shingle roof system and underlayment, with ice guard at eaves and valleys. Replace fascias, rake trim, drip edges, gutters and downspouts. New system to meet manufacturer's 30-year warranty and and FM I-90 criteria for uplift and 115 ultimate wind

speed warranty. Alert Architect to any deteriorated roof sheathing.

b. At flat roof areas: Remove existing roof system down (including pea-gravel ballast) to structure and replace existing roof membrane and insulation with new fully-adhered thermoset (EPDM) single-ply roof membrane, over coverboard, over poly-isocyanurate insulation, over vapor barrier (over mechanically attached fiberglass matt-faced exterior sheathing where roof deck is metal decking at penthouse and entrance canopy). The R-value for the new roofing system shall be 25. New roof system shall meet requirements for 30-year manufacturer's warranty and FM I-90 criteria for uplift and 115 ultimate wind speed warranty. Tapered insulation is required, including for crickets and saddles.
   i.) Replacement of coping, edge metal, flashing, and counterflashing.
   ii.) At the mechanical penthouse, removal of existing built-up roof system, and replacement with new EPDM and insulation system, including edge metal, gutter, downspout and splashblock.

c. Remove existing RTU and install new RTU on built-up equipment curbs at same locations (bearing points), raising curbs to accommodate additional insulation where necessary, and provide and install flashing and counterflashing of all penetrations and curbs. Replace equipment curb cap with stainless steel sheet metal.

d. Paint existing-to-remain vents, stacks, and sheet metal ductwork with rust-preventative coating.

e. Re-seal and/or re-flash all roof top equipment including curbs, vents, hatches, and penetrations to meet code and roofing manufacturers' standards. Extend any pipe where height is less than 8" above new roof surface.

f. Install crickets and saddles to provide positive drainage to roof drains with min. 8'x8' drain pans.

g. Clean and inspect existing roof drain leaders. Replace roof drains and strainers with retrofit units to accommodate additional thickness of insulation.

1.4 WORK SEQUENCE

A. Work shall proceed in a continuous and orderly manner.

B. The Contractor shall strive to minimize disruption to the building operations and occupancy during remedial roofing activities.

C. New roofing and masonry work of the existing in scope or out of scope systems shall be fully protected from damage to prevent leakage. Special protection of installed products is required to prevent contamination from tar/asphalt, oils, chemicals, etc.

D. All work shall be made watertight at the end of each day with no exceptions.

1.5 CONTRACTOR USE OF PREMISES

A. Limit use of premises to construction operations to allow for building occupancy.

B. Coordinate use of premises under direction of the Public Housing Agency.

C. The Contractor shall be held liable for any damages to the building, new or existing roof systems, the building contents, landscaping and grounds, or its occupancy resulting from work under this contract.

D. Contractor may work overtime at its own expense, provided that such action does not conflict with the building usage and prior approval is obtained.

E. Work may be performed between the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday. Alternate hours and days must be reviewed and approved by the Public Housing Agency.

1.6 OCCUPANCY

A. Assume that premises during entire period of construction will be occupied and remain in full operation. Cooperate with the Public Housing Agency to minimize conflict, and to promote facility operations.

1.7 COORDINATION

A. Coordinate work of the various sections of specifications to assure efficient and orderly sequence of installation of materials.

B. Coordinate work under this contract with other contract work relating to the same building/roof areas to assure efficient and orderly sequence of installation of materials.

1.8 REFERENCE STANDARDS

A. Products specified by association or trade standards must comply with those standards, except when more rigid requirements are specified herein or are required by applicable codes.

B. The date of the standard is that which is in effect as of the bid date, except when a specific date is stated.

C. Should there be a discrepancy between the referenced standards and these contract documents, the latter shall govern unless written interpretation is obtained from the University's representative.

D. Should there be discrepancies among the referenced standards the more stringent requirements shall govern.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. Comply with the Conditions of the Contract and provisions for each Contract in the technical Specifications.

PART 3 – EXECUTION

2.1 EXECUTION, GENERAL

A. Comply with the Conditions of the Contract and provisions for each Contract in the technical Specifications.

END OF SECTION 01 1100

SECTION 01 2500
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 01 6000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in Project Manual.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    e. Samples, where applicable or requested.
    f. Certificates and qualification data, where applicable or requested.
    g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
    h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
    i. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's

letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

j. Cost information, including a proposal of change, if any, in the Contract Sum.

k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.

l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within (15) days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than (15) days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. Substitution request is fully documented and properly submitted.

c. Requested substitution will not adversely affect Contractor's construction schedule.

d. Requested substitution has received necessary approvals of authorities having jurisdiction.

e. Requested substitution is compatible with other portions of the Work.

f. Requested substitution has been coordinated with other portions of the Work.

g. Requested substitution provides specified warranty.

h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 2500

SECTION 01 2600
CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 01 2500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue through the General Contractor as supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within (10) days, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times,

and activity relationship. Use available total float before requesting an extension of the Contract Time.

6. Comply with requirements in Section 01 2500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 2600

SECTION 01 2900
PAYMENT PROCEDURES

PART 1 - GENERAL

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 01 2600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Section 01 3216 "Construction Progress Schedule" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect **through General Contractor** at earliest possible date, but no later than **seven (7)** days before the date scheduled for submittal of initial Applications for Payment.
3. Sub-schedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values coordinated with each phase of payment.
4. Sub-schedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work. Provide sub-schedules showing values coordinated with each element.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Name of Architect.
   c. Architect's Project number.
   d. Contractor's name and address.
   e. Date of submittal.
2. Arrange schedule of values consistent with format of **AIA Document G703**.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.

g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
   1) Labor.
   2) Materials.
   3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of three percent of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site.
6. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
7. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
8. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling three percent of the Contract Sum and subcontract amount.
9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the 30th of the month. The period covered by each Application for Payment is one (1) month, ending on the **last day of the month**.
   1. Submit draft copy of Application for Payment **seven (7)** days prior to due date for review by Architect.

D. Application for Payment Forms: Use **AIA Document G702 and AIA Document** as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Architect** will return incomplete applications without action.
   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:
    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit **three (3)** signed and notarized original copies of each Application for Payment to **Architect** by a method ensuring receipt **within 24 hours**. One (1) copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from **entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment**.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.

J. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

K. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 2900

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes Project administrative requirements, including:
   1. Submittal procedures.
   2. Preconstruction meeting.
   3. Progress meetings.
   4. Construction progress schedule.
   5. Contractor's superintendent.

1.3 SUBMITTAL PROCEDURES

A. Submit the following items to the Architect:
   1. Shop drawings, product data, and samples.
   2. Test and inspection reports.
   3. Manufacturer's instructions and field reports.
   4. Qualifications statements for subcontractors and personnel.
   5. Progress schedules.
   6. Coordination drawings.
   7. Closeout submittals.

B. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format.
   1. This procedure applies to pre-construction submittals, requests for information (RFIs), progress documentation, supplementary instructions, change proposals, pencil copies of applications for payment, field reports and meeting minutes, and any other document any participant wishes to make part of the project record.
   2. It is Contractor's responsibility to submit documents in PDF format.
   3. Paper document transmittals will not be reviewed; emailed PDF documents will be reviewed.
   4. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

C. Submittals for Review:
   1. When the following are specified in individual sections, submit them for review:
      a. Product data.
      b. Shop drawings.
      c. Samples for selection.
      d. Samples for verification.
   2. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
   3. Samples will be reviewed only for aesthetic, color, or finish selection.
   4. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in General Conditions.

D. Submittals for Information:
   1. When the following are specified in individual sections, submit them for information:
      a. Design data.
      b. Certificates.

c. Test reports.
d. Inspection reports.
e. Manufacturer's instructions.
f. Manufacturer's field reports.

2. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

E. Submittals for Contract Closeout: Refer to Section 01 7800 – Closeout Submittals.

F. Transmit each submittal with a copy of approved submittal form in the electronic format described above.

G. Sequentially number the transmittal forms. Revise submittals with original number and a sequential alphabetic suffix. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

H. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

I. Schedule submittals to expedite the Project, and coordinate submission of related items.

J. For each submittal for review, allow (15) days excluding delivery time to and from the Contractor.

K. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.

L. Provide space for Contractor and Architect review stamps.

M. When revised for resubmission, identify all changes made since previous submission.

N. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

O. Submittals not requested will not be recognized or processed.

1.4 PRE-CONSTRUCTION MEETING

A. Architect will schedule a pre-construction meeting after Notice of Award.

B. Attendance Required:
1. Owner.
2. Architect.
3. Contractor.

C. Agenda:
1. Submission of executed bonds and insurance certificates.
2. Distribution of Contract Documents.
3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
4. Designation of personnel representing the parties to the Contract and Architect.
5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
6. Scheduling.
7. Mobilization on site, parking and staging, and use of Owner-provided power and water.

1.5 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at intervals determined by the Architect and Owner.

B. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.

4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to Work.

1.6 CONSTRUCTION PROGRESS SCHEDULE

A. Refer to 01 3216 “Construction Progress Schedule”.

1.7 CONTRACTOR’S SUPERINTENDENT

A. The Contractor shall employ a qualified construction superintendent and necessary support personnel who shall be in attendance at the Project site during the performance of the Work. The superintendent shall represent the Contractor; communications given to the superintendent shall be as binding as if given directly to the Contractor.

B. Superintendent’s Qualifications: Prior to commencement of the Work on site, the Contractor shall submit the name and qualifications of the proposed superintendent to the PHA and the Architect. The PHA or the Architect will give timely notification if either or both have reasonable objection to the Contractor’s proposed superintendent.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION 01 3000

SECTION 01 3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Construction schedule requirements.

1.3 RELATED SECTIONS

A. Section 01 1000 - Summary: Work sequence.

1.4 SUBMITTALS

A. Within (10) days after date of Agreement, submit preliminary schedule defining planned operations for the first (60) days of Work, with a general outline for remainder of Work.
B. If preliminary schedule requires revision after review, submit revised schedule within (10) days.
C. Within (20) days after review of preliminary schedule, submit draft of proposed complete schedule for review.
D. Within (10) days after joint review, submit complete schedule.
E. Submit updated schedule with each Application for Payment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 PRELIMINARY SCHEDULE

A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.2 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
B. Identify each item by specification section number.
C. Identify work of separate stages and other logically grouped activities.
D. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
E. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

A. Include a separate bar for each major portion of Work or operation.
B. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.
B. Evaluate project status to determine work behind schedule and work ahead of schedule.
C. After review, revise as necessary as result of review, and resubmit within (10) days.

3.5 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.
B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
E. Indicate changes required to maintain Date of Substantial Completion.
F. Submit reports required to support recommended changes.

3.6 DISTRIBUTION OF SCHEDULE

A. Distribute copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect, Owner, and other concerned parties.
B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION 01 3216

SECTION 01 3300
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Submittal schedule requirements.
   2. Administrative and procedural requirements for submittals.

B. Related Requirements:
   1. Section 01 2900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
   2. Section 01 4000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
   3. Section 01 7700 "Closeout Requirements" for submitting closeout submittals and maintenance material submittals.
   4. Section 01 7800 "Closeout Submittals" for submitting closeout submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
   1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
   2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first (60) days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
   3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
      a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
   4. Format: Arrange the following information in a tabular format:
      a. Scheduled date for first submittal.
      b. Specification Section number and title.
      c. Submittal Category: Action; informational.
      d. Name of subcontractor.
      e. Description of the Work covered.
      f. Scheduled date for Architect's final release or approval.
      g. Scheduled dates for purchasing.

h. Scheduled date of fabrication.
i. Scheduled dates for installation.
j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:
1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.
15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:
1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Action Submittals: Submit three (3) paper copies of each submittal unless otherwise indicated. Architect two (2) copies.
4. Informational Submittals: Submit two (2) paper copies of each submittal unless otherwise indicated. Architect will return one (1) copy.
5. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using AIA Document G810 transmittal form.

E. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

F. Submittals for Web-Based Project Software: Prepare submittals as PDF files, or another format indicated by Project software website.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package, and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
    a. Architect will return annotated file. Annotate and retain one (1) copy of file as a digital Project Record Document file.
2. Web-Based Project Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
3. Paper: Prepare submittals in paper form, and deliver to Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow (15) days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow (10) days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow (21) days for initial review of each submittal.
    a. Unknown at this time.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow (15) days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
    a. Submit one (1) copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment. Prepare a submittal with specification section identified, stamped and signed reviewed, and with space for Engineer and Architect's stamps.
   1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
   3. Include the following information, as applicable:
      a. Manufacturer's catalog cuts.
      b. Manufacturer's product specifications.
      c. Standard color charts.
      d. Statement of compliance with specified referenced standards.
      e. Testing by recognized testing agency.
      f. Application of testing agency labels and seals.
      g. Notation of coordination requirements.
      h. Availability and delivery time information.
   4. to the above, as applicable:
      a. Wiring diagrams that show factory-installed wiring.
      b. Printed performance curves.
      c. Operational range diagrams.
      d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
   5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Identification of products.
      b. Schedules.
      c. Compliance with specified standards.
      d. Notation of coordination requirements.
      e. Notation of dimensions established by field measurement.
      f. Relationship and attachment to adjoining construction clearly indicated.
      g. Seal and signature of Professional Engineer if specified.
   2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
      a. Two (2) opaque (bond) copies of each submittal. Architect will return one (1) copy.
      b. Three (3) opaque copies of each submittal. Architect will retain two (2) copies; remainder will be returned.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.
   1. Transmit Samples that contain multiple, related components such as accessories together in one (1) submittal package.
   2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
      a. Project name and submittal number.
      b. Generic description of Sample.
      c. Product name and name of manufacturer.
      d. Sample source.
      e. Number and title of applicable Specification Section.
      f. Specification paragraph number and generic name of each item.
      g. Manufactures color samples. Colors will ne be selected for contractor printed materials or off the internet.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.
4. Web-Based Project Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
5. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
7. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    a. Number of Samples: Submit **one (1)** full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
8. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    a. Number of Samples: Submit three (3) sets of Samples. Architect will retain two (2) Sample sets; remainder will be returned. Mark up and retain one (1) returned Sample set as a project record Sample.
        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Architects and Owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit **digitally signed PDF file and three (3)** paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
   1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action**.**
   2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
   3. Submittals by Web-Based Project Software: Architect will indicate, on Project software website, the appropriate action.
      a. Actions taken by indication on Project software website have the following meanings:

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 3300

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 RELATED REQUIREMENTS

A. Section 01 4219 – Reference Standards.
B. Section 01 7000 – Execution Requirements.
C. Section 01 7700 – Closeout Procedures.

1.3 SUMMARY

A. Section includes quality assurance and quality control services to be provided by the Contractor under the terms of the Contract. Refer to Definitions Article below for definitions of the terms used herein.
    1. Quality assurance services include but are not limited to the following:
        a. Qualification of sources, manufacturers, fabricators, support service providers, testing and inspection agencies and installers.
        b. Pre-construction testing procedures specified to be the Contractor's responsibility.
        c. Delegated design proposals.
        d. Representative construction assemblies, activities, or processes.
        e. Field measurements and surveys.
        f. Evaluation of project conditions and corrective measures.
        g. Manufacturer construction process monitoring.
        h. Construction documentation.
    2. Quality control services include but are not limited to the following:
        a. Post-installation quality control testing.
        b. Inspection of installed work.
        c. Scheduling required inspections.
        d. Scheduling inspections for special project warranties.
        e. Correction of deficient or defective work.
        f. Re-testing following correction of deficient or defective work.

1.4 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with the Contract Documents.
B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to verify that completed construction complies with the Contract Documents. Services do not include contract administration activities performed by Architect or Construction Manager.
C. Representative Construction Assemblies, Activities, or Processes: Physical assemblies, demonstrations, or exercises to illustrate finishes, show interrelationships of materials, or demonstrate critical construction processes to establish the standard by which the Work will be judged or compared, including the following:
    1. Mock-ups: Representative assemblies of dissimilar materials to verify the Contractor's understanding of the work of the Contract.
    2. Field Samples: Application of finish materials to verify the applicator's skill in performing the work.
    3. Field Demonstrations: Demonstration of a construction process or a portion thereof to verify the Contractor's understanding of the Work of the Contract.

D. Qualified Testing Agency: An entity with the experience and capability to conduct the specified testing and inspecting procedures, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.
E. Qualified Professional Engineer: A licensed professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated.
F. Qualified Factory-Authorized Service Representative: An authorized representative who is trained and approved by a specified manufacturer to inspect and service the manufacturer's installed products.
G. Qualified Fabricator: A firm experienced in fabricating products of the design indicated to those indicated for this Project and with sufficient production capacity to produce required units in accordance with the Contract Documents and the Project Schedule.
H. If more detailed requirements are needed, add this information to specific individual Sections. Examples include Installer employing workers trained and approved by manufacturer, Installer being acceptable to manufacturer, and Installer being an authorized representative of manufacturer for both installation and maintenance.
I. Qualified Material Supplier: A firm with documented capability to produce specified materials of sufficient quality and quantity to service the Project in compliance with the Contract Documents and the Project Schedule.
J. Qualified Manufacturer: A firm experienced in manufacturing the specified products or systems and with sufficient resources to produce specified products or systems in accordance with the Contract Documents and the Project Schedule.
K. Qualified Product Distributor: A firm authorized by the specified product manufacturer to distribute the product in the Project vicinity and having sufficient product or material inventory access, service personnel, and distribution resources to adequately service the Project in accordance with the Contract Documents and the Project Schedule.
L. Qualified Construction Support Service Provider: A firm with sufficient labor, equipment, and/or supply resources to provide construction-related services in sufficient quantity and quality to comply with the Contract Documents and Project Schedule.
M. Qualified Installer: A firm or individual experienced in installing, erecting, or assembling work for this Project in compliance with the Contract Documents and the Project Schedule.
N. Retain paragraph and subparagraph below if other Specification Sections assign certain items of work to preselected contractors (specialists). Revise to suit Project. See Evaluations about naming parties other than Owner and Contractor in Specifications.
O. Qualified Specialists: A firm or individual with documented qualifications to perform certain critical construction activities in accordance with the Contract Documents and the Project Schedule. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
    1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

1.5 CONTRACT DOCUMENTS, AND THEIR INTENT

A. The intent of the contract documents is to include all items necessary for the proper execution and completion of the work by the contractor(s).
B. The contract documents are complementary, and what is required by one shall be as binding as if required by all.
C. The contractor shall provide all labor and materials necessary for the entire completion of the work or system as described in the contract documents and reasonably inferable to produce the intended results.
D. In the event of inconsistencies within or between the contract documents, the contractor shall provide the better quality or greater quantity or work, and shall comply with the stricter requirements.

1.6 SUBMITTALS

A. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.

B. Test Reports: After each test / inspection, promptly submit two copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Owner's information.

C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit report in duplicate within (30) days of observation to Architect for information.
   2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

F. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
   2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.7 REFERENCES AND STANDARDS - SEE SECTION 01 4219

1.8 TESTING AND INSPECTION AGENCIES

A. Owner will employ and pay for services of an independent testing agency to perform other specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
B. Comply with manufacturers' instructions, including each step-in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Have Work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
C. Accepted mock-ups shall be a comparison standard for the remaining Work.
D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 TESTING AND INSPECTION

A. See individual specification sections for testing required.
B. Testing Agency Duties:
    1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
    2. Perform specified sampling and testing of products in accordance with specified standards.
    3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
    4. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
    5. Perform additional tests and inspections required by Architect.
    6. Submit reports of all tests / inspections specified.
C. Limits on Testing/Inspection Agency Authority:
    1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
    2. Agency may not approve or accept any portion of the Work.
    3. Agency may not assume any duties of Contractor.
    4. Agency has no authority to stop the Work.
D. Contractor Responsibilities:

1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
    a. To provide access to Work to be tested / inspected.
    b. To obtain and handle samples at the site or at source of Products to be tested / inspected.
    c. To facilitate tests/inspections.
    d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-conformance to specified requirements shall be paid for by Contractor.

3.5 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 DEFECT ASSESSMENT

A. Repair visual defects to the satisfaction of the Architect and Owner. If repairs cannot be made satisfactorily, replace items so designated.

B. Replace Work or portions of the Work not conforming to specified requirements.

C. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION 01 4000

SECTION 01 4100
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Regulatory requirements applicable to this project include but are not limited to the following:
   1. Ohio Building Code, Current edition
   2. 29 CFR 1910 - Occupational Safety and Health Standards; current edition.
   3. Accessible and Usable Buildings and Facilities ICC A117.1-2009.

1.3 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements.

1.4 QUALITY ASSURANCE

A. Designer Qualifications: Where delegated engineering design is to be performed under the construction contract provide the direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 4100

SECTION 01 4126
PERMIT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. The Contractor is responsible for obtaining and paying for permits, licenses, and other local requirements for constructing the Project.

1.3 SUBMITTALS

A. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 4126

SECTION 01 4216
DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative requirements for definitions. Refer to Divisions 02 through 32 for specific references.

1.3 DEFINITIONS

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

B. **"Indicated":** The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. **"Directed":** Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Architect, requested by the Architect, and similar phrases.

D. **"Approved":** The term "approved," when used in conjunction with the Architect's action on the General Construction's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract. Refer to Section 01 3300 - “Submittal Procedures” for additional terms and phrases regarding review/approval/rejection as they relate to submittal procedures.

E. **"Regulations":** The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. **"Furnish":** The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. **"Install":** The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. **"Provide":** The term "provide" means to furnish and install, complete and ready for the intended use.

I. **"Installer":** An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
2. Trades: 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 tradespersons of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

J. Product-Related Definitions:
   1. **"Products"** are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   2. **"Materials"** are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
   3. **"Equipment**" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.
   4. **"Systems"** are sets of complementary materials or products arranged or combined by a manufacturing concern so as to form a unity or whole for fulfilling a specific building (or site) function.
   5. **"Damage"** shall mean a substandard or impaired condition of a product, including breakage, surface blemishes, abrasion, caused by weather exposure, accident, abuse, aging, mis-handling, storage, shipping, or other causes.
   6. A **"Substitution"** is a product not specified and which substantially deviates from the specified requirements.

K. **"Project site"** is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.

L. **"Testing Agencies":** A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.4 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the 50-division format and CSI / CSC's "MasterFormat" numbering system.

B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words 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 the Contractor. At certain locations in the Section Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 4216

SECTION 01 4219
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative requirements for references. Refer to Divisions 2 through 33 for specific references.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents.
C. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
D. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-producing organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research's "Encyclopedia of Associations" or Columbia Books' "National Trade & Professional Associations of the U.S.," which are available in most libraries.

1.4 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 01 4219

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Provisions for use of existing building services, including electrical power and water.
B. Temporary Controls: Barriers and enclosures.
C. Security requirements.
D. Vehicular access and parking.
E. Waste removal facilities and services.
F. Provisions for field office within the existing building.

1.3 SUBMITTALS

A. Prior to commencement of Work on site, each Contractor shall submit a site plan identifying locations of temporary barriers and other facilities and controls for protecting the public and existing facilities and operations. Include descriptions of assemblies including but not limited to protection of existing glass atrium, sidewalks and landscaping, building entrances and other existing conditions that require protection. The Owner will review the submitted plans. Contractors shall respond to any adjustments requested or recommended by the Owner.

1.4 EXISTING BUILDING SERVICES

A. The Owner will allow use of existing building electrical power and water for construction purposes, provided that such use does not disrupt or otherwise adversely affect the ordinary building operations. The Contractor shall evaluate the capacity of existing services and supplement them as required.
B. Existing Elevators: passenger elevator use only, no freight use.

1.5 TEMPORARY SANITARY FACILITIES

A. The Owner will designate a toilet room in the building for use by construction personnel. The Contractor shall maintain it in a clean and sanitary condition.

1.6 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations.
B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
C. Provide protection for plants designated to remain. Replace damaged plants.
D. Protect vehicular traffic, stored materials, site, and structures from damage.

1.7 SECURITY

A. Provide security and facilities to protect Work, and Owner's operations from unauthorized entry, vandalism, or theft.

1.8 VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
B. Coordinate access and haul routes with governing authorities and Owner.
C. Provide and maintain access to fire hydrants, free of obstructions.
D. Park only in areas approved by the Owner.

1.9 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
B. Provide containers with lids. Locate containers agreed upon by the Owner. Remove trash from site periodically.
C. If materials are to be recycled or re-used on the project, they must be stored on-site, or at a location of the owner's choosing. Provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 FIELD OFFICES

A. The Owner will designate a space in the building for meetings and general administration activities.

1.11 STAGING AREA FENCE

A. Provide 6' high chain link fence for enclosing the staging area. Materials may be previously used as long as the appearance is acceptable to the Owner. Provide gates adequate for Contractor's daily use, and as follows:
   1. Terminal posts and Corner Posts: 2-1/2-inch o.d.
   2. Intermediate (Line) Posts: 2-inch o.d.
   3. Gate posts for Gates 5'-feet wide and larger: 4: o.d.
   4. Fence Fabric
   5. Top Rail: 1.5-inch o.d.
   6. Privacy slats: Plastic slats, vertical application, manufactured by Pexco or approved equivalent.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
B. Clean and repair damage caused by installation or use of temporary work.
C. Restore existing facilities used during construction to original condition. Restore new permanent facilities used during construction to specified condition.
D. Repair and restore any damage to existing site and / or landscaping to original condition at contractor's expense.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 01 5000

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. General product requirements.
B. Re-use of existing products.
C. Transportation, handling, storage and protection.
D. Product option requirements.
E. Substitution limitations and procedures.
F. Maintenance materials, including extra materials, spare parts, tools, and software.

1.3 RELATED REQUIREMENTS

A. Section 01 1100 – Summary of Work
B. Section 01 4000 - Quality Requirements

1.4 REFERENCE STANDARDS

A. 16 CFR 260 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; current edition.
B. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

1.5 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
    1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 - PRODUCTS

2.1 EXISTING PRODUCTS

A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
D. Reused Products: Reused products include materials and equipment previously used in this or other construction, salvaged and refurbished as specified.

2.2 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.
B. Do not use products having any of the following characteristics:
    1. Made outside the United States, its territories, Canada, or Mexico.
    2. Made using or containing CFC's or HCFC's.

3. Made of wood from newly cut old growth timber.

C. Regionally-Sourced Products:
   1. Overall Project Requirement: Provide materials amounting to a minimum of 10 percent of the total value of all materials (excluding plumbing, HVAC, electrical, elevators, and other equipment) that have been extracted, harvested, or recovered, as well as manufactured, within a radius of 500 miles from the project site.

D. Products with Rapidly Renewable Material Content:
   1. Definition: Materials made from plants that are typically harvested within (10) years or less after planting.
   2. Specific Product Categories: Provide renewable material content as specified elsewhere.
   3. Calculations: Where information about renewable material content is required to be submitted and an item is not made completely of rapidly renewable material, calculate content by dividing the renewable material content by weight by the total weight of the item.

E. Products with Recycled Content:
   1. Specific Product Categories: Provide recycled content as specified elsewhere.
   2. Calculations: Where information about recycled content is required to be submitted:
      a. Determine percentage of post-consumer and post-industrial content separately, using the guidelines contained in 16 CFR 260.7(e).
      b. Previously used, reused, refurbished, and salvaged products are not considered recycled.
      c. Wood fabricated from timber abandoned in transit to original mill is considered reused, not recycled.
      d. Determine percentage of recycled content of any item by dividing the weight of recycled content in the item by the total weight of all material in the item.
      e. Determine value of recycled content of each item separately, by multiplying the content percentage by the value of the item.

2.3 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.4 MAINTENANCE MATERIALS

A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 - EXECUTION

3.1 SUBSTITUTION PROCEDURES

A. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

B. Architect will consider requests for substitutions only within (30) days after date established in Notice to Proceed.

C. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

D. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

E. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the substitution as for the specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.

F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

G. Substitution Submittal Procedure:
1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
3. The Architect will notify Contractor in writing of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
B. Transport and handle products in accordance with manufacturer's instructions.
C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

A. Designate receiving / storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
B. Store and protect products in accordance with manufacturers' instructions.
C. Store with seals and labels intact and legible.
D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
E. For exterior storage of fabricated products, place on sloped supports above ground.
F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
G. Prevent contact with material that may cause corrosion, discoloration, or staining.
H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION 01 6000

SECTION 01 7000
EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes execution requirements applicable to all sections of these Specifications.

1.3 EXAMINATION

A. Prior to installation of any product or system, with Installer present, review the condition of the substrate or area of installation provided and verify that it is acceptable in accordance with the product manufacturer's instructions, referenced standards, and accepted trade practices. Report unfavorable conditions to the Architect. Verify that reinforcement, blocking, nailers, or other attachment provisions required for support of work are properly placed. Do not allow installation to proceed until all unsatisfactory conditions have been corrected. Commencing work in an area will be considered acceptance of the existing conditions by that Installer and the Contractor shall assume all responsibility therefore.

B. No allowance will be made for conditions that, in the opinion of the Architect, were foreseeable during the bidding period or reasonably inferrable from the Contract Documents.

1.4 PREPARATION

A. Prepare materials for installation in accordance with referenced industry standards, manufacturer's instructions, and accepted trade practices. In exposed or finish work, mix or arrange materials for uniform blending and optimum arrangement according to the Architect 's instructions.

B. Lay out work in advance to ensure accurate spacing of surface patterns with uniform joint thicknesses and for accurate location of openings, joints, returns, and offsets.

C. Surface Preparation:

1. Furnish, install, maintain, and remove as required all necessary temporary protections to safeguard persons and property in the vicinity of the surface preparation area prior to commencement of surface preparation procedures, including but not limited to protection of existing adjacent construction. Any damage to existing construction shall be repaired at the contractor's own expense.
2. Prepare surfaces to receive work in accordance with manufacturer's instructions, referenced standards and accepted trade practices.

1.5 EXECUTION, GENERAL

A. The work shall be performed by skilled and, where applicable, by licensed installers. Where indicated in the Contract Documents, installers shall be approved by the manufacturer for installing the materials in the manner indicated.

B. Install work in accordance with recognized trade practices, unless more stringent installation requirements are described in the Contract Documents or in the approved manufacturer's published installation instructions. For materials or systems that are specified to receive warranties, work shall comply with the requirements of the manufacturer.

C. Construct work to the full elevations, widths, and thicknesses shown.

D. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.

E. Leave openings for equipment to be installed before completing work. After installing equipment, complete work to match the construction immediately adjacent to the opening.

F. As work progresses, build in items furnished under other sections

1.6 MATCHING EXISTING CONSTRUCTION

A. When the Contract Documents state that new work shall match existing, new work shall interface with existing work in a manner that provides optimum blending of visible surfaces.

1.7 INSPECTION

A. When inspection and testing of installed work is required by authorities having jurisdiction over the Project, the Contractor shall schedule and be present during such inspections and tests and promptly act upon all recommendations that arise therefrom.

B. When review and inspection of work by a manufacturer representative is a condition of a special project warranty, the Contractor shall schedule and oversee such reviews and inspections and promptly act upon all recommendations that arise therefrom.

1.8 FINISHING

A. Except where specifically noted to remain unfinished, finish installed components, whether or not indicated on the Finish Schedule, and in a manner acceptable to the Owner and Architect.

1. Finish surfaces of installed work that are not pre-finished by the manufacturer or fabricator, including but not limited to metal, wood, cementitious elements.
2. Finishing includes, as applicable, sealing joints between frames and substrates, surface preparation, priming and painting or staining and sealing in accordance with the manufacturer's recommendations and the Owner's finish scheme.
3. Final colors and sheen will be selected by the Architect.
4. Do not conceal or paint over labels or tags required by authorities having jurisdiction when performing finish work.
5. Refer to Section 09 9000 for additional requirements.

B. Back-prime and weather-proof components installed as part of building shell construction.

1. Seal backs and edges of materials that will be exposed to the weather, to damp conditions, or exposed to view.
2. Coat unfinished metal with primer and a finish coat approved by the Architect.

1.9 BUILDING ENVELOPE REQUIREMENTS

A. Execute the Work in a manner that optimizes the moisture resistance, thermal performance, and acoustical performance of the facility. As such:

1. Back-prime and weather-proof components installed as part of building shell, substructure and foundation construction.
   a. Weatherproofing includes but is not limited to membranes, mastics, flashing, sealants, and coatings as indicated on the Drawings, specified in subsequent Sections, required by authorities having jurisdiction, and recommended by referenced standards and manufacturers.
2. Seal the backs and edges of wood and other potentially absorptive materials that will be exposed to the weather and damp or humid conditions.
3. Isolate dissimilar metals from each other to prohibit galvanic action.
4. Isolate metals and other corrosion-sensitive materials from components containing deleterious or otherwise reactive chemicals, including but not limited to pressure-treated wood, solvents, and incompatible sealants.

5. Fill voids and annular spaces between dissimilar building components with insulation, gaskets, and joint fillers to assure the moisture resistance, thermal performance, and acoustical performance qualities of the building.
6. Insulate and seal all voids in the building shell whether or not designated in a work scope definition or identified in the Contract Documents, but which is an ordinary procedure according to referenced standards and manufacturer recommendations.
7. Assure positive, uninterrupted drainage of roofs, ledges, parapets, sills, and other facility components that may collect precipitation. Assure that drainage lines and other conveying elements direct water to legal collection and discharge points so as to preserve constructed elements from water damage.
    a. Provide gratings, filters, and similar elements that prevent the intrusion of debris into drainage structures and permit periodic cleanout. Secure gratings and covers in a manner acceptable to the owner so as to prevent theft.
8. Assure that parapets and other similar elements properly drain and ventilate so as to prevent condensation and precipitation from damaging building shell elements and adversely affecting indoor air quality.
9. Provide vents, louvers, weep systems, and similar elements that are designed to prevent the intrusion of insects, rodents, birds, and similar wildlife into concealed spaces.
10. Assure that fasteners selected are of the correct type for the applications indicated, are corrosion-resistant, and will not react with the penetrated substrates when installed. Space fasteners appropriately. Provide pre-finished fasteners when required for aesthetic effect.
11. Account for thermal movement of installed materials in executing the Work.
    a. Incorporate washers, gaskets, movement joints, and other appropriate means according to manufacturer instructions and referenced standards.
12. Coat primed and unprimed ferrous metals with suitable finish systems approved by the Architect.
13. Refer to subsequent Sections and the manufacturer's instructions for additional requirements.

1.10 CLEANING

A. Progress Cleaning: As the Work progresses, the Contractor shall ensure that installed products are cleaned in accordance with the recommendations of the product manufacturer, referenced standards, and accepted trade practices.

B. Daily and Final Cleaning: Refer to the Conditions of the Contract.

1.11 OPERATION AND ADJUSTMENT

A. Start, operate, and adjust products in accordance with the manufacturer's instructions and recommendations to ensure proper function. The Contractor shall make adjustments or other remedial procedures as required.

1.12 DEMONSTRATION AND TRAINING

A. Schedule demonstration and training sessions with Owner's facilities manager to review preventive maintenance procedures for operational building components.
    1. Engage manufacturer's authorized field technician to oversee and conduct demonstration and training activities.
    2. Review preventive maintenance procedures, including, as applicable, but not limited to:
        a. Recommended schedule of maintenance procedures.
        b. Cleaning procedures.
        c. Troubleshooting procedures.
        d. Warranty notification protocol.

B. Obtain Owner's written statement that demonstration and training activities have been completed.

1.13 PROTECTION

A. Provide all necessary protections to ensure that installed products are without damage or due deterioration as of the Date of Substantial Completion. Upon final acceptance of the work, remove temporary protections from the Project Site.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION 01 7000

SECTION 01 7419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:
   1. Section 00 3126 “Existing Hazardous Material Information”
   2. Section 02 4119 "Selective Demolition"
   3. Section 02 2623 “Asbestos Abatement”

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within seven (7) days of date established for the Notice to Proceed.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Conference: Conduct conference at Project site. Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, locations for waste to be held until picked up for disposal and how often waste is to be picked up.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls," Section 02 4119 "Selective Demolition", and Section 02 2623 “Asbestos Abatement”.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
   1. Distribute waste management plan to everyone concerned within three (3) days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 01 7419

SECTION 01 7700
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.
   5. Repair of the Work.

B. Related Requirements:
   1. Section 01 7800 "Closeout submittals"

1.3 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at final completion.

1.4 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of (10) days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number.
      a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item

and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.

5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of (10) days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of (10) days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. 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 PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit final completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of (10) days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

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

1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in one of the following formats:
      a. MS Excel electronic file. Architect will return annotated file.
      b. PDF electronic file. Architect will return annotated file.
      c. Three (3) paper copies. Architect will return two (2) copies.

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
   1. Submit on digital media acceptable to Architect.

E. Warranties in Paper Form:
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

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

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

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated 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 not planted, mulched, or paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. 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.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    k. Remove labels that are not permanent.
    l. Wipe surfaces of mechanical and electrical equipment**,** elevator equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
    m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
    n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
    o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    p. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
    q. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 01 5000 "Temporary Facilities and Controls." Prepare written report.

D. Construction Waste Disposal: Comply with waste disposal requirements in Section 01 5000 "Temporary Facilities and Controls.".

E. Insert an article on continuing inspections or consultations by Contractor if required. Possibly insert a schedule of approximate times for inspections.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
   1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
   2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
      a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
   3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
   4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 7700

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Project Record Documents.
B. Operation and Maintenance Data.
C. Warranties and bonds.

1.3 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
B. Section 01 7700 Closeout Procedures.
C. Individual Product Sections: Specific requirements for operation and maintenance data.
D. Individual Product Sections: Warranties required for specific products or Work.

1.4 SUBMITTALS

A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
B. Operation and Maintenance Data:
   1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one (1) copy with comments.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten (10) days after acceptance.
   3. Submit one copy of completed documents (15) days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   4. Submit two sets of revised final documents in final form within (10) days after final inspection.
C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within (10) days after acceptance.
   2. Make other submittals within (10) days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.1 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed shop drawings, product data, and samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.
B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.
D. Record information concurrent with construction progress.
E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
    1. Manufacturer's name and product model and number.
    2. Product substitutions or alternates utilized.
    3. Changes made by Addenda and modifications.
F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
    1. Field changes of dimension and detail.
    2. Details not on original Contract drawings.

3.2 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
    1. Description of unit or system, and component parts.
    2. Identify function, normal operating characteristics, and limiting conditions.
    3. Include performance curves, with engineering data and tests.
    4. Complete nomenclature and model number of replaceable parts.
B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
E. Provide servicing and lubrication schedule, and list of lubricants required.
F. Include manufacturer's printed operation and maintenance instructions.
G. Include sequence of operation by controls manufacturer.
H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
I. Additional Requirements: As specified in individual product specification sections.

3.5 OPERATION AND MAINTENANCE MANUALS

A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
B. Prepare data in the form of an instructional manual.

C. Binders: Commercial quality, 8-1/2 by 11-inch three D side ring binders with durable plastic covers; 2-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
E. Provide tabbed dividers for each separate product and system, with typed description of product and major component parts of equipment.
F. Text: Manufacturer's printed data, or typewritten data on 24-pound paper.
G. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
H. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.
I. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
    1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
    2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
        a. Significant design criteria.
        b. List of equipment.
        c. Parts list for each component.
        d. Operating instructions.
        e. Maintenance instructions for equipment and systems.
        f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
    3. Part 3: Project documents and certificates, including the following:
        a. Shop drawings and product data.

3.6 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within (10) days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
B. Verify that documents are in proper form, contain full information, and are notarized.
C. Co-execute submittals when required.
D. Retain warranties and bonds until time specified for submittal.
E. Manual: Bind in commercial quality 8-1/2 by 11-inch three D side ring binders with durable plastic covers.
F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION 01 7800

SECTION 02 2623
ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Prequalification requirements for asbestos abatement personnel.
B. Abatement of hazardous materials as indicated in reports in Section 00 3126 – Existing Hazardous Material Information.
C. Documentation of removal and disposal of the asbestos-containing waste materials described above.

1.3 RELATED SECTIONS

A. Section 00 3126 – Existing Hazardous Material Information
B. Section 07 0501 – Preparation for Re-Roofing

1.4 DEFINITIONS AND ACRONYMS

A. Abatement: Removal of asbestos-containing building material.
B. Asbestos: Any of the following naturally occurring serpentine or amphibole minerals that display an asbestiform habit, including: Chrysotile, Amosite, Crocidolite, and fibrous Tremolite, as defined in CFR 1926.1001.
C. ACM: (Asbestos containing material) Materials which contain >1% asbestos as determined by bulk sample analysis using stereo and polarized light microscopy as defined in 29 CFR 1926.1001.
    1. Category I ACM consists of asbestos-containing gaskets, resilient floor coverings (including vinyl asbestos tile and linoleum), and asphalt roofing products that contain greater than one percent asbestos using the method described in appendix A, subpart F, 40 CFR Part 763, section 1, Polarized Light Microscopy.
    2. ACWM: Asbestos-containing waste material.
    3. RACM: Regulated asbestos-containing material: Non-Frable Category I ACM that is subjected to forces or removal methods that would crush, crumble, pulverize, or reduce the Category I ACM to a powder by sanding, cutting, grinding, or abrading, including the use of mechanical chippers.
D. Friable: Capable of being crushed by hand pressure.
E. NIOSH: National Institutes for Occupational Safety and Health.
F. OSHA: Occupational Safety and Health Administration.
G. EPA: Environmental Protection Agency.
H. HEPA: High Efficiency Particulate Air, filters 99.97% of particulate from air down to 0.03 microns.

1.5 INFORMATIONAL SUBMITTALS

A. Current copies of all training records, notifications, licenses, insurance certificates, employee certifications, respiratory protection fit-test records, and a copy of the Physician's approval for wearing respiratory protection prior to the start of work.
    1. Personnel with expired records will not be permitted on the worksite.
B. Entry logs, personnel certification, disposal records, and testing information to the Architect for information. Contractor must also supply a copy of the landfill and other disposal information to the Architect.

1.6 QUALITY ASSURANCE

A. Qualifications:
    1. All asbestos abatement work must be conducted by an Ohio State Certified

Contractor and shall be performed in accordance with these specifications, EPA regulations, OSHA regulations, NIOSH recommendations, Chapter 3701-34 of the Ohio Administrative Code, and any other applicable federal, state and local government regulations. Whenever there is a conflict or overlap of the above references, the most stringent provisions shall apply.

2. All abatement workers shall provide documentation including required certifications, experience, licensing, education and any other qualification that falls under the regulations described above.
3. The Contractor must not have had any recorded EPA, ODOH, Ohio EPA, or other than *de minimis* OSHA violations within the past (5) years.

B. Pre-Abatement Meeting: A mandatory pre-abatement meeting shall be held and attended prior to the initiation of asbestos abatement and other abatement activities. The Contractor is responsible for presenting the following at the meeting:
1. Abatement Plans: Include drawings of the disposal provisions and their locations.
2. Emergency response or action plan.

1.7 PROJECT CONDITIONS

A. The Owner assumes no responsibility for the actual condition of the building or materials therein.

B. Suspected Additional Asbestos Materials: If additional materials suspected of containing asbestos are encountered, document the extent and condition and notify the Architect immediately.

PART 2 – PRODUCTS (NOT APPLICABLE TO THIS PROJECT)

PART 3 - EXECUTION

3.1 NOTIFICATION

A. Make proper notifications to regulatory agencies.
1. Submit copies of notifications to the Architect and Owner.

3.2 EXAMINATION

A. Conduct a pre-abatement inspection of the site and prepare a written asbestos abatement plan to be submitted to the Architect.

B. Continue to evaluate building components as Work progresses to detect hazards resulting from asbestos abatement activities.

3.3 PREPARATION

A. General: Conduct abatement activities to ensure minimum interference with roads, sidewalks, and other adjacent facilities.

B. Conduct abatement activities in a manner consistent with good practice and professional standards, as well as compliant with applicable regulations governing the removal of asbestos in the jurisdiction of the Project.

3.4 ASBESTOS ABATEMENT

A. Asbestos-containing roofing materials must be removed, handled and disposed of in a manner that maintains the materials in a non-friable condition.

B. Implement appropriate wet removal methods in a manner compliant with Federal, State and local regulations.
1. No dry material will be permitted to be removed or disposed under this contract. Visible emissions of asbestos dust or debris shall not be permitted and all appropriate measures shall be undertaken to assure that these conditions will not exist.
2. Control water used in wet methods so as not to penetrate and damage the building.

C. Remove all ACM from the roof area. Use methods required to complete Work within

limitations of governing regulations.

1. Conduct operations in an efficient manner consistent with good work practices using properly certified and licensed workers utilizing an appropriate level of respiratory protection as required by Federal, State and local regulations, subject to the following minimum conditions:

D. Remove asbestos-containing caulking with wet methods, HEPA vacuum equipment with HEPA-filtered exhaust.

3.5 PACKAGING AND TRANSPORT OF ASBESTOS-CONTAINING WASTE MATERIAL

A. All asbestos-containing waste material (ACWM) must be adequately wetted, packaged in leak-tight containers, and appropriately labeled with asbestos warning signs and waste generator labels.

1. Package materials with sharp edges in a manner that prevents any further breakage of the ACWM or puncturing or tearing of the containers.
2. Affix warning signs identifying the contents as Class 9 hazardous material on the vehicle or dumpster during the loading and unloading of ACWM in accordance with 40CFR 61.150(c).

3.6 DISPOSAL

A. Storage of removed materials on-site will not be permitted.

B. Remove and transport asbestos and other debris to a central location for waste loadout in a manner that will prevent spillage on other materials or building elements and in a manner consistent with regulations applicable to transport of ACM.

C. Promptly dispose of demolition debris. All ACWM must be disposed of at a site approved by the U.S. Environmental Protection Agency which is operated in accordance with 40 CFR § 61.154.

D. Do not allow demolished materials to accumulate onsite. No burning will be permitted on the Project site.

3.7 POST-ABATEMENT DOCUMENTATION

A. Provide copies of all project documentation, including notifications, records, sign-in sheets, personnel logs, signed release sheets, disposal manifests and any other required documentation.

END OF SECTION 02 3623

SECTION 02 4119
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:
   1. Demolition and removal of selected portions of building to accommodate addition and remodeling work.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.
   4. Temporary construction to protect the existing building and contents.

B. Related Requirements:
   1. Section 00 3126 “Existing Hazardous Material Information”
   2. Section 01 5000 “Temporary Facilities and Controls”
   3. Section 01 7419 “Construction Waste Management”
   4. Section 02 2623 “Asbestos Abatement”
   5. Section 07 0501 “Preparation for Re-Roofing”

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Use of elevator and stairs.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
   6. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes. Refer also to related sections listed above.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
D. Standards: Comply with ANSI A10.6 and NFPA 241.
E. Pre-demolition Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Administrative Requirements."

1.6 PROJECT CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
   1. Comply with requirements specified in Division 1 Section "Summary."
B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
   1. Before selective demolition, Owner will remove the following items:
      a. Refer to Salvaged Items Schedule at the end of this section.
C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
D. Hazardous Materials: Hazardous materials are identified in reports located elsewhere in this Project Manual.
E. Storage or sale of removed items or materials on-site is not permitted.
F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

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

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped where indicated.
B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services / Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."
B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

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

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly. Comply with requirements in Division 02 Section “Building Demolition.”

B. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to designated storage area on-site.
5. Protect items from damage during transport and storage.
6. Items to be removed and salvaged: Refer to salvaged item schedule at the end of this section.

C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

C. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill
1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

D. Materials that may be recycled: Structural steel.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 02 4119

SECTION 04 2200
MASONRY UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide labor, materials, and equipment necessary for complete installation and/or repair of unit masonry, including the following:
   1. Concrete masonry units. (CMU)
   2. Clay brick.
   3. Miscellaneous materials.
   4. Masonry restoration

B. Related Work Requirements:
   1. Section 02 4119 "Selective Demolition"
   2. Section 07 6200 “Sheet Metal Flashing and Trim”

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with the provisions of the following codes, specifications, and standards, except as otherwise shown or specified:
   1. Conform to applicable requirements of the Ohio Building Code Requirements for masonry structures, including but not limited to
      a. Chapter 14 Exterior Walls
      b. Chapter 17 Structural Tests and Masonry Inspections.
      c. Chapter 21 Masonry
   2. National Concrete Masonry Association (NCMA)
      a. NCMA TEK Bulletin 3-1C “All Weather Concrete Masonry Construction”.
      b. NCMA TEK Bulletin 3-3A “Reinforced Concrete Masonry Construction”.
      c. NCMA TEK Bulletin 8-2A “Removal of Stains from Concrete Masonry”.
      d. NCMA TEK Bulletin 8-3A “Control and Removal of Efflorescence”.
      e. NCMA TEK Bulletin 19-4 “Flashing Strategies for Concrete Masonry Walls”.
      f. NCMA TEK Bulletin 19-5 “Use of Flashing in Concrete Masonry Walls”.
   3. ASTM International (ASTM)
      a. ASTM C67 “Standard Test Method for Sampling and Testing Brick and Structural Clay Tile
      b. ASTM C90 “Standard Specification for Loadbearing Concrete Masonry Units”.
      c. ASTM C140 “Standard Methods of Sampling and Testing Concrete Masonry Units and Related Units”.
      d. ASTM D 1056 “Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber.”
      e. ASTM D 1187 “Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.”
      f. ASTM E514-74 “Standard Specification for Water Penetration and Leakage Through Masonry”.
   4. International Masonry Institute
      a. Technology Brief: “Cold Weather Masonry Construction”

   Brick Institute of America (BIA)
      a. BIA Technical Notes No. 1: Hot and Cold Weather Construction.
      b. BIA M1-88: Specifications for Portland Cement Lime Mortar for Brick Masonry.
      c. BIA Technical Notes No.20: Cleaning Brickwork.
      d. BIA Technical Notes No.28A: Adding Brick Veneer to Existing Construction.

B. Changes in the source of brand of masonry material during construction will require resubmission and retesting at the Contractor's expense.
C. Masonry Mock-Up Requirements: At a location designated by the Architect, construction a 48-inch x 48-inch mockup of the approved face brick and mortar colors and textures for review by the Architect and Owner before commencing with brick replacement. The mock-up will remain in place throughout the construction period and will be maintained as a basis of determining compliance with the Contract regarding color selection and workmanship standards.
    1. Clean and seal the mock-ups using the specified materials.
    2. Do not proceed with masonry work until the mock-ups have been reviewed and approved by the Architect, the University Architect and the University's Project Manager.
    3. Remove the mock-ups and restore the site when requested by the Architect.
D. Pre-Construction Conference: Prior to the installation of the masonry and associated work, meet at the project site with the installer, the installer of each component of associated work, the installers of other work in and around masonry (including windows), the University / University's Representative and other representatives directly concerned with performance of the Work, product manufacturers, governing authorities, and the University / University's Representative. Record (by Masonry Contractor) the discussions of the conference and the decisions and agreements (or disagreements) reached and furnish a copy of the record to each party attending. Review foreseeable methods and procedures related to the masonry work, including, but not necessarily limited to, the following.
    1. Review project requirements (drawings, Specifications, and other Contract Documents), including sample panels, job mock-ups, and cleaning procedures.
    2. Review required submittals, both completed and yet to be completed.
    3. Review availability of materials, tradesmen, equipment and facilities needed to make progress and avoid delays.
    4. Review regulations concerning code compliance, environmental protection, health, safety, fire, and similar considerations.
    5. Review procedures needed for protection of masonry during the remainder of the construction period.
    6. Review constructed masonry mock-ups.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Assume responsibility for acceptance of masonry units delivered to site being in compliance with specified ASTM requirements for chippage and dimensional tolerances.
B. Deliver packaged mortar materials in original containers with manufacturer's labels intact and legible. Deliver masonry units in undamaged condition and handle units to prevent chipping, breaking, or other damage.
C. Store masonry units and package materials off ground, covered, and protected from wetting by capillary action, rain or snow, and protected from mud, dust, or other materials and contaminants likely to cause staining or defects in the masonry.

1.5 PROJECT CONDITIONS

A. Protect partially completed masonry against weather, when Work is not in progress, by covering walls with strong, waterproof, nonstaining membrane. Extend membrane at least 2 feet beyond open work area of walls and anchor securely in place.
B. Environmental Requirements
    1. Cold Weather Requirements: Protect masonry against freezing when the temperature of the surrounding air is 40 degrees F and falling. Heat materials and provide temporary protection of completed portions of masonry work. Comply with the requirements of the governing code and with the "Construction and Protection Recommendations for Cold Weather Masonry Construction" of the Technical Notes of Brick and Tile Construction by the Brick Institute of America (BIA) and International Masonry Industry All-Weather Council, "Recommended Practices and Guide Specifications for Cold Weather Masonry Construction."

2. Hot Weather Requirements: Masonry construction performed when ambient temperature exceeds 100 degrees F (or 90 degrees F with wind velocities greater than 8 mph) shall conform to the following requirements:
    a. Store materials in cools, shaded location.
    b. Cover aggregate stockpiles with black plastic sheet to retard the evaporation of moisture.
    c. Cool reinforcing steel, metal accessories, wheelbarrows, mixers and mortar boards by flushing with water.
    d. Wet high-suction brick.
    e. Increase lime and/or cement content to maximum allowed under ASTM C270 for mortar type specified.
    f. Increase water content of mortar and grout as needed.
    g. Spread mortar beds no more than 4 feet ahead of masonry, and set units within one minute of spreading mortar.
    h. Moist cure masonry by water fog spray after tooled joints have set.
    i. Cover walls to retard evaporation.
    j. Schedule work to avoid hottest part of day.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: Obtain masonry units from one manufacturer of uniform texture and color for each kind required, for each continuous area and visually related areas.

B. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
    1. Basis-of-Design Product: The design is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
        a. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product.

2.2 MASONRY UNITS, GENERAL

A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits state in standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.3 CLAY MASONRY UNITS

A. Facing Brick (BRK)
    1. Color and Texture: Match existing. Provide samples for verification.
    2. Size: Match Existing. The existing brick is Jumbo Norman (3-5/8" x 2-3/4" x 11-5/8"). Provide special sizes to accommodate unusual or special conditions.
    3. Compressive Strength: Shall exceed 3000 psi when tested with the loads applied normally to the bedding surface, or sized to match existing CMU.
    4. Water Absorption: Average maximum water absorption by submersion in boiling water for 5 hours shall be less than 20 percent, when tested per ASTM C67. Average saturation coefficient shall be less than 0.78.
    5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated “not effloresced.”
    6. Shall match existing units in size, shape, configurations, color and compressive strength.
    7. Colors: To match the Architect’s samples.

2.4 RELATED MATERIALS

A. Preformed Expansion Joint Filler: Provide closed cell sponge Expansion Joint Filler conforming to ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated. Expansion Joint material is specified in Section 07 9200 Sealants and Caulking; 2.2 Back-up materials, 3.3 Installation of back-up materials, and 3.4 Joint Design.

B. Compressible Filler: Pre-molded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC. Applications: For use under all new or re-furbished shelf angles.

C. Bituminous Coating: Cold applied asphalt mastic complying with SSPC- Paint 12, except containing no asbestos fibers, or cold applied asphalt emulsion complying with ASTM D1187, Type II.

D. Cavity Drainage Material: Made from polyethylene strands, fill full-depth of cavity and 10-inches high, with dovetail shaped notches 7-inches deep that prevent clogging with mortar droppings.
   1. Mortar Net; Mortar Net USA, Highland, Indiana
   2. Mortar Break; Advanced Building Products, Springvale, Maine

E. Concealed Flashing Materials (Through Wall Flashing)
   1. Rubber Asphalt Sheet Flashing: Manufacturer's standard composite flashing product consisting of 32 mil thick pliable and self-adhering rubberized asphalt compound fully bonded to 8 mil thick high-density polyethylene film to produce an overall thickness of 40 mils.
   2. Products: Subject to compliance with requirements, provide products by one of the following:
      a. Peel-N-Seal Extra Strength; Advance Building Products, Inc., Springvale, Maine.
      b. Perm-A-Barrier Wall Flashing; W. R. Grace & Company, Cambridge, Maryland.

F. Primer Seal: Prime all surfaces with a high quality, rubberized, low VOC primer compatible with the rubber asphalt sheet flashing. Primer shall be manufactured by the manufacturer of the approved through wall flashing membrane.

G. Cell Weep/Vent: One-piece, flexible extension made from UV resistant durable polypropylene. Polypropylene shall be tested in conformance with ASTM D2240, D790B, D638 and D1238B. Cell vent shall be 3/8 inch by 2-1/2 inch by 3-3/8 inch and designed to fill the head joint with outside face being held back 1/8 inch from the exterior face of the masonry. Cell vent shall be installed 24 inches on center in the masonry course directly above the through wall flashing.
   1. Products: Subject to compliance with requirements, provide products by one of the following:
      a. Mortar Maze Cell Vent; Advance Building Products, Inc., Springvale, Maine.
      b. Quadro-Vent; Hohmann & Barnard, Inc., Hauppauge, New York

H. Helical Wall Ties / Anchors System: One piece retrofitting asymmetrical stainless steel (304) tie 8mm to 10mm in diameter that will function as a flexible load sharing connection for the masonry wall assembly. The ties will enable the outer masonry (brick veneer) to withstand wind loads while allowing differential movement between adjacent wythes.
   1. Design is based on Spiral-Lok Asymmetrical Stainless Steel Helical Wall Ties by Blok-Lok, Hohmann and Barnard Company, Woodbridge, Ontario – USA.
   2. Other acceptable manufacturers include but are not limited to: Simpson Strong-Tie; Helifix, Thor Helical.

I. Masonry Cleaners
   1. Job Mixed Detergent Solution: Solution of trisodium phosphate (1/2 cup dry measure) and laundry detergent (1/2 cup dry measure) dissolved in one (1) gallon of water.
   2. Proprietary Acidic Cleaner: Manufacturer's standard strength, general purpose cleaner designed for removing mortar / grout stains, efflorescence, and other new construction stains from masonry surface of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned.
      a. For brick masonry not subject to metallic oxidation stains, use formulation consisting of a concentrated blend of surface acting acids, chelating, and wetting agents.
         1a. Products: Subject to compliance with requirements, provide products by one of the following:
         2a. Sure Klean No. 600 Detergent; ProSoCo., Inc., Kansas City, Kansas.
         3a. 202 Detergent; Diedrich Technologies, Milwaukee, Wisconsin.

4a. Eaco Chem, Inc., New Castle, Pennsylvania.

3. For dark colored brick masonry not subject to metallic oxidation stains, use formulation consisting of a liquid blend of surface acting acids and special inhibitors.
   a. Products: Subject to compliance with requirements, provide products by one of the following:
      1a. Sure Klean No. 101 Lime Solvent; ProSoco., Inc., Kansas City, Kansas.
      2a. 200 Lime Solv; Diedrich Technologies, Milwaukee, Wisconsin.
      3a. EaCo Chem, Inc., New Castle, Pennsylvania.
4. For brick masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of organic acids and special inhibitors.
   a. Products: Subject to compliance with requirements, provide products by one of the following:
      1a. Sure Klean Vana Trol; ProSoCo., Inc., Kansas City, Kansas.
      2a. 202 Vana-Stop; Diedrich Technologies, Milwaukee, Wisconsin.
      3a. Eaco Chem, Inc., New Castle, Pennsylvania.

J. Concrete Masonry Inspection: Materials may require testing and retesting, as directed by the Owner's Representative, during the progress of the Work. All free access to material stockpiles, facilities and completed construction.

2.5 REINFORCING STEEL

A. Lintels / Shelf Angles: Shall be equivalent to the existing steel angles currently installed. The steel angles shall match the existing angles in size, configuration, hardness, anchoring, etc, and be galvanized coated (G60). Refer to Section 05 5000 – Metal Fabrications.

2.6 MORTAR MATERIALS

A. Do not add admixture including coloring pigments, air-entraining agents, accelerators, retarders, water repellant agents, anti-freeze compounds, or other admixtures, unless otherwise indicated or approved in writing. When specifically approved admixtures shall meet ASTM C1384, Standard Specification for Admixtures for Masonry Mortars.
   1. Admixtures containing chlorides in excess of 0.2 percent chloride ions are not permitted to be used.
   2. Limit cementitious materials in mortar to Portland cement, mortar cement, and lime, unless otherwise permitted by the Architect.
      a. Masonry cement may be used only where type N mortar is approved.

B. Mortar for Unit Masonry: Comply with ASTM C270, Property Specification, for job mixed mortar, or ASTM C1142 for ready mixed mortar of types indicated below:
   1. Type S: 1800 psi minimum average compressive strength at (28) days for concrete unit masonry, unless otherwise noted.
   2. Type N: 750 psi minimum average compressive strength at (28) days for all masonry veneer, unless otherwise indicated.
   3. New mortar shall match the existing mortar in color, texture and hardness.

C. Use colored mortar for clay masonry units. The colors shall match the existing and as approved by the Architect.

D. Use integral water repellent admixture at all exterior concrete masonry wythe locations, unless noted otherwise.

E. Pointing mortar shall conform to ASTM C270, except that all sand shall pass a No.16 sieve. Non-staining and dirt resistant mortar shall be used to which ammonium stearate or calcium stearate is added to the amount equal to 3 percent of the weight of the cement used.
   1. Pointing mortar shall be proportioned by volume with one part Portland cement, 1/8-part Type N hydrated lime, and 2 parts graded (50 mesh or finer) sand to which ammonium stearate or calcium stearate is added in an amount equal to 2 percent of the weight of the cement used. Use mortar within 30 minutes of final mixing; do not re-temper or use partially hardened material.

F. Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer, comply with referenced ASTM standards for mixing time and water content.
G. Water: Potable
H. Cold weather additives prohibited

PART 3 - EXECUTION

3.1 EXAMINATION

A. Masonry Installer must examine the areas and conditions under which masonry is to be installed and notify the University / University's Representative in writing of conditions detrimental to the proper and timely completion of the work.
   1. Examine surfaces that are to support masonry work to assume completion to proper lines and grades. Remove all dirt, laitance, loose aggregates, and other deleterious material.
   2. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.
   3. Examine all wall surfaces and identify all deteriorating mortar joints and / or fractured brick units for repair and/or replacement.
   4. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to masonry installer.

3.2 PREPARATION

A. Protecting Adjacent Surfaces: Protect all sills, ledges, and projections from droppings of mortar.
B. Protect base of exterior walls from splattering of mortar, soil, mud and other materials that might stain the masonry up to 4-feet above grade with a membrane similar to 45 mil EPDM or plywood sheathing material. Maintain protection for the entire duration of the project.
C. Surface Preparation: Remove dirt, ice, loose rust, and scale from metal components prior to installation.
   1. Prior to placing masonry, remove laitance, loose aggregate, and anything else that would prevent mortar from bonding to the foundation.
D. Wetting Clay Brick Units: Verify that initial rate of absorption of brick is less than 1 gram per square inch per minute. Brick absorption rates in excess of this amount shall be wetted with clean water 24 hours prior to placement until units are nearly saturated, and shall be surface dry when laid. During freezing weather, sprinkle units that required wetting with warm or hot water just before placement.
   1. Do not wet concrete masonry units. A concrete masonry unit for which 50 percent or more of the surface area is observed to be wet is considered to have unacceptable moisture content for placement.
E. Coordinate installation of flashings with erection of masonry walls to ensure material is provided in timely manner for embedment in mortar joints.

3.3 INSTALLATION, GENERAL

A. Thickness: Build masonry construction to the full thickness shown, except, build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.
B. Cut masonry units with motor-driven saw designed to cut masonry with clean, sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. 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, cut edges concealed.
C. Frozen Materials and Work: Do not use frozen materials mixed or coated with ice or frost. For masonry, which is specified to be wetted, comply with the BIA recommendations. Do not build on frozen work. Remove and replace masonry work damaged by frost or freezing.
D. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.

3.4 CONSTRUCTION TOLERANCES

A. Comply with tolerances of referenced unit masonry standard (MSJC Code and Specification, ACI 530.1/ASCE 6/TMS 602) and the following:
   1. For conspicuous vertical lines, such as external corners, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
   2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 20 feet, or 1/2 inch maximum.
   3. For conspicuous horizontal lines, such as lintels, sills, shelf angles, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
   4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed joint thickness of adjacent courses by more than 1/8 inch.
   5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed joint and head joint thickness by more than 1/8 inch.
   6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
   7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.5 LAYING MASONRY WALLS

A. Placing Units
   1. Do not install cracked, broken, or chipped masonry units.
   2. Clean units of surface dirt and contaminants before placing in contact with mortar.
   3. Lay-out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and whenever possible at other locations.
   4. Lay-up walls plumb and true and with courses level, accurately spaced, within specified tolerances, and coordinated with other work. Do not wedge partitions tight against structural ceiling or beams, but provide a caulk or insulation filled joint between masonry and masonry wall, structural steel framing or structural floor deck at non-rated conditions. At rated walls, provide firestopping.
   5. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond patter; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
      a. One-half running bond with vertical joint in each course centered on units in courses above and below, unless otherwise noted. Rework shall match existing masonry bond pattern and type.
   6. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2-inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
   7. Where masonry walls must align with structural steel or concrete framing members, use a string line, plumb bob, or other device to align the base of the wall in the correct relationship with the structural members. Walls shall not be constructed out of plumb to accomplish alignment with structural members.
   8. Adjust units to final position while mortar is soft and plastic. If units are displaced after initial set, remove, clean joints and units of mortar, and relay with fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position.
   9. Provide uniform color blending in walls of exposed brick or concrete masonry units to avoid patchy effect.
   10. Stop horizontal runs at end of work day by racking back 1/2-unit length in each course.
   11. When joining fresh masonry to set or partially set masonry, remove loose unit and mortar, and clean and lightly, wet exposed surface of set masonry prior to laying fresh masonry.

12. Ease exposed corners of concrete masonry units not designated as bullnose, by rubbing to remove sharp, irregular edges. Install standard square corner units at the first masonry course where resilient base or ceramic tile base is scheduled as a wall base.

B. Weight Requirements for CMU Units. Provide one weight throughout project, unless otherwise noted. Do not mix weight.
   1. Normal Weight: Unless otherwise noted.

C. Mortar Bedding; Brick and Concrete Masonry Units as follows:
   1. Mix mortar ingredients for a minimum of 5 minutes in a mechanical batch mixer. Use water clear and free of deleterious materials that would impair the work. Each mortar batch is allowed only one re-tempering. Do not use mortar, which has begun to set after the first re-tempering, or if more than 2-1/2 hours has elapsed since initial mixing. Re-tempering will be permitted only within 1-1/2 hours of mixing, to replace moisture by evaporation. Discard any mortar or grout that is partially set.
   2. Lay brick and other solid masonry units with completely filled bed and head joints. Do not deeply furrow bed joints. Butter ends with sufficient mortar to fill head joints and set into place. Buffer ends of brick in hand and in the wall at closures. Do not slush head joints.

   3. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar in starting course on footings and foundation walls, in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
      a. Construct bed joint of the starting course of foundation with a thickness not less than 1/4 inch and not more than 3/8 inch.
   4. Remove mortar protruding into cells, cavities of multi-wythe walls or to block weep holes. Maintain clear cavity width between facing and backing material and keep clear of mortar droppings by back beveling the mortar bed to prevent excess from extruding into cavity. Clean any excess that does occur by parging it to back of unit.

D. Joints: Maintain joint widths shown, expect for minor variations required, to maintain bond alignment. Lay walls with 3/8 inch joints. Tool joints consistently with the same type round jointer when the mortar is thumb print hard. Tool joints in exposed masonry walls at uniform moisture content to avoid color variations. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials. For exposed masonry, provide joints as follows:
   1. Exterior Joints
      a. Concave tooled, unless otherwise noted.
         1a. For pre-finished masonry units, use a nonmetallic jointer 3/4 inch or more in width.
         2a. Provide tooled joints horizontal and vertical of exterior masonry units.

E. Stopping and Resuming Work: Step back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, and remove loose masonry units and mortar prior to laying fresh masonry.

3.6 MASONRY WASTE DISPOSAL

A. Recycling: Undamaged, excess masonry materials are Contractor's property and shall be removed from the Project site for his/her use.

B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil contaminated sand is the masonry contractor's

C. Excess Masonry Waste: Remove clean masonry waste and other masonry waste and legally dispose of off University / University's Representative's property.

3.7 CLEANING

A. In Progress Cleaning: Wipe off excess mortar as the work progresses. Dry brush with bristle brushes exposed masonry at the end of each day's work. Remove mortar splatters and joint ridges.
   1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on area as indicated by the University / University's Representative and allow test area to dry (3) to (7) days. Obtain the University / University's Representative approval of sample cleaning before proceeding with cleaning of masonry. Record methods.

3. Protect adjacent non-masonry surfaces, including metals, from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clean water.
5. Clean exposed brick masonry surfaces by means of bucket and brush hand cleaning method with materials specified in this specification as recommended by BIA Technical Notes 20 "Cleaning Brick Masonry, Nov. 1990.
   a. Remove efflorescence in accordance with brick manufacturer's recommendations. Cleaning agents may be used only with approval of masonry unit manufacturer. Cleaning agents must be same as those used on test area.
   b. If chemical cleaners are to be sprayed on, the pressure shall not exceed 50 psi.
   c. If additional cleaning is necessary for special or prefaced CMU, consult with masonry unit manufacturer for approved method. Test method and gain the University / University's Representative's approval before proceeding.
   d. Water application methods shall never exceed 400 psi without approval of the University / University's Representative.

3.8 REPAIR AND POINTING

A. Replace masonry units which are loose, chipped, broken, stained, or otherwise damaged, or if units do not match adjoining units as intended. Patch chipped CMU unit to match adjacent units.
B. Provide new units to match adjoining units that cannot be successfully patched and install in fresh mortar, pointed to eliminate evidence of replacement.
C. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings, and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.
D. Pointing: Remove the existing mortar to a minimum depth of 1" or until sound mortar is found (if greater than 1"). Before installing new mortar wet mortar joint to increase the drying time of the new mortar. Mortar being installed shall match the existing mortar in color, texture, composition. Adjust the mortar hardness to accommodate the existing conditions and masonry units. Install the pointing mortar in layer of 1/4" to 3/8" lifts, fill the entire joint area and pack the mortar tight before tooling the exterior of the joint.
E. At completion of masonry work, cut out any defective joints or holes in exposed masonry and re-point with fresh mortar, tooling to match adjacent joints.

END OF SECTION 04 2200

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK INCLUDED

A. Installation of new wood nailers, blocking, curbs, etc., where required for roofing application, and to replace existing wood found to be in deteriorated condition.

1.3 RELATED WORK

A. Board Insulation – Section 07 2216
B. Thermoset Single-Ply Sheet Roofing – Section 07 5320
C. Sheet Metal Flashing and Trim – Section 07 6200

1.4 REFERENCES

A. ASTM E-84: Standard Test Method for Surface Burning Characteristics of Building Materials; 1995.
B. NFPA 255: Standard Method of Test for Surface Burning Characteristics of Building Materials; 1996.
C. PS 20: American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 1999.
D. SPIB (GR): Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau, Inc.; 1994.
E. UL 723: Standard Method of Test for Surface Burning Characteristics of Building Materials; 1993.
F. WCLB (GR): Standard Grading Rules for West Coast Lumber No. 17; West Coast Lumber Inspection Bureau; 1996, Suppl. VII (1996) & VIII (1997).
G. WWPA G-5: Western Lumber Grading Rules; Western Wood Products Association; 1998.
H. US DOC PS1 and US DOC PS2 and the Standards of the American Plywood Association.

1.5 SUBMITTALS

A. Product Data: Provide technical data on insulated sheathing and wood preservative materials.
B. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.
   1. Acceptable Lumber Inspection Agencies: RIS, SPIB, WCLB, and WWPA.
   2. Lumber of other species or grades, or graded by other agencies, is acceptable, provided that the structural and appearance characteristics are equivalent to or better than the products specified.
B. Contractor shall provide sufficient qualified workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be familiar with the type of construction involved and the materials and techniques specified.
C. The Owner shall make no allowance for lack of skill of the workmen, or the lack of qualified workmen to meet the schedule.

1.7 DELIVERY, STORAGE, AND HANDLING

Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.8 WARRANTY

See Section 07 5320 "Thermoset Single-Ply Sheet Roofing" for warranty requirements.

1.9 ENVIRONMENTAL CONDITIONS

Material installation shall proceed only when weather conditions are in compliance with the manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to rejection, including removal and replacement.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Board Wood: Shall be No. 2, or better, southern yellow pine, kiln-dried. Shall be sound, thoroughly seasoned, dressed to nominal finish dimension, and free of warpage, cupping, and bowing. Dimensions shall be determined by job conditions. Treated for exterior exposure.

B. Wood Structural Panel Sheathing (Plywood or Oriented Strand Board): Shall be stamped APA RATED SHEATHING, Grade C-C or better, and shall be manufactured with exterior glue (exposure 1).

Wood structural panels shall be 23/32 inch in thickness, or as otherwise noted or required to match existing conditions.

2.2 ACCESSORIES

A. Nails shall be ring shank 16-penny, or 8-penny cement coated (untreated wood); use ring shank stainless steel nails for treated wood locations.

B. Masonry anchors shall be 1/4 inch expanding anchor-type having stainless steel nail or approved equal; length shall be as required to provide a minimum of 1-1/2 inch imbedment in masonry. Plastic or nylon anchors shall not be allowed.

C. Concrete anchors shall be a one-piece, pre-expanded 1/4 inch diameter, flat head anchor, corrosion protected with zinc with yellow dichromate and shall be made of high grade tempered steel having a shear strength greater than grade 8 steel and have a tensile strength of not less than 2,050 lbs. Fasteners shall meet FM 4470.

D. Concrete screw fastener shall have a minimum 0.190 shank diameter and thread diameter of 0.245 with 10 threads per inch. Fastener shall be coated with CR-10 or equivalent and shall meet FM 4470.

E. When fasteners are expected to be in contact with copper, the fasteners shall be stainless steel.

F. Felt separator sheet shall be No. 30 # non-perforated asphalt saturated felts conforming to the requirements of ASTM D-226 Type I, cut to fit under wood blocking to prevent contact with concrete or masonry surfaces. Lap minimum of 3".

G. Protection Pad - Provide a protection pad membrane under all blocking attached to the rooftop curbs that rest on the roof surface. Protection Pad shall be membrane from the installing manufacturer's system. Protection Pad shall be continuous and extend past all edges of blocking by a minimum of 3".

2.3 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc. (SPIB)

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that existing construction is sound and dry, so as to adequately support new roofing components. Replace any wood found to be deteriorated.

B. Verify that curbs are sound, firmly anchored, smooth, and clean on surfaces to receive new nailers.

C. The Owner's Representative and the Contractor shall document the actual quantities of materials installed.

3.2 INSTALLATION

A. Anchor nailers securely to underlying construction as required in the project details. Perimeter nailers shall be anchored in accordance with FM Loss Prevention Data Sheet 1-49.

B. All nailers shall be of sufficient thickness so as to be flush (in height) with the roof insulation and securely anchored with the appropriate fasteners to resist a force of 300 lbs/linear foot in any direction**.**
C. Wood nailers and blocking shall be secured with a minimum of two fasteners per piece. Fasteners shall be positioned (in sets of 2) 6 inches from each end and 12" o.c. staggered or in sets of two (2) a maximum of 2 feet o.c.
D. Anchors used to secure new wood nailers, blocking, etc., shall be countersunk to provide a flush finish. Pre-drill lumber and deck where required to prevent damage to decking materials.
E. Nailers shall be grooved for edge venting; install at walls, curbs, and other vertical surfaces with a 1/4-inch gap between each length.
F. New wood nailers, blocking, etc., shall be chamfered, beveled, shaved, planed, or shimmed as necessary to provide smooth transition to adjacent materials.
G. Stagger wood nailers at overlapping conditions by minimum of two feet. Alternate nailers at corners to avoid edge on top of edge conditions.
H. Separate wood from masonry and from metal with a felt separator (30# asphalt felt).

3.3 COORDINATION

A. Cover unprotected wood with specified material as soon as practical. No wood is to be exposed and uncovered for more than (3) days.

END OF SECTION 06 1000

SECTION 07 0501
PREPARATION FOR RE-ROOFING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Remove existing roofing assembly base flashings, metal counterflashing, insulating materials, and miscellaneous items down to the existing roof deck and parapet/penthouse masonry.

B. Related Requirements:

1. Section 00 3126 “Existing Hazardous Material Information”
2. Section 02 4119 "Selective Demolition"
3. Section 02 2623 “Asbestos Abatement”
4. Section 04 2200 “Masonry Units”
5. Section 07 2216 “Board Insulation”
6. Section 07 3113 “Asphalt Shingles”
7. Section 07 4635 “Vinyl Soffit”
8. Section 07 5320 “Thermoset Single-Ply Sheet Roofing”
9. Section 07 6200 “Sheet Metal Flashing and Trim”
10. Section 07 7123 “Gutters & Downspouts”

1.2 PRE-INSTALLATION CONFERENCE

A. Refer to Division 07 Sections.

B. Review installation procedures and coordination required with related work.

1.3 ENVIRONMENTAL CONDITIONS

A. Do not remove existing roofing system, skylights, or deteriorated decking when weather conditions threaten the integrity of the building contents or occupants. Maintain temporary protection prior to installation of the new roofing system and other components.

1.4 PROTECTION

A. Respond immediately to correction of roof leaks or thermal migration during construction. A six (6) hour time limit shall be given from the time of notification of emergency conditions.

B. In the event of water penetration during rain or a storm, the Contractor shall provide for repair or protection of the building contents and interior. If the Contractor does not respond or cannot be contacted, the Owner will effect repairs or emergency action and the Contractor shall be back charged for all expenses and damages, if any.

1.5 SCHEDULE

A. Schedule work to coincide with commencement of installation of new roofing system.

B. Remove only what can be replaced or temporarily protected in a single day or single work shift.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Temporary Roofing Membrane: Approved manufacturer’s torch-applied or self-adhering sheet compatible with specified roofing insulation.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Verify existing site conditions, including roof dimensions.

B. Verify that the existing roof surface and parapets are clear and ready for work of the section.

3.2 MATERIALS REMOVAL

A. Remove all roofing, cant strips, expansion joints, base flashings, and any other items as required to leave a smooth, even surface for new roofing.

B. Utilize methods for removal of dirt, silt, gravel, debris, roof membrane and insulation from the roof surface that preserve the surrounding environment and protect the building surfaces.

C. All debris removed from the roof shall be transported from the roof via chutes into dumpsters or trucks and this debris shall be removed from the premises when vehicles are full at the Contractors cost. No debris shall be transported from the area being worked on over a previously finished roof without an overlayment of 3/4" plywood.
   1. Take proper measures to assure that demolished insulation does not become airborne and litter adjacent facilities or properties.
   2. If necessary, tent dumpsters to prevent the spread of dust and debris

D. Locate equipment and materials in a manner that does not damage the roof structure.

E. Repair of damage to the building or surrounding grounds caused by the removal or installation of the roof system will be the sole responsibility of the Contractor, at their own cost.

END OF SECTION 07 0501

SECTION 07 2216
BOARD INSULATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the contract including General, Supplemental, and Special Conditions and other Division 1 Specification sections apply to work of this section.

1.2 SUMMARY

A. Install new polyisocyanurate insulation
B. Related Requirements:
   1. Section 00 3126 “Existing Hazardous Material Information”
   2. Section 02 4119 "Selective Demolition"
   3. Section 02 2623 “Asbestos Abatement”
   4. Section 06 1000 “Rough Carpentry”
   5. Section 07 5320 “Thermoset Single-Ply Sheet Roofing”
   6. Section 07 6200 “Sheet Metal Flashing and Trim”
   7. Section 07 9200 “Sealants and Caulking”

1.3 WORK INCLUDED

A. Installation of new polyisocyanurate insulation board to replace existing insulation boards on low-slope roofs as indicated in drawings. The project requires the installation of a base layer on the roofs. The base layer of insulation board shall be attached/adhered per manufacturer’s requirements over the vapor barrier in a manner to meet the requirements of FM 1-90 and a 115 MPH wind speed warranty and the roof system manufacturer’s 30-year non-dollar limit Full System Warranty. The roof systems shall be installed to meet wind uplift requirement of 115 mile per hour ultimate wind zone for Risk Category II buildings, and is also to meet requirements of FM 1-90, FM 1-28, FM 1-29, and FM 1-49. Installation shall provide R-25 insulation at low-slope roofs.

B. Installation of new tapered polyisocyanurate insulation board shall be installed at a minimum of 1/8” per 12” slope, except where specifically noted. **The insulation shall be designed in all locations so that it slopes to roof drains, and such that no ponding water accumulates anywhere on the roof.** All layers of insulation shall be adhered with low rise foam over the base layer, which shall be fastened to meet the requirements of 1.3.A above.

C. Crickets shall be installed on the upslope sides of all roof curbs wider than 24 inches. Insulation boards shall be adhered with low rising foam adhesive unless otherwise noted in the project specifications or on the project drawings.

D. Install the polyisocyanurate insulation per the manufacturer’s tapered drawing layout. A taper drawing diagram must be submitted by the contractor for approval before the start of the roofing project.

E. High density polyisocyanurate coverboard (1/2”) shall be installed over the polyisocyanurate insulation. Coverboard shall be adhered to the polyisocyanurate insulation with a low rise foam adhesive approved by the roof system manufacturer to maintain wind resistance for 115 mph winds. Where no cover board is required over the insulation board in order to achieve the required wind warranty, the top layer of polyisocyanurate shall have a 25 psi rating.

F. Install a self-adhering reinforced modified bitumen vapor/air barrier membrane (used also as a temporary roof protection) over the concrete roof decks. Where metal roof decks exist at penthouses and entry canopies, install self-adhering reinforced modified bitumen vapor/air barrier membrane over 1/2” fiberglass matt-faced gypsum sheathing mechanically fastened to the metal deck to meet requirements in 1.3.A above. Prime all surfaces as required by the membrane manufacturer. The vapor/air barrier membrane shall be included in the roof manufacturer’s 30-year Full System Warranty and wind warranty.

G. Seal all perimeter edges, penetrations and gaps exceeding 1/8" with low rising foam to prevent moisture and/or air infiltration under the roof system membrane. The adhesive beads adjacent to walls, roof curbs, etc., shall cause a bond between the insulation board to the wall/curb substrate.

1.4 QUALITY ASSURANCE

A. Standards: Comply with standards specified in this section and as listed in the general requirements.

B. Qualifications of Manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacturer of similar items, have a history of successful production and are acceptable to the Owner and Owner's Representative.

C. Qualifications of Contractor: The Contractor and its personnel shall be currently approved by the manufacturer as qualified to install the materials of this section.

D. Qualifications of Installers: Use adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.

E. Inspections: Make all required notifications and secure all required inspections by the manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

1.5 SUBMITTALS

Submittals shall be in accordance with Section 01 3000.

1.6 ENVIORNMENTAL CONDITIONS

Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation is imminent. Materials installed during adverse weather conditions shall be subject to rejection, removal, and replacement.

1.7 WARRANTY

Warranty shall be a 30-year non-dollar limit Full Roof System Warranty, and a 115 MPH wind speed warranty.

PART 2 PRODUCTS

2.1 MATERIALS

A. Base layer and Tapered Insulation to achieve R-25 above-deck insulation at minimum 1/8" per 12" slope: Shall consist of a closed-cell polyisocyanurate foam core with factory laminated heavy-duty inorganic coated glass facers. Foam core shall have a flame spread of 20 or less and shall have a minimum density of 2 pcf; compressive strength shall be 20 psi minimum. Insulation shall conform to Federal Specification HH-1-1972/2, ***ASTM C1289***, ASTM E108, ASTM D-1621, ASTM D-1622, Factory Mutual 4450, and Underwriters Laboratories 1256. R-Values shall be as determined by RIC/TIMA Bulletin No. 281-1 based on aged material at 75 degrees Fahrenheit. Boards shall be 4' x 4' and factory cut to a taper of 1/4 inches per foot for crickets and/or saddles. Minimum thickness of tapered polyisocyanurate insulation shall be 1/2 inch at the toe of the board.

1. Project conditions require that the field insulation shall consist of a closed-cell polyisocyanurate foam core with factory laminated heavy-duty inorganic coated glass facers. Boards shall be 4' x 4' and factory cut to a taper of 1/8 or 1/4 inches per foot as indicated. Low rise foam adhesive attachment of insulation boards shall be in compliance with the minimum requirements of FM 1-90 and the membrane roof manufacturer to achieve a full systems 30-year warranty. Additional adhesive may be required to meet the requirements of the specified 115 MPH wind warranty, and 115 mph code wind requirements

B. High Density Cover Board: Shall be a lightweight, high-density polyisocyanurate roof board with factory laminated heavy-duty inorganic coated glass facers. Board thickness shall be per project specifications and drawings and/or roof system manufacturer's requirements. Coverboard shall conform to ***ASTM C1289, type II***, ASTM C473, ASTM E96, ASTM C518, ASTM D1037, ASTM D2126, ASTM C 209, ASTM D3273, ASTM E84 and ASTM D 1621. Cover board shall have a minimum compressive strength of 100 PSI. Coverboard shall be 4' x 4' in size as required to meet manufacturer's requirements. Facers of board insulation shall be compatible with the roof system type. Coverboard thickness to be 1/2 inch unless project conditions dictate otherwise.
   1. Boards shall be 4' x 4' and attached with a low rise foam adhesive. The attachment of insulation boards shall be in compliance with the minimum requirements of FM 1-90 and the membrane roof manufacturer to achieve a full systems 30-year warranty. Additional adhesive may be required to meet the requirements of the specified 115 MPH wind warranty and 115 mph code wind requirements.

C. Gypsum Coverboard / Roof Board: Shall be Fiberglass-Mat Faced Gypsum Roof Board. Board thickness shall be per project specifications and drawings and/or roof system manufacturer's requirements. Minimum board thickness shall be a minimum of 1/2" on all metal roof decks. Coverboard shall conform to ASTM C473, ASTM E96, ASTM C1177, ASTM C518 and applicable sections of ASTM C472. Coverboard shall be 4' x 4' in size or 4' x 8' as required to meet FM1-90 and manufacturers requirements. Facers of board insulation shall be compatible with the roof system type. Mechanical attachment of coverboard shall be in compliance with the minimum requirements of FM1-90 and a 115 MPH wind speed warranty for membrane roof manufacturer to achieve a full system warranty.
   1. Acceptable Manufacturers
      a. Georgia-Pacific Gypsum, LLC: DensDeck Prime
      b. United States Gypsum Company: Securock Roof Board
      c. Approved equal
   2. On concrete, lightweight concrete, or gypsum roof decks the coverboard/roof board shall be adhered with a low-rise foam adhesive. Adhesive attachment of boards shall be in compliance with the minimum requirements of FM 1-90 and the membrane roof manufacturer to achieve a full systems warranty. Additional adhesive may be required to meet the requirements of the specified 115 MPH wind warranty.
   3. On metal roof decks the coverboard/roof board shall be mechanically fastened with plates and screws. Mechanical attachment of boards shall be in compliance with the minimum requirements of FM 1-90 and the membrane roof manufacturer to achieve a full systems warranty. Additional adhesive may be required to meet the requirements of the specified 115 MPH wind warranty and 115 mph code wind requirements.

D. Foam Adhesive: Low rise polyurethane foam adhesive. Regular Grade for use in temperatures above 40 degrees F and Winter Grade for use in temperatures from 0 to 40 degrees F. When using foam adhesive the adhesive beads adjacent to walls shall cause a bond between the insulation board and the wall substrate. Installation of low rise foam adhesive shall be in compliance with the minimum requirements of FM1-90 and a 115 MPH wind speed warranty for membrane roof manufacturer to achieve a full system warranty.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that surfaces and site conditions are ready to receive work.
B. Verify that decks are supported, secured, and do not exhibit excessive deflection.
C. Verify that surfaces to receive insulation are clean, smooth, free of depressions and projections, and have no obstructions to retard drainage of water.
D. Verify that the surfaces to receive roofing are dry, clean, and free of debris and all foreign matter.

E. Verify that wood blocking, curbs, and nailers are securely anchored to the roof deck at roof penetrations and terminations and match the thickness of the insulation.
F. Verify that pipes, sleeves, ducts, and vents through the roof are solidly set and fastened into place. Seal around all roof penetrations to prevent drippage of roof products into the building.
G. Installation of the insulation shall result in positive drainage. Verification of positive drainage through the use of stringlines, building levels, etc., may be necessary. If the deck surface will not provide an acceptable substrate, the Owner's Representative shall be notified to allow appropriate actions to be taken.
H. Should the Contractor find the substrate unacceptable and outside the preparation requirements contracted for, the Owner's Representative shall be immediately notified in writing to allow appropriate actions to be taken.
I. Application of materials shall constitute acceptance of the surface by the Contractor.

3.2 INSTALLATION - GENERAL

A. Install no more insulation than can be completely dried-in with membrane in the same day. Contractor shall strictly conform to this requirement.
B. Insulation shall be laid in parallel courses with joints staggered and sealed. Where more than one layer of insulation is used, joints shall be staggered from the underlying layer a minimum of 12 inches along all edges.
C. Upon completion of the work in each area, visually inspect and verify that all components are complete and properly installed and that all fasteners are properly located and securely anchored.

3.3 POLYISOCYANURATE BOARD / COVERBOARD

A. On all deck areas, install insulation board to achieve positive drainage. The polyisocyanurate board shall be installed to meet requirements of FM 1-90 and 115 MPH wind speed warranty
B. Install tapered insulation board at all roof drain locations to provide an 8' x 8' drain sump areas and to improve roof drainage as identified on project tapered insulation drawings.
C. Insulation and coverboard boards adhered in foam adhesive are to be set in foam adhesive ribbons placed and sized to meet FM 1-90 and 115 MPH wind speed warranty criteria at a minimum.

3.4 CUTTING AND FITTING

A. Adjacent insulation boards shall be tightly abutted but not forced together. Gaps between insulation boards shall not exceed 1/8 inch in width.
B. Gaps greater than 1/8 inch shall be filled by cutting out enough material to allow placement of a minimum 12 inch wide piece of similar insulation.
C. Board-to-board height variations greater than 1/8 inch at top surface on insulation shall be shaved to provide a smooth transition.
D. At all perimeters, interior and exterior, insulation shall be fitted in such a manner as to allow pieces no smaller than 18 inches in width. When using foam adhesive the adhesive beads adjacent to walls shall cause a bond between the insulation board and the wall substrate.
E. Insulation shall be terminated immediately adjacent to roof penetrations.
F. Insulation boards shall be installed in a staggered overlapping pattern.
G. Upon completion of the installation in each area, visually inspect and verify that all components are complete and properly installed and that all fasteners are properly located and securely anchored.

END OF SECTION 07 2216

SECTION 07 3113
ASPHALT SHINGLES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Asphalt shingle roofing.
B. Self-adhesive waterproofing membrane for eave protection and underlayment.
C. Associated metal flashings, trim, and accessories.
D. Ridge vents.

1.3 RELATED REQUIREMENTS

A. Section 07 4635 - Vinyl Soffit
B. Section 07 6200 - Sheet Metal Flashing and Trim.

1.4 REFERENCE STANDARDS

A. ASTM D226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
B. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
C. ASTM D3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method.
D. ASTM D3462 - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced With Mineral Granules.
E. NRCA MS104 - The NRCA Steep Roofing Manual; National Roofing Contractors Association.

1.5 SUBMITTALS

A. Product Data: Provide data indicating material characteristics, performance criteria, and limitations.
B. Samples: Submit two (2) samples of each shingle color indicating color range and finish texture / pattern; for verifying color selection.
C. Manufacturer's Instructions: Indicate installation criteria and procedures.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
    1. Extra Shingles: 400 sq. ft. of each type and color.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the recommendations of NRCA Steep Roofing Manual.

1.7 Warranty

A. Manufacturer’s Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
    1. Material Warranty Period: minimum (30) years from date of Substantial Completion, prorated, with first (5) years non-prorated.
    2. Provide Certainteed SureStart Protection or approved equal.
B. Roofing Installers to be factory certified installers.
C. Workmanship Warranty Period to two (2) years from date of Substantial completion.

PART 2 PRODUCTS

2.1 SHINGLES

A. Basis of Design: Certainteed Landmark Series, minimum 30-year warranty – color selected by the Architect

B. Description: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462; UL 790, Class A fire resistance.
   1. Wind Resistance: Class F, when tested in accordance with ASTM D3161.
   2. Warranted Wind Speed: Not less than as required by Code. FM I-90 rated
   3. Warranty: Lifetime
   4. Algae Resistant.
   5. Self-sealing type.
   6. Style: Architectural Dimensional.

C. Subject to compliance with requirements, provide products by one of the following, including but not limited to:
   1. Certainteed - Landmark
   2. Atlas Roofing Corporation
   3. GAF Materials Corporation
   4. Owens Corning
   5. Timberline
   6. Tamko Building Products

2.3 ROOF VENTS

A. Ridge Vents
   1. Basis of Design: as required by roof manufacturer warranty and code-compliant ventilation.
   2. Plastic, extruded with vent openings that do not permit direct water or weather entry; flanged to receive shingles.

B. Unit Ventilators, as required:
   1. Basis of Design: Square Top Roof Vent manufactured by Duraflo, or as required by roof manufacturer warranty and code-compliant ventilation.
   2. 75 square inches min. of net free area.
   3. Color as selected by Architect.

2.4 SHEET MATERIALS

A. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970; 40 mil (1 mm) total thickness; with strippable treated release paper and polyethylene sheet top surface.

B. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226, Type I (#15), minimum.

C. Flexible Flashing: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970; 40 mil (1 mm) total thickness; with strippable treated release paper and polyethylene sheet top surface.

2.5 ACCESSORIES

A. Nails: Standard round wire shingle type, of hot-dipped zinc coated steel, 12 gage, 0.105-inch (2.67 mm) shank diameter, 3/8-inch (9.5 mm) head diameter, of sufficient length to penetrate through roof sheathing or ¾-inch (19 mm) into roof sheathing or decking.

B. Staples are not permitted.

C. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

2.6 METAL FLASHINGS

A. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, ridge vents, chimney flashing, and other flashing indicated.
   1. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
   2. Hem exposed edges of flashings minimum ¼-inch (6 mm) on underside.

B. Sheet Metal: Prefinished aluminum, as specified in Section 07 6200.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions prior to beginning work.
B. Verify that deck is of sufficient thickness to accept fasteners.
C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
D. Verify roof openings are correctly framed.
E. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.2 PREPARATION

A. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.
B. Broom clean deck surfaces before installing underlayment or eave protection.
C. Install eave edge and gable edge flashings tight with fascia boards. Weather lap joints 2-inches (50 mm) and seal with plastic cement. Secure flange with nails spaced 16 inches on center.
D. Install specified 1-1/2” drip edge (Section 07 6200) on all sides.

3.3 INSTALLATION - EAVE PROTECTION MEMBRANE

A. Install eave protection membrane from eave edge to minimum 3 ft. up-slope beyond interior face of exterior wall.
B. Install eave protection membrane in accordance with manufacturer's instructions.

3.4 INSTALLATION - UNDERLAYMENT

A. At Roof Slopes Greater Than 4:12 (1:3): Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4-inches (100 mm). Stagger end laps of each consecutive layer. Nail in place. Weather lap minimum 4-inches (100 mm) over eave protection.
B. At Roof Slopes Less Than 3:12: Install self-healing, min. 40 mil. adhesive-backed elastomeric underlayment for low-slope applications, or as required by manufacturer warranty.
C. Items projecting through or mounted on roof: Weather lap and seal watertight with plastic cement.

3.5 INSTALLATION - METAL FLASHING AND ACCESSORIES

A. Install flashings in accordance with NRCA requirements.
B. Weather lap joints minimum 2-inches (50 mm) and seal weather tight with plastic cement.
C. Secure in place with nails at 4-inches on center. Conceal fastenings.
D. Items Projecting Through or Mounted on Roofing: Flash and seal with plastic cement.

3.6 INSTALLATION - SHINGLES

A. Install shingles in accordance with manufacturer's instructions.
    1. Fasten individual shingles using 2 nails per shingle, or as required by code, whichever is greater.
    2. Fasten strip shingles using 4 nails per strip, or as required by code, whichever is greater.
B. Place shingles in straight coursing pattern with 5-inch (125 mm) weather exposure to produce double thickness over full roof area. Provide double course of shingles at eaves.
C. Project first course of shingles ¾-inch (19 mm) beyond fascia boards.
D. Extend shingles ½-inch (13 mm) beyond face of gable edge fascia boards.
E. Extend shingles on one slope across valley and fasten. Trim shingles from other slope 2-inches (50 mm) from valley center line to achieve closed cut valley, concealing the valley protection.
F. Cap hips with individual shingles, maintaining 5-inch (125 mm) weather exposure. Place to avoid exposed nails.
G. Cap ridge vent with individual shingles, maintaining 5-inch weather exposure. Place to avoid exposed nails.
H. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of counterflashings.
I. Complete installation to provide weather tight service.

3.7 PROTECTION

A. Do not permit traffic over finished roof surface.

END OF SECTION 07 3113

SECTION 07 4635
VINYL SOFFIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Vinyl soffit, concealed ventilated type, and accessories.

1.3 SUBMITTALS

A. Manufacturer's Product Data.
B. Manufacturer's full range of color selections.
C. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.

1.6 DELIVERY, STORAGE, AND PROTECTION

A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 - PRODUCTS

2.1 VENTILATED SOFFIT

A. General: Integrally colored vinyl soffit complying with ASTM D 4477, not less than 0.042" thick.
B. Basis of Design: Certainteed Triple 3-1/3" InvisiVent Hidden Soffit with a minimum of (10) square inches perfoot net-free intake area. Equivalent products manufactured by Alside, Certainteed, Kaycan or Ply-gem are also acceptable.
C. Color: Selected by the Architect from the manufacturer's full range of selections.
D. Finish: Matte

2.2 ACCESSORIES

A. Fasteners: As recommended by the soffit manufacturer and suitable for project conditions.
B. J-Channel: Soffit manufacturer's 5/8" channel for securing ends and edges. Color and finish shall match the soffit.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.

3.2 INSTALLATION

A. Comply with ASTM D4756, Standard Practice for Installation of Rigid Poly (VinylChloride) (PVC) Siding and Soffit and the Vinyl Siding Institute's "Vinyl Siding Installation Manual" and as follows:
   1. Miter soffit panels and trim at intersections at corners and other changes in direction.

3.3 CLEANING AND PROTECTION

A. Protect installed products until completion of project.
B. Replace damaged products before Substantial Completion.
C. Clean installed work according to the manufacturer's recommendations.

END OF SECTION 07 4635

SECTION 07 5320
THERMOSET SINGLE PLY SHEET ROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK INCLUDED

A. Installation of new, .060 EPDM reinforced membrane fully adhered roof system, including all accessories.
B. Installation of flashing, protection mat, and accessories at conditions identified in the contract documents.
C. The roof system shall be installed to meet wind uplift requirement of 115 mile per hour wind zone for Risk Category II buildings, and is also to meet requirements of FM 1-90, FM 1-28, FM 1-29, and FM 1-49.
D. A 30-year no dollar limit warranty with a 115-mph wind speed warranty for material and labor, inclusive of all roof system components, flashings, perimeter edge metals, etc., shall be presented to the Owners upon completion of the EPDM roof system installation.

1.3 RELATED REQUIREMENTS

A. Section 07 2216 - Board Insulation
B. Section 07 6200 - Sheet Metal Flashing and Trim
C. Section 07 9200 - Sealants and Caulking

1.4 QUALITY ASSURANCE

A. Standards: Comply with requirements specified in this section and as listed in the general requirements. Roof system shall meet all local Codes for a roof in a 115 mile per hour wind zone, ANSI/SPRI, and Underwriters Laboratories Class A for fire resistance.
B. Qualifications of Manufacturer: Products used in the work included in this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner.
C. Qualifications of Contractor: The Contractor and its' personnel shall be currently approved by the manufacturer of the approved products as qualified to install the materials of this section. Contractor shall have a minimum of five (5) years of active experience with installation of the materials and systems specified herein and be able to document at least five (5) projects of comparable size and difficulty.
D. Qualifications of Installers: Use adequate numbers of skilled workmen who are thoroughly trained, experienced in the necessary crafts, approved by the roof product manufacturer, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.
E. Roofing Inspections: Make all required notifications and secure all required inspections by the roof manufacturer of the approved materials to facilitate issuance of the specified roof warranty. The Manufacturer shall provide qualified technical personnel to visit the site and examine the work to assure compliance with technical specifications and guidelines. As a minimum, the Manufacturer shall visit the site at the beginning of the application of materials, three times throughout the installation, and at project completion for warranty approvals. Provide site inspection reports of site visits to the contractor and to the Owner's Representative.
F. Pre-Roofing Meeting - A Pre-Roofing meeting shall be scheduled with the Owner and / or its

representative, Roof Designer, Contractor, Contractor's project foremen and manufacturer's representatives at least seven (7) days prior to proposed start of work. The Agenda for the Conference will consist of the following items as a minimum:

1. Contract documents
2. Site Access
3. Communications channels and procedures
4. Field change orders and decisions
5. Project meeting schedules
6. Construction schedule
7. Rules and regulations affecting the work
8. Safety requirements
9. Staging, material storage and parking
10. Organization of Contractor, Subcontractors, material suppliers, etc.
11. Shop drawings and submittals
12. Project record documents
13. Technical discussion to include as a minimum
    a. Review of contractor methods and procedures for roofing installation to include the manufacturers written instructions
    b. Review of flashings, details, drainage, penetrations, and other conditions that may affect the work
    c. Review of loading limitations of the deck during roof work

1.5 SUBMITTALS

A. Submittals shall be in accordance with this specification.

B. Submit manufacturer's certification that materials and systems meet specification requirements including but not necessarily limited to wind zones, Class1A and Underwriters Laboratories Class A. Minimum items to be submitted include the roof membrane system, insulation, fastening, roof membrane layout and fastening, and shall include all related flashings, fasteners, accessories, cements and adhesives. Also submit the roof manufacturer's warranty indicating requirements noted herein.

C. Contractor shall also submit:

1. Complete material list of all items proposed to be furnished and installed under this section.
2. Manufacturer's specifications and certification data required to demonstrate compliance with specified requirements.
3. Manufacturer's recommended methods of installation.
4. When approved by the Owner representative, the manufacturer's recommended methods of installation (unless superseded by the specification) will become the basis for inspecting and acceptance or rejection of the actual installation procedures used on this work.
5. Shop drawings shall be submitted and include all necessary details, fastening patterns of insulation board and membrane materials, fastening of wood, and membrane layout patterns. Shop drawings are to be stamped for approvals by the membrane manufacturer.

1.6 ENVIRONMENTAL CONDITIONS

A. Material installation shall proceed only when weather conditions are in compliance with the applicable manufacturer's recommendations for installation and no precipitation imminent. Materials installed during adverse weather conditions shall be subject to removal and replacement.

B. Do not install EPDM sheet roofing during high winds or inclement weather, or when there is ice, frost, moisture, or visible dampness on the substrate surface. Unless recommended otherwise by the EPDM sheet manufacturer, do not install EPDM sheet when air temperature is below 40 degrees F. Provide manufacturer's printed recommendations for installation during cold weather conditions.

1.7 WARRANTY

A. Manufacturer's 30-year, "Full System" warranty shall cover materials and labor including EPDM membrane, new insulation, substrate board, coverboard, flashing materials, edge metal, coping caps and terminations. The warranty shall also include 115 mile per hour wind coverage, and related wind coverage for the edge metal.

1.8 REFERENCES

A. Materials used in this section shall be listed in the latest addition of the following:
   1. Factory Mutual
   2. Underwriters Laboratories, Inc. Building materials directory.
   3. ASTM D 751 Method of testing nominal thickness.
   4. ASTM D 2137 Method of testing brittleness point.
   5. ASTM D 751 Test method for tear strength.
   6. SPRI's "Wind Design Guide for Single-Ply Roofing Systems."

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Firestone Building Products, Carmel, In.
B. Carlisle Syntec Incorporated, Carlisle, PA
C. Johns Manville, Denver, Colorado
D. Versico, Carlisle, PA

2.2 MATERIALS

A. Membrane: Sheet shall meet ASTM D-4637 for Type I reinforced EPDM single-ply roofing membrane. Ethylene Propylene Diene Terpolymer (EPDM), 0.060-inch minimum thickness. Size of sheet shall be maximum size available from manufacturer with pre-applied 6-inch tape. Material is not to be folded for transportation.

B. Vapor / Air Barrier: Shall consist of a self-adhesive reinforced vapor / air barrier membrane used also as a temporary roof protection. The membrane shall be a minimum of 40-mil thick composite membrane consisting of a self-sealing rubberized asphalt adhesive laminated to cross or woven laminated film reinforcement. Provide primers as required by manufacturer.

C. Walkway Membrane: Roof system manufacturer's walkway membrane or walk pads shall be installed per the project documents and included in the roof manufacturer's full system warranty.

D. Other Materials: Flashing, mechanical fasteners and fastener plates meeting FM 4470, expansion joint, termination bars, splice tape, seam tape, reinforced perimeter fastening strip, cover tape, sealant, edge metal system, and adhesives shall be as supplied and warranted by the EPDM membrane manufacturer, and meeting requirements of other specification sections.

2.3 SUBSTITUTIONS

No substitutions

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that the insulation substrate is clean, smooth, free of depressions, waves, projections, and free of gaps 1/4-inch or greater.

B. Verify that insulation has been cut or terminated at appropriate roof penetrations and projections. In addition, verify proper installation of wood nailers, etc. Contractor shall verify all dimensions, prior to installation of materials.

3.2 INSTALLATION - GENERAL

A. The Contractor shall strictly adhere to the applicable manufacturer's specifications for installation unless otherwise specified. Instructions and procedures described herein shall be considered minimum requirements for application of materials.

B. Do not dilute adhesives or coatings unless specifically recommended by the manufacturer. Do not thin materials with cleaners used for cleaning the EPDM sheet.

C. Keep liquids in airtight containers and keep containers closed, except when removing materials.

D. Place only as much membrane as can be totally installed as a completed section in the same day. All aspects of the system including field seams, flashing at all penetrations, walls, etc., lap sealant application, T-joiints covers, etc. shall be shall be completed daily.

E. Protect insulation board from damage, and replace any wet materials prior to installing the new roof membrane. Stored materials shall be covered with tarps and shall be secured at all time.

F. Require workmen and others who walk on the membrane to wear clean, soft-soled shoes to avoid damage to roofing materials.

G. Do not use equipment with sharp edges, which could puncture the EPDM sheet.

3.3 MEMBRANE FULLY ADHERED SYSTEM

A. Beginning at the low point of the roof, place the EPDM membrane with-out stretching over the acceptable substrate and allow to relax a minimum of 30 minutes before application of membrane seaming.

B. The membrane sheet shall be installed in largest sheets possible according to the manufacturer’s membrane sheet sizes, to eliminate excessive quantities of seams. Seams are to be installed in a water shedding direction.

3.4 MEMBRANE LAP SPLICING

A. Position the sheet at the splice area by overlapping membrane for a minimum 6-inch seam. Once the membrane is in place, mark the bottom sheet 1/2” from the edge of the top sheet. Tack the sheet back with primer and at factory splices or as necessary to hold back the membrane at the splicing area.

B. Clean the lap area as required by the manufacturer and apply primer along the length of the splicing area until surfaces become a dark gray in color. Apply primer to both surfaces at the same time to allow the same flash off time.

C. Where factory applied tape is not used, position the seam tape on the bottom sheet, aligning the edge of the release paper with the markings. Roll the seam tape with a silicone roller. Allow the top sheet to rest on top of the tape’s release paper; trim the top sheet as necessary to assure that 1/8” to 1/2” of the seam tape will be exposed on the finished splice.

D. Remove the release paper from the tape, allowing the top sheet to fall freely onto the exposed seam tape and broom the entire length of splice as the release paper is being removed.

E. Roll the splice using a silicone roller along the entire length of the splice.

F. Secure the membrane at all locations where the membrane terminates or goes through an angle change greater than 1/2” in 12” except for round pipe penetrations less than 18” in diameter and square penetrations less than 4” square. Membrane is to be secured at all base of flashing locations.

3.5 FLASHING

A. Flashing area shall be clean and free of dust, dirt, or debris. Exercise caution when cleaning flashing area that membrane is not exposed to petroleum products for extended periods. Should such exposure result in membrane degradation, the affected area shall be cut out completely and replaced with new materials.

B. Talc dust or other parting agents shall be thoroughly removed from the flashing area by appropriate solvents. Wiping rags shall be changed frequently to effectively remove the parting agent and excess solvent. Flashing tape of adhesive shall not be applied until proper cleaning and drying have been accomplished.

C. Flashing tape and/or bonding adhesive shall be applied to mating surfaces of the flashing area. Adhesive shall be applied in a smooth, continuous, and even manner to achieve a uniform coating. Do not allow adhesive to glob or puddle. Adhesive shall be allowed to dry until tacky but not stringy or sticky to a dry finger touch.

D. Roll the flashing ply sheet onto the mating surface. Take care not to stretch or wrinkle the flashing ply to avoid fishmouths.

E. Roll the lap area with a 2-inch-wide steel roller, using positive pressure toward the outer edge of the lap. Do not roll parallel to the lap edge.

F. Lap sealant shall be applied to all flashing lap edges where the seam tape is not exposed and as required by the manufacturer. A bead (approximately 5/16 inch in diameter) shall be applied such that the flashing lap edge is completely covered. Sealant shall be applied to all flashing lap edges completed daily.

G. Install termination bar at appropriate locations in accordance with the manufacturer's requirements and horizontal to the plane of the roof. Bridging or floating of the membrane at perimeters shall not be acceptable.

H. Flashing seams shall be allowed to tack and then checked for fishmouths, blisters and other voids. All necessary repairs shall be made daily using 6 inch minimum, cured patches.

I. Flashings shall extend a minimum of 6 inches onto the roof membrane.

J. All flashings shall be totally bonded. Unadhered flashings shall not be accepted. Provisions for asphalt contaminated surfaces shall be addressed.

K. Flashings shall be secured at the top edge with manufacturer’s recommended termination bar and approved fasteners under metal counterflashing or cap.

END OF SECTION 07 5320

SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK INCLUDED

A. Installation of new pre-finished sheet metal and counter-flashings, manufactured edge metal flashing, and miscellaneous sheet metal flashing and trim as may be needed.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 06 1000 - Rough Carpentry
B. Section 07 2216 - Board Insulation
C. Section 07 5320 - Thermoset Single-Ply Sheet Roofing
D. Section 07 9200 - Sealants and Caulking

1.4 QUALITY ASSURANCE

A. Qualifications of the Manufacturer: Products used in the work of this section shall be produced by manufacturers regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the Owner.
B. Qualifications of the Installer: Use adequate number of skilled workmen who are thoroughly trained and experienced in the necessary crafts and are completely familiar with the specified requirements and the methods needed for the proper performance of the work in this section.
C. In acceptance or rejection of the work of this section, the Owner shall make no allowance for lack of skill on the part of the workmen.
D. Follow all local and state building codes, ANSI/SPRI ES-1 criteria and FM criteria for coping caps and edge metal conditions.
E. Follow recommendations by SMACNA and NRCA.

1.5 SHOP DRAWINGS

A. Submit shop drawings in accordance with Section 01 3000 Administrative Procedures.
B. Indicate material profile, jointing pattern, jointing details, fastening methods, and installation details, type and gauge of metal.

1.6 SUBMITTALS

A. Submit samples in accordance with Section 01 3000 Administrative Procedures.
B. Submit to Owner's Representative a 12-inch length of each sheet metal configuration prior to total project fabrication. Provide mockups as requested.
C. Provide a mockup for scupper.

1.7 STORAGE AND HANDLING

A. Store materials so as to maintain clean, dry, off-ground, weathertight conditions and to protect against loss, damage, and wetting.
B. Stack material to prevent twisting, bending, or abrasion.
C. During storage prevent material contact with any substance that would discolor or stain, including soil and water.
D. Store and handle metal as per new material. Prevent damage from on-going roofing activity.

1.8 SCHEDULING

A. All new sheet metal work shall be closely coordinated with the installation of the new roofing materials.

B. New sheet metal shall be installed directly after roofing work such that roofing terminations will not be left unprotected by metal.

1.9 WARRANTY

A. Warranty shall be in accordance with 07 5320 Thermoset Single-Ply Sheet Roofing, as part of the roofing system.

PART 2 PRODUCTS

2.1 SHEET METAL MATERIALS

A. Edge Metal/ Fascia: Anchor-Tite Fascia System, by Metal Era, or approved equal with straight and radius sections fabricated using minimum 24-gauge metal fascia cover and extruded aluminum anchor bar with factory fabricated miters and with a 30-year Kynar 500 finish. System must meet ANSI/SPRI Wind Design Standard ES-1. Edge Metal / Fascia system and installation shall be incorporated into the roof system "Full System's No Dollar Limit Roof Warranty".

D. Counterflashing and miscellaneous metal profiles – minimum 26-gauge stainless steel.

E. Stainless Steel: Conforming to ASTM A240 and/or ASTM A666

F. Aluminum: Conforming to ASTM B-209.

G. Galvalume: Conforming to ASTM A-792.

H. Roof Curbs:

1. Rail roof curbs for free standing roof top equipment. Curbs shall be constructed from 18 ga. galvanized steel, unitized construction with integral base plate, continuous welded corners seams, pressure treated wood nailer, counterflashing with screws and internally re-enforced. All exposed screws shall be stainless steel and have an EPDM/stainless steel composite washer installed under the screw head. New rail curbs shall match the existing curbs in size, length and width. New rail curbs shall extend a minimum of 8" above the finished roof system. Curbs shall be fabricated to set level on the sloped roof deck. Rail curbs shall be as manufactured by The Pate Company, 245 Eisenhower Lane South, Lombard, ILL. 60148, model – pate equipment support es-2, or approved equal.
2. Steel roof curbs shall be constructed from 18 ga. galvanized steel, unitized construction with integral base plate, continuous welded corners seams, pressure treated wood nailer, counterflashing with screws and internally re-enforced. All exposed screws shall be stainless steel and have an EPDM/stainless steel composite washer installed under the screw head. New roof curbs shall extend a minimum of 8" above the finished roof system. Curbs shall be fabricated to set level on the sloped roof deck. Roof curbs shall be as manufactured by The Pate Company, 245 Eisenhower Lane South, Lombard, ILL. 60148, model – pate equipment support es-2, or approved equal.

I. Aluminum Roof Curbs:

1. Aluminum roof curbs for free standing roof top equipment. Curbs shall be constructed from .080 aluminum, utilizing construction with integral base plate, continuous welded seams, crickets, pressure treated wood nailers, counterflashing with screws and internally re-inforced. Curb walls shall be sized to meet project conditions. All exposed screws shall be stainless steel and have an EPDM/stainless steel composite washer installed under the screw head. New roof curbs shall extend a minimum of 8" above the finished roof system when applicable. Curbs shall be fabricated to set level on the sloped roof deck. Roof curbs shall be as manufactured by The ThyBar Corporation, 44 East South Street; Akron, Ohio 44311, or approved equal.

2.2 ACCESSORY MATERIALS

A. Fasteners: Shall be type and size as required by construction.
   1. For concealed fastening into wood, use fasteners according to the coping cap requirements based upon ANSI/SPRI Wind Design Standard ES-1.
   2. For exposed fastening into wood, use stainless steel screws with EPDM/Stainless Steel washers (color to match painted metal).
   3. For fastening into concrete, use masonry/concrete anchors with EPDM/Stainless Steel washers. Use all metal anchors only, no plastic anchors allowed.
   4. For fastening into steel, use self-drilling, self-tapping hex head or pan head, minimum 1-1/4" long. For exposed fasteners into steel use stainless steel self drilling, self tapping hex head or pan head fasteners with EPDM/Stainless Steel washers (color to match painted metal)

B. Pop Rivets: Shall be 1/8-inch to 3/16-inch diameter with stainless steel mandrels and washers, color clad to match pre-finished metal.

C. Masonry Fasteners: Shall be 1/4-inch diameter mushroom head, one-piece nail drive anchor; zinc alloy body with stainless steel drive nail. Fasteners shall provide a minimum of 1 1/4" embedment into masonry. Plastic or vinyl anchors are not permitted.

D. Masonry Screws: Shall be a stainless steel (Type 410) screw 3/16" or 1/4" diameter (depending on application), with a flat, oval or hex head (depending on application). Depth of embedment in sold material shall be a minimum of 1 1/4". All exposed masonry screws shall an EPDM/stainless steel composite washer installed under the screw head.

E. Termination Bar: Shall be 1/8-inch x 1 inch, 304 stainless steel flat bar, hot rolled annealed, pickled and conforming to requirements of ASTM A276. Bar shall have pre-drilled holes 6 inches o.c. Holes shall be slotted. Termination Bar shall be deburred before installing.

F. Sealant: Shall be as specified in Section 07 9200.

G. Screws: Shall be stainless steel self-drilling, self-tapping, No. 12 hex head or pan head minimum 1-1/4 inches long or as required by systems manufacturer.

H. Ice and Watershield Membrane: Self adhering, high temperature resistant, minimum 40 mils thick, polyethylene film top surface laminated to butyl or SBS modified asphalt adhesive with release paper backing. Provide primer as recommend by manufacturer.

2.3 FABRICATION

A. In addition to complying with all pertinent codes and regulations, comply with all pertinent recommendations as noted in "Architectural Sheet Metal Manual", 5th edition, 1993, as published by the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

B. Fabricate and install sheet metal sections in 10-foot lengths except where shorter lengths are required by construction. Provide adequate provisions for expansion and contraction.

C. Form sections square, true, and accurate to size, free from distortion, sharp edges, and other defects detrimental to appearance or performance.

D. Junctures, intersections, corners and unions of sheet metal shall be held to a minimum of 18-inch legs.

E. At all locations where new sheet metal sections abut walls, copings or terminate sheet metal shall be terminated with end sections and end dams. Terminating or end pieces shall be of one-piece construction with watertight seams; seams shall be pop riveted and sealed.

E. Sheet metal flashing shall be fabricated and installed to allow for expansion and contraction of the component materials without buckling, hole elongation, fastener failure or excess stress loading situations developing at any time during the temperature cycle. Clips shall be designed and installed to resist rotation and to avoid shear stress when roofing material expands and contracts.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that nailer areas are clean, smooth, free of depressions, waves, or projections and solidly supported joints.
B. Verify that roof openings, pipes, sleeves or vents through roof are solidly set.
C. Verify compatibility of flashing system with other system materials.
D. Verify installation of all appropriate base flashings prior to installation of sheet metal.
E. Verify existing field conditions. Minor dimensional detail changes may be required to fit existing conditions.

3.2 INSTALLATION - GENERAL

A. Dissimilar metals shall be kept separated to prevent galvanic action. Preventative measures shall include separation by suitable bituminous paint.
B. All metal flanges shall be installed on top of membrane and the flange set in a full bed of sealant.
C. All exposed edges of sheet metal shall be folded back, or "hemmed", on concealed surfaces.
D. Form and install new edge metal, fascia coping, trim, counterflashing, etc., in accordance with detail drawings, SMACNA and ANSI/SPRI ES-1 recommendations and/or requirements.
E. Where lap seams do not have a joint cover, lap according to pitch, but in no case less than 4-inches.
F. Make all lap seams in the direction of water flow.
G. Finish all sheet metal watertight and weather tight.
H. Anchor downspout to wall with minimum two (2) anchor straps and no more than 8-feet apart.
I. Set concrete splash block at bottom of downspout and direct water flow from building wall. Install roof membrane slip sheet under splash block.

3.3 EDGE METAL / DRIP SILL / FASCIA

A. Fabricated edge metal systems shall be tested and must be in compliance with ANSI/SPRI ES-1 (Wind Design Standards for Edge Systems on Low Slope Roofs) standards.
B. The Contractor must submit documentation and proof from the testing agency that the shop fabricated edge metal system is in compliance with ANSI/SPRI ES-1 standards.
C. The Contractor must submit detailed shop drawings of the edge metal systems indicating profiles, splicing, length of pieces, materials used in fabrication, installation techniques, fasteners, etc.
D. The Owner and / or Owner's Representative must approve all shop drawings before installation of all shop fabricated edge metal systems.
E. All pre-manufactured perimeter edge metal systems shall be supplied by the roofing systems manufacturer and be incorporated into the project's Full Systems warranty.

3.4 COUNTERFLASHING

A. Form and install new counterflashing metal as shown in detail drawings. Lap joints a minimum of 4-inches and stagger joints a minimum of 2-feet from adjacent or abutting metal flashings (through wall or extension flashings) joints.
B. Apply sealant between flat surface of counterflashing and walls, curbs, etc. prior to securing.
C. At areas where counterflashing is to be installed without benefit of sawcut reglet and

receiver, anchor counterflashing to walls, curbs, etc., using appropriate fastener (for wall substrate material) fasten counterflashing 8-inches o.c. Use EPDM/Stainless Steel washers to seal fasteners.

D. Seal top edge of counterflashing joint by dry tooling; sealant shall be installed to shed water.

3.5 CLEAN-UP

A. Factory-applied plastic release film shall be removed from all exposed pre-finished metal.

B. Clean and neutralize all flux materials.

C. All excess solder and sealants shall be cleaned from the surface.

D. All hand prints, smudges and other superficial stains that were placed on the sheet metal during fabrication and installation shall be removed.

E. All abrasions, scratches, scrapes, etc., shall be touched up with paint furnished by the sheet metal manufacturer.

F. Leave job site clean at completion of work and properly dispose of all construction debris.

END OF SECTION 07 6200

SECTION 07 7123
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Aluminum gutters, downspouts and accessories.

1.3 REFERENCE STANDARDS

A. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
B. ASTM D4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free.
C. SMACNA Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association.

1.4 DESIGN REQUIREMENTS

A. Conform to SMACNA Architectural Sheet Metal Manual for sizing components for rainfall intensity determined by a storm occurrence of 1 in 50 years. Minimum 6” gutters.
B. Conform to applicable code for size and method of rain water discharge.

1.5 SUBMITTALS

A. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
B. Product Data: Provide data on prefabricated components.
C. Samples: Submit two (2) samples, 4-inch-long illustrating component design, finish, color, and configuration.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required.
    1. Metal thickness:
        a. Gutters: 0.032”
        b. Downspouts and Accessories: 0.032”
    2. Finish: Epoxy primer and silicone-modified, polyester-enamel topcoat; with dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
    3. Color: Selected by the Architect.

2.2 ACCESSORIES

A. Gutter Leaf Protection System: Basis of Design: Leafsout Micro Mesh Stainless steel gutter guard system, screw-attached to gutter system – size to required gutter dimensions – or approved equal.
B. PVC connector boots with “Y” for capped cleanout. Size to match existing connectors.

2.3 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.
B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
D. Hem exposed edges of metal.
E. Fabricate gutter and downspout accessories; seal watertight.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.
B. Verify that surfaces are ready to receive work.

3.2 PREPARATION

A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15-mil (0.4 mm).

3.3 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
B. Connect downspouts to storm sewer system with PVC connectors with cleanouts. Prime and paint PVC connectors to match downspouts. Seal connections watertight.

END OF SECTION 07 7123

SECTION 07 9200
SEALANTS AND CAULKING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Throughout the work, caulk and seal all joints as required to provide a positive barrier against passage of air and passage of moisture.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Section 07 5320 - Thermoset Single-Ply Sheet Roofing
B. Section 07 6200 - Sheet Metal Flashing and Trim

1.4 QUALITY ASSURANCE

A. Qualifications of manufacturer: Products used in this work shall be produced by Manufacturers regularly engaged in the manufacture of similar items and with a history of successful production.
B. In acceptance or rejection of the work of this section, the Owner will make no allowance for lack of skill on the part of the workmen.

1.5 PRODUCT HANDLING

A. Deliver materials to the job site in original, unopened containers. Materials are to be stored in a protected area between 40 to 80 degrees Fahrenheit.
B. Do not retain on the job site any material which has exceeded the shelf life recommended by its manufacturer.
C. Protect all surfaces from staining or damage. All damaged work shall be repaired or replaced as directed by the Owner's Representative and at no additional contractor cost to the Owner.

1.6 JOB CONDITIONS

A. Do not apply caulking or sealants when the surface temperature is below 40 degrees Fahrenheit, or above 125 degrees Fahrenheit. Do not apply materials when surface is damp or during cold, rainy, or frosty weather.

PART 2 - PRODUCTS

2.1 SEALANTS

A. General: except as specifically directed otherwise by the, use only the type of sealants described in the section.
B. Sealant shall be low modulus, non-staining, one-part urethane and of gun-grade consistency. Sealant shall be easily workable and shall be capable of producing a smooth attractive finish. For joints in vertical surfaces, provide ASTM C 920, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type S or M, Grade P, Class 25, Use T.
C. Sealant shall be Tremco, Inc. - Spectrem 1, Spectrem 3, or Spectrem 4.
    1. Pecora Corporation – Dynatrol II
    2. Pecora Corporation – 890 Silicone
    3. Sika Corporation – Sikaflex 2C

4. Based on existing sealant used previously, verify that the new sealant to be used is compatible.
5. Use primer material specific to each manufacture and product applied to.
6. Color shall match mortar joint or color of material.

2.2 BACK-UP MATERIALS

A. General: Use only those back-up materials which are specifically recommended for this installation by the manufacturer of the sealant used, and which are non-absorbent and non-staining. Back-up materials must be 1-1/2 times the width of the joint.

B. Acceptable types include closed cell, resilient urethane, or polyvinylchloride foam; closed cell, polyethylene foam; closed cell sponge of vinyl or rubber, or approved equal.

2.3 CLEANER

A. Shall be Xylol, Toluene, or commercial solvent recommended by the sealant manufacturer.

2.4 PRIMER

A. Shall be as recommended by sealant manufacturer.

2.5 OTHER MATERIALS

A. All other materials not specifically described, but required for complete and proper caulking and installation of sealants, shall be first quality of their respective kinds, new, and as selected by the Contractor subject to the approval of the Owner.

PART 3 - **EXECUTION**

3.1 EXAMINATION

A. Examine all areas and conditions under which work of this section will be performed.

B. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Do not add liquids, solvents, or powders to the sealant. Mix multi-component elastomeric sealants in accordance with manufacturer's instructions.

B. Concrete and Masonry
1. All surfaces in contact with the sealant shall be dry, cured, sound, and well brushed and wiped free from dust.
2. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
3. Remove all bitumen from joint area.
4. Where surfaces have been treated, remove the surface treatment by use of sandblasting or wire brushing.
5. Remove all debris and mortar from the joint cavity.
6. Where back-up material is required, insert the approved backer-rod or bond-breaker tape in the joint cavity to the depth required.

C. Steel Surfaces
1. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
2. Remove protective coatings on steel by sandblasting, or by a solvent that leaves no residue.

D. Aluminum Surfaces
1. Aluminum surfaces in contact with sealant shall be cleaned of temporary protective coatings, dirt, oil, and grease.

2. When masking tape is used for a protective cover, remove the tape just prior to applying the sealant.
3. Use only such solvents to remove protective coatings as are recommended for that purpose by the manufacturer of the aluminum work, and which are non-staining.

3.3 INSTALLATION OF BACK-UP MATERIAL

A. Use only the back-up material recommended by the manufacturer of the sealant and approved by the University or University's Representative for the particular installation, compressing the back-up material 25 to 50 percent to secure a positive and secure fit.

B. When using back-up of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose, or rod back-up stock.

3.4 JOINT DESIGN

A. Joint depth shall never be greater than width.
1. If joint width is 1/4-inch to 1/2 inch wide, sealant depth at midpoint shall be 1/4-inch.
2. If joint width is 1/2-inch to 1-inch wide, sealant depth at midpoint shall be 3/8-inch to 1/2-inch.
3. If joint width is 1-inch to 2-inches wide, sealant depth at midpoint shall be 1/2-inch.

B. In deep joints, the sealant depth shall be controlled by the use of back-up materials to maintain the recommended depth.

C. Where depth of joint does not permit the use of back-up material, then a bond breaker strip must be installed to prevent three-point bonding.

3.5 INSTALLATION OF SEALANTS

A. General: Prior to the start of installation in each joint, verify the joint type according to the details in the drawings and verify that the required proportion of width of joint to depth of joint has been secured.

B. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.

C. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.

D. Installation of sealant: Install the sealant in strict accordance with the manufacturer's recommendations, as approved by the University's Representative, thoroughly filling all joints to the recommended depth.

E. Air voids shall not be present throughout the entire joint cross section. To ensure complete joint fill, tooling shall be performed within ten (10) minutes of sealant application.

F. Tool all joints to the profile shown on the details in the drawings.

G. Sealant shall be tooled with light pressure to spread the material against the back-up material and the joint surface. Tooling shall be performed with a concave profile tool to keep the sealant within the joint.

H. Sealant shall be dry tooled, unless specifically approved otherwise by the manufacturer and the University's Representative. If the sealant manufacturer approves, the tool may be dampened with a sealant manufacturer approved reducer. Water or soapy water shall not be used on the tool; do not over tool.

3.6 CLEANING UP

A. Remove masking tape immediately after joints have been tooled.

B. Keep adjacent surfaces clean and free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.

C. Do not allow uncured sealants to contact surfaces adjacent to the joints, or any other

non-joint surfaces. If uncured sealants are introduced to prohibited areas, sealant shall be removed as follows:

1. Non-porous Surfaces - Immediately remove all excess sealant adjacent to the joint and elsewhere by using xylol, tolvol, or methyl ethel ketone while sealant is still in uncured state.
2. Porous Surfaces - Allow sealant to develop initial cure, and then remove by abrasion or other mechanical means. Exercise extreme care to maintain the original surface texture without damage.

END OF SECTION 07 9200

SECTION 09 9000
PAINTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

A. Surface preparation and application of paint materials to roof-related items as described in drawings and specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Exterior Coating system:
   1. Rust-Go system manufactured by the Garland Company.
   2. Sherthane 2K system manufactured by the Sherwin Williams Company.
   3. Equivalent systems by ICI or PPG.

2.2 PAINT MATERIALS - GENERAL

A. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated.

B. Colors: Selected by the Architect from standard color selections.

PART 3 EXECUTION

3.1 APPLICATION

A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

B. The number of coats and film thickness required is the same regardless of application method. Apply succeeding coats per manufacturer's specifications.

3.2 MINIMUM COATING THICKNESS

A. Apply materials at the manufacturer's recommended spreading rate.

3.3 COMPLETED WORK

A. Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

END OF SECTION 09 9000

SECTION 22 1426.13
RETROFIT ROOF DRAINS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 REFERENCE STANDARDS

A. International Association of Plumbing and Mechanical Officials (IAPMO):
   1. PS 97-96 – Mechanical Cast Iron Closet Flanges – Pressure Test

B. Single Ply Roofing Industry (SPRI):
   1. ANSI/SPRI RD-1 – Performance Standard for Retrofit Drains.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Olympic Hercules
B. OMG, Inc.
C. Zurn

2.2 RETROFIT ROOF DRAINS

A. Retrofit Roof Drains:
   1. Size: Fit within existing pipe as closely as possible, to maximize clear opening of drain.
   2. Compliance:
      a. ANSI/SPRI RD-1.
      b. IAPMO PS 97-96.
   3. Drain Body:
      a. Material: PC/PET blend
      b. Flange: 18-inch square.
      c. Drain Stem Length: 9-inches
      d. Flange Includes:
         1) Six 1-1/8-inch-long stainless steel studs.
         2) 12 pre-punched holes to secure flange.
      e. Sump Area: Depressed.
   4. Strainer Dome:
      a. Material: PC/PET blend.
      b. Height: 4-inches.
      c. Outside Base Diameter: 14-inches.
      d. Inlet Area: 125-square inches.
   5. Clamping Ring:
      a. Material: 0.125-inch aluminum.
      b. Low profile.
      c. Strainer Brackets: 2, to 5-1/2 inches high to secure strainer.
      d. Bosses: 6, to accept studs on flange.
   6. Backflow Seal:
      a. Compression Seal: Watertight, “RAC Seal” mechanical seal.
      b. Material: Urethane and cast aluminum.
   7. Hardware:
      a. Nuts: 6, stainless steel kep nuts, for studs.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove clamping ring, strainer dome, and bolts from existing roof drain assembly and discard.

B. Clean existing drain leader pipe of bitumen, dirt, and debris.

3.2 INSTALLATION

A. Install retrofit roof drains in accordance with manufacturer's instructions at locations, and with sump size, as indicated on the Drawings.

B. Install retrofit roof drains into existing drain leaders in accordance with manufacturer's instructions.

C. Install flashing in accordance with membrane roofing manufacturer's instructions.

D. Install retrofit roof drains to provide watertight connection to existing plumbing and membrane roofing systems.

3.3 PROTECTION

A. Protect installed retrofit roof drains to ensure that, except for normal weathering, retrofit roof drains will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 22 1426.13

APPENDIX A

EXISTING HAZARDOUS MATERIAL INFORMATION

Asbestos Survey Report

Lincoln Apartments
815 E Lincon Way NW
Massillon, Ohio 44646

Prepared for:

TC Architects
430 Grant Street
Akron, Ohio 44311
330-867-1093

Prepared by:

Professional Service Industries, Inc.
5555 Canal Road
Cleveland, Ohio 44125
216-447-1335

October 23, 2023

PSI Project Number: 01373995-1

Martin Kurkul
Asbestos Inspector
ES# 36332

Jeff Chapman
Principal Consultant

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS OR ABBREVIATIONS

Acronym or Abbreviation	Definition
ACM	Asbestos-Containing Material
ACBM	Asbestos-Containing Building Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CAT. I NF	Category I Non-Friable
CAT. II NF	Category II Non-Friable
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
EPA	Environmental Protection Agency
HA	Homogeneous Area
HVAC	Heating, Ventilation, and Air Conditioning
MJP	Mudded Joint Packing
NESHAP	National Emission Standards for Hazardous Air Pollutants
NVLAP	National Voluntary Laboratory Accreditation Program
O&M	Operations & Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos-Containing Material
PLM	Polarized Light Microscopy
PSI	Professional Service Industries, Inc., an Intertek company
PT	Point Count
RACM	Regulated Asbestos-Containing Material
TEM	Transmission Electron Microscopy
TSI	Thermal System Insulation
VFT	Vinyl Floor Tile
VJC	Vibration Joint Cloth
VSF	Vinyl Sheet Flooring

1.0 INTRODUCTION

PSI was retained by TC Architects to perform a survey for suspect ACM of the roofing areas at Lincoln Apartments, located at 815 E Lincon Way NW in Massillon, Ohio 44646.

This project encompassed only the accessible roofing areas of the 80,000 square-foot, 6-story, building, hereinafter referred to as the Project Area. The field work was conducted on September 21, 2023.

1.1 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to provide general information for the Project Area regarding the presence, condition, and quantity of accessible and/or exposed friable and non-friable materials suspected to contain asbestos.

The survey of the Project Area was conducted in general accordance with the EPA AHERA and the NESHAP sampling guidelines to determine the presence and general locations of exposed and/or physically accessible suspect ACM, depict the sample locations, quantify the amount of ACM identified during the survey, and provide photographic documentation of each homogeneous area**.**

Each suspect material was touched, where possible, to determine the friability of the material. Samples were obtained only from suspect ACM that were readily exposed and/or physically accessible during the survey**.**

PSI also identified the roofing materials sampled during this survey and noted the composition and depths of the layers.

Samples were sent to Eurofins CEI NVLAP accredited laboratory located at 730 SE Maynard Road, in Cary, North Carolina, for analysis. Each sample underwent PLM analysis for detection of asbestos fibers in the building materials.

1.1.1 INFORMATION PROVIDED BY THE CLIENT

No documents were provided by the client during the course of this survey.

1.2 AUTHORIZATION AND ACCESS

Authorization to perform the survey was given on September 18, 2023 by the receipt of a signed copy by PSI of PSI Proposal Number 0137-408489, between TC Architects and PSI.

Access to the property was provided by SMHA Faciltiy Staff. PSI was not escorted during the field work for this survey.

1.3 LIMITATIONS

This asbestos survey was not intended to meet the requirements of the NESHAP for Asbestos renovation for the entire building. The survey included a thorough inspection of the reported areas of planned roofing renovation**.**

Destructive sampling, such as behind finished surfaces (plaster/drywall walls, above hard ceilings, etc.) inside mechanical chases, behind mirrored walls, under carpet or tiled floors, etc., was not generally conducted to assess inaccessible or concealed materials.

Although PSI made an attempt to identify all areas of ACM, an exhaustive investigation of void spaces was not included in the scope of services for this project. There may exist conditions which were unable to be identified within the scope of this survey.

Inaccessible is defined as areas of the building that were locked, or where admittance was not permitted. It also includes areas/materials that could not be tested (sampled) without destruction of the structure or a portion of the structure, and areas/materials that could not be safely reached by the inspector or inspection team. In the event that access to a portion of the building was not obtained (which otherwise would have been tested), such limitations specifically are identified in the Findings Section of this report.

PSI did not inspect for or sample materials in areas or locations which presented a hazard to the inspection team, such as those associated with energized electrical systems or within confined spaces.

PSI did not collect samples from building elements where the intended use would be compromised by testing, such as fire rated doors, vapor barriers, mirror mastics, etc. If observed, such materials were assumed to be asbestos-containing.

Due to the occupancy of the structure, PSI was generally not able to conduct ‘destructive’ sampling such as inside wall cavities or above plaster ceilings: therefore, the inspection was limited to areas that were accessible and exposed.

2.0 GENERAL PROPERTY, BUILDING AND SURVEY INFORMATION

2.1 PROPERTY AND BUILDING INFORMATION

SUBJECT PROPERTY:	Lincoln Apartments 815 E Lincon Way NW Massillon, Ohio 44646

CONSTRUCTION DATE:	1975
PREVIOUS RENOVATION DATE:	Not reported
NUMBER OF FLOORS:	6
ESTIMATED SQUARE FOOTAGE:	80,000
CONSTRUCTION TYPE:	Concrete decking and CMU/Brick
VACANT? (YES/NO)	No
ADDITIONAL INFORMATION:	None Provided

2.2 SURVEY INFORMATION

NAME OF INSPECTOR:	Martin Kurkul
LICENSE/CERTIFICATION NUMBER:	ES# 36332
	

NAME OF INSPECTOR:	Alec Benedetti
LICENSE/CERTIFICATION NUMBER:	ES# 36461
	

DATE(S) OF SURVEY AND SAMPLING:	September 21, 2023
ESCORT:	No escort

3.0 METHODOLOGY

3.1 GENERAL REFERENCES

Survey, sampling, and analysis procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987 and the OSHA Asbestos Construction Standard, found in 29 CFR 1926.1101, and in the NESHAP regulation (40 CFR Part 61, April 6, 1973, revised 1990).

3.2 RECORD DOCUMENT REVIEW

If available, prior to conducting the visual inspection, PSI reviewed documents provided by the client including: drawings, floor plans, historical data, maintenance records, previous survey reports, laboratory reports, etc. for information regarding construction history and building materials. This data was used to focus the walk through and scope of work to be followed over the course of our visual inspection and sampling. Information obtained from the references was incorporated into the Findings Section of the report.

3.3 VISUAL INSPECTION PROCEDURES

An initial walkthrough of the Project Area was conducted to determine the presence and condition of suspect materials which were physically accessible and/or exposed. Materials which were similar in general appearance were grouped into HAs. In addition, the friability of the suspect material was determined. A material is defined as friable (F) if the material can be reduced to a powder by hand pressure when dry. Non-Friable (NF) materials that are damaged can also be considered friable.

3.3.1 HOMOGENEOUS AREA CLASSIFICATIONS

A walk-through of the Project Area was conducted to determine areas of materials which were visually similar in color, texture, general appearance, and which appeared to have been installed at the same time. Such materials are termed HAs by the EPA AHERA regulation. During this walk-through, the approximate locations of these HAs were also noted. Only materials which were physically accessible and/or exposed and suspected to contain asbestos were identified and placed in homogeneous areas.

Following the EPA AHERA inspection protocol, each identified HA was placed in one of the following AHERA classifications for the purposes of determining the number of samples to collect:

- Surfacing Materials: spray or trowel applied to building members;
- TSI: materials generally applied to various mechanical systems; or
- Miscellaneous Materials: any materials which do not fit either of the above categories.

Following the EPA NESHAP inspection protocol, each identified suspect homogeneous material that was confirmed as an ACM was also placed in one of the following NESHAP classifications:

- Friable Materials: NESHAP defines a friable ACM as any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I Non-Friable (Cat. I NF): NESHAP defines a Category I non-friable ACM as packing, gaskets, resilient floor covering (except vinyl sheet flooring products which are considered friable), and asphalt roofing products which contain more than one percent asbestos.
- Category II Non-Friable (Cat. II NF): NESHAP defines a Category II non-friable ACM as any material, except for a Category I non-friable ACM, which contains more than one percent asbestos and cannot be reduced to a powder by hand pressure when dry.

In the NESHAP regulation, a regulated asbestos-containing material (RACM) is defined as any (a) friable asbestos material; (b) Category I Non-Friable ACM that has become friable; (c) Cat. I NF 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.

3.4 ASBESTOS SAMPLING PROCEDURES

Following the walk-through, the inspector(s) collected selected samples of exposed and/or physically accessible materials identified as suspect ACM. Sampling was limited to those physically accessible materials not involving the destruction of walls, other building elements, physical barriers, or the structural integrity of the item being tested**.**

EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous area.

Where possible, samples of surfacing material, if present, were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October, 1985). The homogeneous area was divided into a grid of nine (9) sub-areas. If nine samples were taken, one sample was taken from each sub-area. If less than nine samples were taken, the EPA random numbering diagram was used to determine which sub-areas would be sampled. While an effort was made to extract the samples from approximately the middle of the sub-area, samples were taken preferentially from already damaged areas or areas which were the least visible.

After each sample was extracted, where applicable, a spray encapsulant and/patching was applied to the sampled area to prevent potential fiber release and temporarily restore the system's use.

Some suspect ACM could not be sampled. These suspect asbestos-containing materials were not sampled to avoid compromising the structural integrity of the material and because of existing safety/material concerns. Suspect asbestos-containing materials that were not sampled are assumed to be ACM. If materials that were assumed to be ACM are to be impacted during future renovation or demolition activities, then those materials, if practical, should be sampled and analyzed prior to that renovation or demolition activity or treated as ACM. Based on the analysis of the previously assumed ACM, further action may be required per the EPA NESHAP regulations.

In accordance with the agreement between PSI and the client, roofing materials were sampled by coring through the roof system to the base deck material. PSI applied a temporary patch to the roof core location following sample extraction. Due to the destructive nature of roof sampling however, PSI does not warrant a water tight condition following sample extraction, nor can PSI guarantee the continuance of any roof system warranties by other entities.

3.5 ASBESTOS ANALYSIS PROCEDURES

The samples were analyzed at Eurofins CEI's Asbestos Laboratory, located in Cary, North Carolina. The Eurofins CEI Asbestos Laboratory is a NVLAP Accredited (ID number 101768-0) Laboratory. A copy of the Laboratory's Accreditation Certificate is included in the Appendix.

The samples were analyzed for asbestos by PLM in accordance with the "EPA Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116, July 1993). Analysis was performed by visually observing the bulk samples with a stereoscope, followed by slide preparation(s) for microscopic examination and identification.

Using a stereoscope, the microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample. Next, the samples were mounted on slides and analyzed by PLM for asbestos (chrysotile, amosite, crocidolite, anthophyllite, actinolite/tremolite), and fibrous non-asbestos constituents (mineral wool, fiberglass, cellulose, etc.). Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

It should be noted that some ACM might not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. TEM is another method that can provide a more definitive analysis of these materials, but was not in the scope of work for this project.

3.6 QUANTIFICATION

Quantities of physically accessible and/or exposed confirmed ACM were estimated. This estimation was performed by taking approximate measurements in the field or estimating quantities based on as-built mechanical or structural drawings. Materials such as pipe insulation and associated MJP were categorized according to the outside diameter of the insulation. Pipe insulation was quantified by linear footage of the insulation while the actual number of MJPs was counted. Insulation on mechanical equipment such as boilers and duct work was quantified by the square footage of the surface area of suspect insulation. Similarly, fireproofings, plasters, ceiling and floor tiles, and cementitious panels were measured in square feet of surface area. The quantities of confirmed ACM that were identified during this investigation are reported in the Tables later in this report.

Quantities identified in this report are estimates, are intended as order of magnitude information or for general policy discussions, and should be confirmed by the roofing/abatement contractor since renovation or demolition is contemplated.

3.7 PHOTOGRAPHIC DOCUMENTATION

Photographs of HAs were taken during the course of this survey. While these photographs were not intended to provide a complete record of the survey, they do provide a visual description of the HA and/or representative layers. Photographs of HAs are intended to depict a representative portion of that HA. The captioned photographs taken during this survey are appended.

3.8 DRAWINGS

Drawings were prepared to indicate the location of the samples that were collected during the course of this survey. The drawings are not intended to be used for construction purposes. Drawings prepared during the course of this survey are appended.

4.0 FINDINGS

A total of eleven samples were collected from two suspect HAs during the asbestos survey. In addition, no suspect HAs were observed during the asbestos survey.

The tables below list the suspect ACM observed throughout the building. Table 1 lists the materials that were sampled, along with the results of the inspection and laboratory analysis.

The table or tables provide a description of the materials, their general locations, condition, friability, and, if applicable and/or within the scope of work, EPA NESHAP Category, and estimated quantities.

In the following table or tables, items that are confirmed or assumed to be ACM are indicated in **bold** and items that contain less than 1% asbestos, but are not 'no asbestos detected' are indicated by *italics*.

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-1	Roof Core	Upper Roof North Side	• 1" Ballast • 1/2" BUR • 1/2" ASP • 3.5" ISO • ASP VB • Total: 5 1/2"	NF	Good	NAD	N/A	Not Applicable
C-2	Roof Core	Upper Roof North Side	• 1" Ballast • 3/4" BUR • 1/4" ASP • 2" ISO • ASP VB • Total: 4"	NF	Good	NAD	N/A	Not Applicable
C-3	Roof Core	Upper Roof South Side	• 1" Ballast • 1/2" BUR • 1/2" ASP • 1 1/2" ISO • ASP VB • Total: 3 1/2"	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-4	Roof Core	Upper Roof South Side	• 1" Ballast • 1/2" BUR • 1/2" ASP • 3" ISO • ASP VB • Total: 5"	NF	Good	NAD	N/A	Not Applicable
C-5	Roof Core	Penthouse Roof	• 1" Ballast • 3/4" BUR • 1" ASP • 1" ISO • ASP VB • Total: 3 3/4"	NF	Good	NAD	N/A	Not Applicable
C-6	Roof Core (Lower Roof)	Lower Roof	• EPDM • 2 1/2" ISO • 2" ISO • 1 1/2" ISO • No VB • Total: 6"	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-7	Roof Core (Lower Roof)	Lower Roof	• EPDM • 2 1/2" ISO • 2" ISO • 1 1/2" ISO • No VB • Total: 6"	NF	Good	NAD	N/A	Not Applicable
F-1	Roof Flashing	Upper Roof North Side	• Mod Bit/ ASP VB • Tar	NF	Good	NAD	N/A	Not Applicable
F-2	**Roof Flashing**	**Upper Roof South Side**	• Mod Bit/ ASP VB • **Tar**	**NF**	**Good**	**CH 10%**	**Cat. I NF/Cat. II NF**	**750 SF**
F-3	Roof Flashing	Lower Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable
F-4	Roof Flashing	Lower Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable

NOTES: F=Friable, NF=Non-Friable; Dam.=Damaged, Sig. Dam.=Significantly Damaged; NAD=No Asbestos Detected, CH=Chrysotile, AM=Amosite, CR=Crocidolite, TR=Tremolite, AC=Actinolite, AN=Anthophyllite, PT=Point Count Analysis; RACM=Regulated ACM, Cat. I NF=Category I Non-Friable ACM, Cat. II NF=Category II Non-Friable ACM; SF=square feet; LF=lineal feet; EA=each; N/A=Not Applicable

***Contractors should be aware of the potential for asbestos-containing roofing, from assumed older roofing, to be present adjacent to identified "NAD" roofing materials**

4.1 INACCESSIBLE OR UNACCESSED AREAS

PSI did not encounter areas where access was denied or prohibited at the time of the field activities. Only roofing areas were included in this scope of work.

4.2 NON-SUSPECT MATERIAL AND OTHER OBSERVATIONS

In addition, the following materials were observed but are considered 'non-suspect' ACM due to their composition (fiberglass, rubber, etc.):

- Fiberglass
- Foam
- Brick
- Concrete

PSI also made the following observations during this survey.

- The roofing areas cored appeared to be free of standing water or moisture in the cores.
- Some areas of the roof appeared to have been repaired/patched recently.

5.0 CONCLUSIONS

5.1 CONCLUSIONS

ACM (>1% asbestos) was identified based on the samples collected from the materials at Lincoln Apartments.

Assumed ACM was not identified in the project area at Lincoln Apartments.

Low concentrations of asbestos (trace to 1%) were not identified in the materials sampled at Lincoln Apartments.

6.0 WARRANTY AND THIRD PARTY RELIANCE

6.1 STANDARD OF CARE AND WARRANTIES

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and/or exposed suspect ACM for the project area. PSI warrants that the findings contained herein have been prepared in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the community. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey and analytical methods have been used to provide the client with information regarding the presence of accessible and/or exposed suspect ACM existing at the time of the survey. Test results are valid only for the material or materials tested. There is a distinct possibility that conditions may exist which could not be identified within the scope of the survey or which were not apparent during the site visit. This survey covered only those areas that were exposed and/or physically accessible to the Inspector.

PSI has assumed that factual information provided to us by the Client, or obtained from governmental sources, the public domain, interviews, and other sources is accurate, unbiased and complete. PSI assumes no liability for the accuracy of data provided to us by others and does not warrant or guarantee that the information provided by these sources is accurate, unbiased or complete.

Our services were not intended to be technically exhaustive. There is a possibility that with the proper application of methodologies, conditions may exist on the property that could not be identified within the scope of the survey or that were not reasonably identifiable from the available information. The report may not represent all conditions at the subject property or project area as it only reflects the information gathered from specific locations on the date of the survey. No inspection can wholly eliminate uncertainty regarding the potential for asbestos in connection with the subject property.

As directed by the client, PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Client further acknowledges that site conditions are outside of PSI’s control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

No other warranties are implied or expressed.

6.2 RELIANCE

TC Architects, PSI's client, may rely on this report. In addition, Stark Metropolitan Housing Authority may rely on this report on the condition that such reliance is subject to the limitations and conditions accepted by PSI's client in its contract with PSI.

6.3 THIRD PARTY RELIANCE

This report was prepared pursuant to a contract between PSI and its client. That contractual relationship included an exchange of information about the property that was unique and serves as the basis upon which this report was prepared. Because of the importance of these understandings, our assessment may not be sufficient for the intended purposes of another party.

Reliance or any use of this report by anyone other than those parties identified above for which it was prepared, except with express written permission, is prohibited and therefore not foreseeable to PSI. Any unauthorized reliance on or use of this report, including any of the information or conclusions contained herein, will be at the third party's risk. No warranties or representations expressed or implied in this report are made to any such third party.

Third party reliance letters may be issued:

- upon timely request;
- subject to the permission of our original client; and
- payment of the then-current fee for such letters.

All third parties relying on our report, by such reliance, agree that such reliance is limited by our proposal and/or General Conditions, as applicable.

Report of Bulk Sample Analysis and Chain-of-Custody

eurofins | CEI

September 29, 2023

Intertek - PSI
5555 Canal Rd
Cleveland, OH 44125

CLIENT PROJECT: SMHA Lincoln, 01373995
CEI LAB CODE: B2320769

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on September 28, 2023. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP® TESTING
NVLAP LAB CODE 101768-0

ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Intertek - PSI

CLIENT PROJECT: SMHA Lincoln, 01373995

LAB CODE: B2320769

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 09/29/23

TOTAL SAMPLES ANALYZED: 11

SAMPLES >1% ASBESTOS: 1

730 SE Maynard Road • Cary, NC 27511 • 919.481.1413

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: SMHA Lincoln, 01373995 **LAB CODE: B2320769**

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
C-1	Layer 1	B2320769.01	Black	Roofing	None Detected
	Layer 2	B2320769.01	Tan,Black	Insulation	None Detected
	Layer 3	B2320769.01	Yellow	Insulation	None Detected
C-2	Layer 1	B2320769.02	Black	Roofing	None Detected
	Layer 2	B2320769.02	Black	Roofing	None Detected
	Layer 3	B2320769.02	Tan,Black	Insulation	None Detected
	Layer 4	B2320769.02	Yellow	Insulation	None Detected
C-3	Layer 1	B2320769.03	Black	Roofing	None Detected
	Layer 2	B2320769.03	Tan,Black	Insulation	None Detected
	Layer 3	B2320769.03	Yellow	Insulation	None Detected
C-4	Layer 1	B2320769.04	Black	Roofing	None Detected
	Layer 2	B2320769.04	Black	Roofing	None Detected
	Layer 3	B2320769.04	Tan,Black	Insulation	None Detected
	Layer 4	B2320769.04	Yellow	Insulation	None Detected
C-5	Layer 1	B2320769.05	Black	Roofing	None Detected
	Layer 2	B2320769.05	Black	Roofing	None Detected
	Layer 3	B2320769.05	Tan,Black	Insulation	None Detected
	Layer 4	B2320769.05	Yellow	Insulation	None Detected
C-6	Layer 1	B2320769.06	White,Black	Roof Membrane	None Detected
	Layer 2	B2320769.06	Off-white	Insulation	None Detected
C-7	Layer 1	B2320769.07	White,Black	Roof Membrane	None Detected
	Layer 2	B2320769.07	Off-white	Insulation	None Detected
F-1	Layer 1	B2320769.08	Black,Green	Roof Flashing	None Detected
	Layer 2	B2320769.08	Black	Roof Flashing	None Detected
F-2	Layer 1	B2320769.09	Black,Green	Roof Flashing	None Detected
	Layer 2	B2320769.09	Black,Gray	Roof Flashing	Chrysotile 10%
F-3		B2320769.10	White,Black	Roof Flashing	None Detected
F-4		B2320769.11	White,Black	Roof Flashing	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320769
Date Received: 09-28-23
Date Analyzed: 09-29-23
Date Reported: 09-29-23

Project: SMHA Lincoln, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-1 Layer 1 B2320769.01	Roofing	Heterogeneous Black Fibrous Bound	25%	Fiberglass	75%	Tar	None Detected
Layer 2 B2320769.01	Insulation	Heterogeneous Tan,Black Fibrous Bound	85%	Cellulose	15%	Tar	None Detected
Layer 3 B2320769.01	Insulation	Heterogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected
C-2 Layer 1 B2320769.02	Roofing	Heterogeneous Black Fibrous Bound	25%	Fiberglass	75%	Tar	None Detected
Layer 2 B2320769.02	Roofing	Heterogeneous Black Fibrous Bound	30%	Cellulose	70%	Tar	None Detected
Layer 3 B2320769.02	Insulation	Heterogeneous Tan,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
Layer 4 B2320769.02	Insulation	Heterogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320769
Date Received: 09-28-23
Date Analyzed: 09-29-23
Date Reported: 09-29-23

Project: SMHA Lincoln, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-3 Layer 1 B2320769.03	Roofing	Heterogeneous Black Fibrous Bound	25%	Fiberglass	75%	Tar	None Detected
Layer 2 B2320769.03	Insulation	Heterogeneous Tan,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
Layer 3 B2320769.03	Insulation	Heterogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected
C-4 Layer 1 B2320769.04	Roofing	Heterogeneous Black Fibrous Bound	25%	Fiberglass	75%	Tar	None Detected
Layer 2 B2320769.04	Roofing	Heterogeneous Black Fibrous Bound	30%	Cellulose	70%	Tar	None Detected
Layer 3 B2320769.04	Insulation	Heterogeneous Tan,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
Layer 4 B2320769.04	Insulation	Heterogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320769
Date Received: 09-28-23
Date Analyzed: 09-29-23
Date Reported: 09-29-23

Project: SMHA Lincoln, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-5 Layer 1 B2320769.05	Roofing	Heterogeneous Black Fibrous Bound	25%	Fiberglass	75%	Tar	None Detected
Layer 2 B2320769.05	Roofing	Heterogeneous Black Fibrous Bound	30%	Cellulose	70%	Tar	None Detected
Layer 3 B2320769.05	Insulation	Heterogeneous Tan,Black Fibrous Bound	95%	Cellulose	5%	Tar	None Detected
Layer 4 B2320769.05	Insulation	Heterogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected
C-6 Layer 1 B2320769.06	Roof Membrane	Heterogeneous White,Black Fibrous Bound	20%	Synthetic Fiber	80%	Rubber	None Detected
Layer 2 B2320769.06	Insulation	Heterogeneous Off-white Non-fibrous Bound	10%	Fiberglass	90% <1%	Foam Binder	None Detected
C-7 Layer 1 B2320769.07	Roof Membrane	Heterogeneous White,Black Fibrous Bound	20%	Synthetic Fiber	80%	Rubber	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320769
Date Received: 09-28-23
Date Analyzed: 09-29-23
Date Reported: 09-29-23

Project: SMHA Lincoln, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B2320769.07	Insulation	Heterogeneous Off-white Non-fibrous Bound	10%	Fiberglass	90% <1%	Foam Binder	None Detected
F-1 Layer 1 B2320769.08	Roof Flashing	Heterogeneous Black,Green Fibrous Bound	50%	Cellulose	40% 10%	Tar Gravel	None Detected
Layer 2 B2320769.08	Roof Flashing	Heterogeneous Black Fibrous Bound	20%	Cellulose	80%	Tar	None Detected
F-2 Layer 1 B2320769.09	Roof Flashing	Heterogeneous Black,Green Fibrous Bound	50%	Cellulose	45% 5%	Tar Gravel	None Detected
Layer 2 B2320769.09	Roof Flashing	Heterogeneous Black,Gray Fibrous Bound	5%	Cellulose	85%	Tar	**10% Chrysotile**
F-3 B2320769.10	Roof Flashing	Heterogeneous White,Black Fibrous Bound	20%	Synthetic Fiber	80%	Rubber	None Detected
F-4 B2320769.11	Roof Flashing	Heterogeneous White,Black Fibrous Bound	20%	Synthetic Fiber	80%	Rubber	None Detected

LEGEND:
Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST: Jacob Morgan

APPROVED BY: Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP TESTING
NVLAP LAB CODE 101768-0

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CHAIN OF CUSTODY

11

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:	
CEI Lab Code:	B23207G9
CEI Lab I.D. Range:	

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:28147	Job Contact: Martin Kurkul
Company:Intertek-PSI	Email / Tel: 216-447-1335 / C: 216-973-6476
Address:5555 Canal Road	Project Name: SMHA Lincoln / Shortridge
Cleveland, Ohio	Project ID#:01373995
Email: martin.kurkul@intertek.com	PO #:
Tel:216-447-1335 Fax:216-642-7008	STATE SAMPLES COLLECTED IN: Ohio

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	■	☐	☐	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR*	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

*Blanks should be taken from the same sample lot as field samples.

REMARKS / SPECIAL INSTRUCTIONS:
SEE ATTACHED SAMPLE LOG

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Alec Benedetti	9/26/2023	CM	9-28-23 9:40

Samples will be disposed of 30 days after analysis

7735 3861 4391

intertek
psi

Project Name: Lincoln Apts Date: 9/26/2023

Project Location: Canton OH Project Number: 01373995

HA#		Material Description
C-1		Roof Core (Upper Roof North Side)
C-2		Roof Core (Upper Roof North Side)
C-3		Roof Core (Upper Roof South Side)
C-4		Roof Core (Upper Roof South Side)
C-5		Roof Core (Penthouse Roof)
C-6		Roof Core (Lower Roof)
C-7		Roof Core (Lower Roof)
F-1		Roof Flashing (Upper Roof North)
F-2		Roof Flashing (Upper Roof South)
F-3		Roof Flashing (Lower Roof)
F-4		Roof Flashing (Lower Roof)

Drawings

ROOF

Drawing Type:	Asbestos Sample Locations
Project Name:	**SMHA** **Lincoln Apts.**
Project Location:	815 Lincoln Way East Massillon, OH 44646
PSI Project:	01373995-1
Project Manager:	Martin Kurkul
Inspector:	Alec Benedetti
Sampled Date:	September 21, 2023

Legend:

ID# Sample Location

General Notes: Not to scale

intertek psi
5555 Canal Road • Cleveland, Ohio 44125
Phone 216-447-1335 • Fax 216-642-7008

Photographs

Photo 1: View of the Roof Flashing (F-1,2)

Photo 2: View of the Roof Flashing

Photo 3: View of the Roof Field/Core (C-1,2,3,4)

Photo 4: View of the elevator penthouse (C-5 location)

Photo 5: View of the roof looking South

Photo 6: View of the Roof Flashing

Photo 7: View of the Rooftop Units and Walkway

Photo 8: View of the Roof Field/Core

Photo 9: View of the walkway warping and bubbling

Photo 10: View of recent patching on the roof

Photo 11: View of the Roof Flashing

Photo 12: View of the roof coatings pinching/raising

Photo 13: View of the southern portion of the roof

Photo 14: View of the southern portion of the roof

Photo 15: View of the western parapet wall

Photo 16: View of the Roof Core

Photo 17: View of the Roof Core

Photo 18: View of the Roof Core

Photo 19: View of the Roof Core layers

Photo 20: View of the Roof looking North

Photo 21: View of typical roof drain style

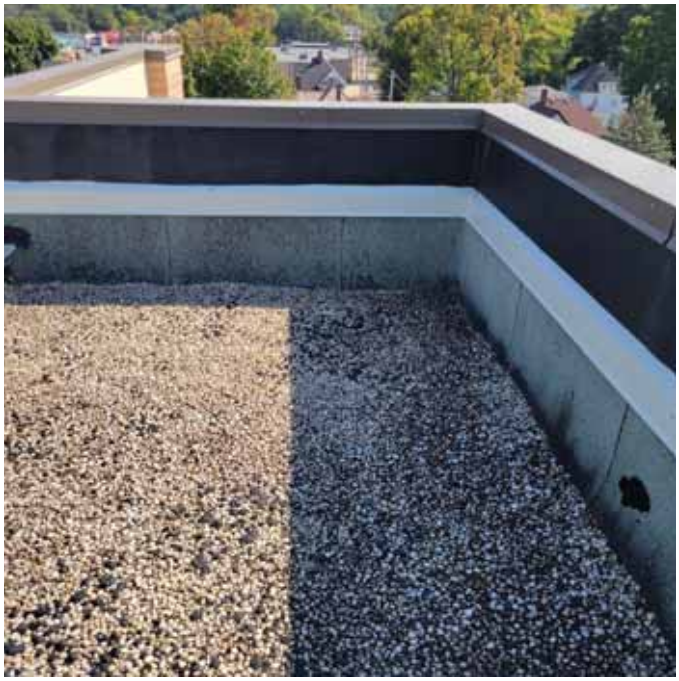

Photo 22: View of southern flashing/stairwell parapet

Photo 23: View of the lower roof near the front entrance

Photo 24: View of the lower roof flashing (F-3,4) near the front entrance

Photo 25: View of the main entrance to the property

Laboratory Accreditations

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

March 31, 2023

Tianbao Bai
Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511

NVLAP Lab Code: 101768-0

Dear Dr. Bai,

Thank you for continuing your accreditation for Asbestos Fiber Analysis under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until March 31, 2024, provided that your laboratory continues to comply with the accreditation requirements contained in the NVLAP Procedures.

Your updated accreditation documents are enclosed. You may reproduce these documents in their entirety and use the NVLAP symbol and/or term to reference your accredited status in accordance with the requirements published in NIST Handbook 150, 1.8. Accreditation does not relieve your laboratory from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Shelby Conyers, Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, 100 Bureau Dr. Stop 2140, Gaithersburg, MD 20899-2140; .

Sincerely,

Dana S. Leaman, Chief
National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101768-0

Eurofins CEI, Inc.

Cary, NC

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

Asbestos Fiber Analysis

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

2023-04-01 through 2024-03-31

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511
Dr. Tianbao Bai
Phone: 919-481-1413 Fax: 919-481-1442
Email: tianbao.bai@eurofinset.com
http://www.eurofinsus.com/CEI

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101768-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

ANAB
ANSI National Accreditation Board

CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511

Fulfills the requirements of

ISO/IEC 17025:2017

and

U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (DoD QSM V5.4)

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

R. Douglas Leonard Jr., VP, PILR SBU
Expiry Date: 1 February 2025
Certificate Number: ADE-3176

ANAB
ANSI National Accreditation Board

ilac-MRA

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

ANAB
ANSI National Accreditation Board

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

and

U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (DoD QSM V5.4)

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511
Tianbao Bai, Ph.D
919-481-1413

TESTING

Valid to: **February 1, 2025** Certificate Number: **ADE-3176**

Environmental

Non-Potable Water		
Technology	**Method**	**Analyte**
TEM	EPA 100.2	Asbestos
Solids and Chemicals		
Technology	**Method**	**Analyte**
TEM	EPA 600/R-93-116	Asbestos
PLM	EPA 600/R-93-116	Asbestos
Air and Emissions		
Technology	**Method**	**Analyte**
TEM	EPA AHERA	Asbestos
PCM	NIOSH 7400	Asbestos
Drinking Water		
Technology	**Method**	**Analyte**
TEM	EPA 100.2	Asbestos

1. This scope is formatted as part of a single document including Certificate of Accreditation No. ADE-3176.

R. Douglas Leonard Jr., VP, PILR SBU

Inspector Accreditations

TSi TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540959 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540972 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

7/14/2023

Alec Benedetti
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36461
Expiration Date: 8/17/2024

Dear Alec Benedetti:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Brandon M. Schwendeman
Brandon Schwendeman
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43216-1049
epa.ohio.gov • (614) 644-3020 • (614) 644-3184 (fax)

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hletter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415323 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hetter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415336 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

11/29/2022

Martin Kurkul Jr.
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36332
Expiration Date: 11/29/2023

Dear Martin Kurkul Jr.:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Joshua S. Koch
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

.O. Box 1049 • Columbus, OH 43216-1049
4-3020 • (614) 644-3184 (fax)

Asbestos Survey Report

Plaza Terrace Apartments
716 30th Street NW
Canton, Ohio 44709

Prepared for:

TC Architects
430 Grant Street
Akron, Ohio 44311
330-867-1093

Prepared by:

Professional Service Industries, Inc.
5555 Canal Road
Cleveland, Ohio 44125
216-447-1335

October 23, 2023

PSI Project Number: 01373995-2

Martin Kurkul
Asbestos Inspector
ES# 36332

Jeff Chapman
Principal Consultant

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS OR ABBREVIATIONS

Acronym or Abbreviation	Definition
ACM	Asbestos-Containing Material
ACBM	Asbestos-Containing Building Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CAT. I NF	Category I Non-Friable
CAT. II NF	Category II Non-Friable
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
EPA	Environmental Protection Agency
HA	Homogeneous Area
HVAC	Heating, Ventilation, and Air Conditioning
MJP	Mudded Joint Packing
NESHAP	National Emission Standards for Hazardous Air Pollutants
NVLAP	National Voluntary Laboratory Accreditation Program
O&M	Operations & Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos-Containing Material
PLM	Polarized Light Microscopy
PSI	Professional Service Industries, Inc., an Intertek company
PT	Point Count
RACM	Regulated Asbestos-Containing Material
TEM	Transmission Electron Microscopy
TSI	Thermal System Insulation
VFT	Vinyl Floor Tile
VJC	Vibration Joint Cloth
VSF	Vinyl Sheet Flooring

1.0 INTRODUCTION

PSI was retained by TC Architects to perform a survey for suspect ACM of the roofing areas at Plaza Terrace Apartments, located at 716 30th Street NW in Canton, Ohio 44709.

This project encompassed only the accessible roofing areas of the 72,000 square-foot, 6-story building, hereinafter referred to as the Project Area. The field work was conducted on September 29, 2023.

1.1 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to provide general information for the Project Area regarding the presence, condition, and quantity of accessible and/or exposed friable and non-friable materials suspected to contain asbestos.

The survey of the Project Area was conducted in general accordance with the EPA AHERA and the NESHAP sampling guidelines to determine the presence and general locations of exposed and/or physically accessible suspect ACM, depict the sample locations, quantify the amount of ACM identified during the survey, and provide photographic documentation of each homogeneous area**.**

Each suspect material was touched, where possible, to determine the friability of the material. Samples were obtained only from suspect ACM that were readily exposed and/or physically accessible during the survey**.**

PSI also identified the roofing materials sampled during this survey and noted the composition and depths of the layers.

Samples were sent to Euronfins CEI NVLAP accredited laboratory located at 730 SE Maynard Road, in Cary, North Carolina, for analysis. Each sample underwent PLM analysis for detection of asbestos fibers in the building materials.

1.1.1 INFORMATION PROVIDED BY THE CLIENT

No documents were provided by the client during the course of this survey.

1.2 AUTHORIZATION AND ACCESS

Authorization to perform the survey was given on September 29, 2023 by the receipt of a signed copy by PSI of PSI Proposal Number 0137-408489, between TC Architects and PSI.

Access to the property was provided by SMHA Facility Staff. PSI was not escorted during the field work for this survey.

1.3 LIMITATIONS

This asbestos survey was not intended to meet the requirements of the NESHAP for Asbestos renovation for the entire building. The survey included a thorough inspection of the reported areas of planned roofing renovation**.**

Destructive sampling, such as behind finished surfaces (plaster/drywall walls, above hard ceilings, etc.) inside mechanical chases, behind mirrored walls, under carpet or tiled floors, etc., was not generally conducted to assess inaccessible or concealed materials.

Although PSI made an attempt to identify all areas of ACM, an exhaustive investigation of void spaces was not included in the scope of services for this project. There may exist conditions which were unable to be identified within the scope of this survey.

Inaccessible is defined as areas of the building that were locked, or where admittance was not permitted. It also includes areas/materials that could not be tested (sampled) without destruction of the structure or a portion of the structure, and areas/materials that could not be safely reached by the inspector or inspection team. In the event that access to a portion of the building was not obtained (which otherwise would have been tested), such limitations specifically are identified in the Findings Section of this report.

PSI did not inspect for or sample materials in areas or locations which presented a hazard to the inspection team, such as those associated with energized electrical systems or within confined spaces.

PSI did not collect samples from building elements where the intended use would be compromised by testing, such as fire rated doors, vapor barriers, mirror mastics, etc. If observed, such materials were assumed to be asbestos-containing.

Due to the occupancy of the structure, PSI was generally not able to conduct ‘destructive’ sampling such as inside wall cavities or above plaster ceilings: therefore, the inspection was limited to areas that were accessible and exposed.

2.0 GENERAL PROPERTY, BUILDING AND SURVEY INFORMATION

2.1 PROPERTY AND BUILDING INFORMATION

SUBJECT PROPERTY:	Plaza Terrace Apartments 716 30th Street NW Canton, Ohio 44709

CONSTRUCTION DATE:	1973
PREVIOUS RENOVATION DATE:	Not reported
NUMBER OF FLOORS:	6
ESTIMATED SQUARE FOOTAGE:	72,000
CONSTRUCTION TYPE:	Concrete decking and CMU/Brick
VACANT? (YES/NO)	No
ADDITIONAL INFORMATION:	None Provided

2.2 SURVEY INFORMATION

NAME OF INSPECTOR:	Martin Kurkul
LICENSE/CERTIFICATION NUMBER:	ES# 36332
	

NAME OF INSPECTOR:	Alec Benedetti
LICENSE/CERTIFICATION NUMBER:	ES# 36461
	

DATE(S) OF SURVEY AND SAMPLING:	September 29, 2023
ESCORT:	No escort

3.0 METHODOLOGY

3.1 GENERAL REFERENCES

Survey, sampling, and analysis procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987 and the OSHA Asbestos Construction Standard, found in 29 CFR 1926.1101, and in the NESHAP regulation (40 CFR Part 61, April 6, 1973, revised 1990).

3.2 RECORD DOCUMENT REVIEW

If available, prior to conducting the visual inspection, PSI reviewed documents provided by the client including: drawings, floor plans, historical data, maintenance records, previous survey reports, laboratory reports, etc. for information regarding construction history and building materials. This data was used to focus the walk through and scope of work to be followed over the course of our visual inspection and sampling. Information obtained from the references was incorporated into the Findings Section of the report.

3.3 VISUAL INSPECTION PROCEDURES

An initial walkthrough of the Project Area was conducted to determine the presence and condition of suspect materials which were physically accessible and/or exposed. Materials which were similar in general appearance were grouped into HAs. In addition, the friability of the suspect material was determined. A material is defined as friable (F) if the material can be reduced to a powder by hand pressure when dry. Non-Friable (NF) materials that are damaged can also be considered friable.

3.3.1 HOMOGENEOUS AREA CLASSIFICATIONS

A walk-through of the Project Area was conducted to determine areas of materials which were visually similar in color, texture, general appearance, and which appeared to have been installed at the same time. Such materials are termed HAs by the EPA AHERA regulation. During this walk-through, the approximate locations of these HAs were also noted. Only materials which were physically accessible and/or exposed and suspected to contain asbestos were identified and placed in homogeneous areas.

Following the EPA AHERA inspection protocol, each identified HA was placed in one of the following AHERA classifications for the purposes of determining the number of samples to collect:

- Surfacing Materials: spray or trowel applied to building members;
- TSI: materials generally applied to various mechanical systems; or
- Miscellaneous Materials: any materials which do not fit either of the above categories.

Following the EPA NESHAP inspection protocol, each identified suspect homogeneous material that was confirmed as an ACM was also placed in one of the following NESHAP classifications:

- Friable Materials: NESHAP defines a friable ACM as any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I Non-Friable (Cat. I NF): NESHAP defines a Category I non-friable ACM as packing, gaskets, resilient floor covering (except vinyl sheet flooring products which are considered friable), and asphalt roofing products which contain more than one percent asbestos.
- Category II Non-Friable (Cat. II NF): NESHAP defines a Category II non-friable ACM as any material, except for a Category I non-friable ACM, which contains more than one percent asbestos and cannot be reduced to a powder by hand pressure when dry.

In the NESHAP regulation, a regulated asbestos-containing material (RACM) is defined as any (a) friable asbestos material; (b) Category I Non-Friable ACM that has become friable; (c) Cat. I NF 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.

3.4 ASBESTOS SAMPLING PROCEDURES

Following the walk-through, the inspector(s) collected selected samples of exposed and/or physically accessible materials identified as suspect ACM. Sampling was limited to those physically accessible materials not involving the destruction of walls, other building elements, physical barriers, or the structural integrity of the item being tested**.**

EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous area.

Where possible, samples of surfacing material, if present, were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October, 1985). The homogeneous area was divided into a grid of nine (9) sub-areas. If nine samples were taken, one sample was taken from each sub-area. If less than nine samples were taken, the EPA random numbering diagram was used to determine which sub-areas would be sampled. While an effort was made to extract the samples from approximately the middle of the sub-area, samples were taken preferentially from already damaged areas or areas which were the least visible.

After each sample was extracted, where applicable, a spray encapsulant and/patching was applied to the sampled area to prevent potential fiber release and temporarily restore the system's use.

Some suspect ACM could not be sampled. These suspect asbestos-containing materials were not sampled to avoid compromising the structural integrity of the material and because of existing safety/material concerns. Suspect asbestos-containing materials that were not sampled are assumed to be ACM. If materials that were assumed to be ACM are to be impacted during future renovation or demolition activities, then those materials, if practical, should be sampled and analyzed prior to that renovation or demolition activity or treated as ACM. Based on the analysis of the previously assumed ACM, further action may be required per the EPA NESHAP regulations.

In accordance with the agreement between PSI and the client, roofing materials were sampled by coring through the roof system to the base deck material. PSI applied a temporary patch to the roof core location following sample extraction. Due to the destructive nature of roof sampling however, PSI does not warrant a water tight condition following sample extraction, nor can PSI guarantee the continuance of any roof system warranties by other entities.

3.5 ASBESTOS ANALYSIS PROCEDURES

The samples were analyzed at Euronfins CEI's Asbestos Laboratory, located in Cary, North Carolina. The Euronfins CEI Asbestos Laboratory is a NVLAP Accredited Laboratory. A copy of the Laboratory's Accreditation Certificate is included in the Appendix.

The samples were analyzed for asbestos by PLM in accordance with the "EPA Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116, July 1993). Analysis was performed by visually observing the bulk samples with a stereoscope, followed by slide preparation(s) for microscopic examination and identification.

Using a stereoscope, the microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample. Next, the samples were mounted on slides and analyzed by PLM for asbestos (chrysotile, amosite, crocidolite, anthophyllite, actinolite/tremolite), and fibrous non-asbestos constituents (mineral wool, fiberglass, cellulose, etc.). Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

It should be noted that some ACM might not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. TEM is another method that can provide a more definitive analysis of these materials, but was not in the scope of work for this project.

3.6 QUANTIFICATION

Quantities of physically accessible and/or exposed confirmed ACM were estimated. This estimation was performed by taking approximate measurements in the field or estimating quantities based on as-built mechanical or structural drawings. Materials such as pipe insulation and associated MJP were categorized according to the outside diameter of the insulation. Pipe insulation was quantified by linear footage of the insulation while the actual number of MJPs was counted. Insulation on mechanical equipment such as boilers and duct work was quantified by the square footage of the surface area of suspect insulation. Similarly, fireproofings, plasters, ceiling and floor tiles, and cementitious panels were measured in square feet of surface area. The quantities of confirmed ACM that were identified during this investigation are reported in the Tables later in this report.

Quantities identified in this report are estimates, are intended as order of magnitude information or for general policy discussions, and should be confirmed by the roofing/abatement contractor since renovation or demolition is contemplated.

3.7 PHOTOGRAPHIC DOCUMENTATION

Photographs of HAs were taken during the course of this survey. While these photographs were not intended to provide a complete record of the survey, they do provide a visual description of the HA and/or representative layers. Photographs of HAs are intended to depict a representative portion of that HA. The captioned photographs taken during this survey are appended.

3.8 DRAWINGS

Drawings were prepared to indicate the location of the samples that were collected during the course of this survey. The drawings are not intended to be used for construction purposes. Drawings prepared during the course of this survey are appended.

4.0 FINDINGS

A total of eleven samples were collected from two suspect HAs during the asbestos survey. In addition, no suspect HAs were observed during the asbestos survey.

The tables below list the suspect ACM observed throughout the building. Table 1 lists the materials that were sampled, along with the results of the inspection and laboratory analysis.

The table or tables provide a description of the materials, their general locations, condition, friability, and, if applicable and/or within the scope of work, EPA NESHAP Category, and estimated quantities.

In the following table or tables, items that are confirmed or assumed to be ACM are indicated in **bold** and items that contain less than 1% asbestos, but are not 'no asbestos detected' are indicated by *italics*.

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-1	Roof Core	Upper Roof (East Side)	• 1" Ballast • 1/4" BUR • 3/4" Pearlite • 2" ISO • 1/4" ASP VB • Total: 4 1/4"	NF	Good	NAD	N/A	Not Applicable
C-2	Roof Core	Upper Roof (East Side)	• 1" Ballast • 1/2" BUR • 1/2" Pearlite • 2" ISO • 1/4" ASP VB • Total: 4 1/4"	NF	Good	NAD	N/A	Not Applicable
C-3	Roof Core	Upper Roof (West Side)	• 1" Ballast • 1/2" BUR • 1/2" Pearlite • 2" ISO • 1/4" ASP VB • Total: 4 1/4"	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-4	Roof Core	Upper Roof (West Side)	• 1" Ballast • 1/2" BUR • 1/2" Pearlite • 2" ISO • 1/4" ASP VB • Total: 4 1/4"	NF	Good	NAD	N/A	Not Applicable
C-5	Roof Core	Upper Roof (Elevator Shaft)	• 1" Ballast • 1/2" BUR • 1 3/4" Pearlite • 2" ISO • 1/4" ASP VB • Total: 5 1/2"	NF	Good	NAD	N/A	Not Applicable
C-6	Roof Core	Entrance Roof	• EPDM • 1" ISO • 1 1/2" ISO • ASP VB • Total: 4 1/4"	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-7	Roof Core	Entrance Roof	• EPDM • 1" ISO • 1" ISO • 2" ISO • 2" ISO • ASP VB • Total: 6"	NF	Good	NAD	N/A	Not Applicable
F-1	Roof Flashing	Upper Roof (West Side)	• Mod Bit/ ASP VB • Tar	NF	Good	NAD	N/A	Not Applicable
F-2	**Roof Flashing**	**Upper Roof (East Side)**	• Mod Bit/ ASP VB • **Tar**	**NF**	**Good**	**2% CH in residual tar**	**Cat. I NF**	**600 SF**
F-3	Roof Flashing	Entrance Roof	• EPDM and Mastic	NF	Good	NAD	N/A	Not Applicable
F-4	Roof Flashing	Entrance Roof	• EPDM and Mastic	NF	Good	NAD	N/A	Not Applicable

NOTES: F=Friable, NF=Non-Friable; Dam.=Damaged, Sig. Dam.=Significantly Damaged; NAD=No Asbestos Detected, CH=Chrysotile, AM=Amosite, CR=Crocidolite, TR=Tremolite, AC=Actinolite, AN=Anthophyllite, PT=Point Count Analysis; RACM=Regulated ACM, Cat. I NF=Category I Non-Friable ACM, Cat. II NF=Category II Non-Friable ACM; SF=square feet; LF=lineal feet; EA=each; N/A=Not Applicable

***Contractors should be aware of the potential for asbestos-containing roofing, from assumed older roofing, to be present adjacent to identified "NAD" roofing materials**

4.1 INACCESSIBLE OR UNACCESSED AREAS

PSI did not encounter areas where access was denied or prohibited at the time of the field activities. Only roofing areas were included in this scope of work.

4.2 NON-SUSPECT MATERIAL AND OTHER OBSERVATIONS

In addition, the following materials were observed but are considered 'non-suspect' ACM due to their composition (fiberglass, rubber, etc.):

- Fiberglass
- Foam
- Brick
- Concrete

PSI also made the following observations during this survey.

- Cores 1, 2, and 4 were wet in all layers to the decking. All of the other roof cores were dry to the decking.

5.0 CONCLUSIONS

5.1 CONCLUSIONS

ACM (>1% asbestos) was identified based on the samples collected from the materials at Plaza Terrace Apartments.

Assumed ACM was not identified in the project area at Plaza Terrace Apartments.

Low concentrations of asbestos (trace to 1%) were not identified in the materials sampled at Plaza Terrace Apartments.

6.0 WARRANTY AND THIRD PARTY RELIANCE

6.1 STANDARD OF CARE AND WARRANTIES

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and/or exposed suspect ACM for the project area. PSI warrants that the findings contained herein have been prepared in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the community. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey and analytical methods have been used to provide the client with information regarding the presence of accessible and/or exposed suspect ACM existing at the time of the survey. Test results are valid only for the material or materials tested. There is a distinct possibility that conditions may exist which could not be identified within the scope of the survey or which were not apparent during the site visit. This survey covered only those areas that were exposed and/or physically accessible to the Inspector.

PSI has assumed that factual information provided to us by the Client, or obtained from governmental sources, the public domain, interviews, and other sources is accurate, unbiased and complete. PSI assumes no liability for the accuracy of data provided to us by others and does not warrant or guarantee that the information provided by these sources is accurate, unbiased or complete.

Our services were not intended to be technically exhaustive. There is a possibility that with the proper application of methodologies, conditions may exist on the property that could not be identified within the scope of the survey or that were not reasonably identifiable from the available information. The report may not represent all conditions at the subject property or project area as it only reflects the information gathered from specific locations on the date of the survey. No inspection can wholly eliminate uncertainty regarding the potential for asbestos in connection with the subject property.

As directed by the client, PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Client further acknowledges that site conditions are outside of PSI’s control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

No other warranties are implied or expressed.

6.2 RELIANCE

TC Architects, PSI's client, may rely on this report. In addition, Stark Metropolitan Housing Authority may rely on this report on the condition that such reliance is subject to the limitations and conditions accepted by PSI's client in its contract with PSI.

6.3 THIRD PARTY RELIANCE

This report was prepared pursuant to a contract between PSI and its client. That contractual relationship included an exchange of information about the property that was unique and serves as the basis upon which this report was prepared. Because of the importance of these understandings, our assessment may not be sufficient for the intended purposes of another party.

Reliance or any use of this report by anyone other than those parties identified above for which it was prepared, except with express written permission, is prohibited and therefore not foreseeable to PSI. Any unauthorized reliance on or use of this report, including any of the information or conclusions contained herein, will be at the third party's risk. No warranties or representations expressed or implied in this report are made to any such third party.

Third party reliance letters may be issued:

- upon timely request;
- subject to the permission of our original client; and
- payment of the then-current fee for such letters.

All third parties relying on our report, by such reliance, agree that such reliance is limited by our proposal and/or General Conditions, as applicable.

Report of Bulk Sample Analysis and Chain-of-Custody

October 4, 2023

Intertek - PSI
5555 Canal Rd
Cleveland, OH 44125

CLIENT PROJECT: SMHA Plaza Terrace, 0137-3995
CEI LAB CODE: B2321083

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on October 3, 2023. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP TESTING
NVLAP LAB CODE 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Intertek - PSI

CLIENT PROJECT: SMHA Plaza Terrace, 0137-3995

LAB CODE: B2321083

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 10/04/23

TOTAL SAMPLES ANALYZED: 11

SAMPLES >1% ASBESTOS: 1

730 SE Maynard Road • Cary, NC 27511 • 919.481.1413

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: SMHA Plaza Terrace, 0137-3995 **LAB CODE: B2321083**

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
C-1	Layer 1	B2321083.01	Black,Brown	Built-Up Roofing	None Detected
	Layer 2	B2321083.01	Yellow,Brown	Insulation	None Detected
C-2	Layer 1	B2321083.02	Black,Brown	Built-Up Roofing	None Detected
	Layer 2	B2321083.02	Yellow,Brown	Insulation	None Detected
C-3	Layer 1	B2321083.03	Black,Brown	Built-Up Roofing	None Detected
	Layer 2	B2321083.03	Yellow,Brown	Insulation	None Detected
C-4	Layer 1	B2321083.04	Black,Brown	Built-Up Roofing	None Detected
	Layer 2	B2321083.04	Yellow,Brown	Insulation	None Detected
C-5	Layer 1	B2321083.05	Black,Brown	Built-Up Roofing	None Detected
	Layer 2	B2321083.05	Yellow,Brown	Insulation	None Detected
C-6	Layer 1	B2321083.06	Black,White	Membrane	None Detected
	Layer 2	B2321083.06	Black,Brown	Built-Up Roofing	None Detected
	Layer 3	B2321083.06	Yellow,Brown	Insulation	None Detected
C-7	Layer 1	B2321083.07	Black,White	Membrane	None Detected
	Layer 2	B2321083.07	Black,Brown	Built-Up Roofing	None Detected
	Layer 3	B2321083.07	Yellow,Brown	Insulation	None Detected
F-1	Layer 1	B2321083.08	Silver	Silver Paint	None Detected
	Layer 2	B2321083.08	Black,Brown	Flashing	None Detected
F-2	Layer 1	B2321083.09	Silver	Silver Paint	None Detected
	Layer 2	B2321083.09	Black,Brown	Flashing	None Detected
	Layer 3	B2321083.09	Gray,Matte Black	Residual Tar	**Chrysotile 2%**
F-3	Layer 1	B2321083.10	White,Gray	Flashing Membrane	None Detected
	Layer 2	B2321083.10	Clear,Yellow	Mastic	None Detected
F-4	Layer 1	B2321083.11	White,Gray	Flashing Membrane	None Detected
	Layer 2	B2321083.11	Clear,Yellow	Mastic	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2321083
Date Received: 10-03-23
Date Analyzed: 10-04-23
Date Reported: 10-04-23

Project: SMHA Plaza Terrace, 0137-3995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-1 Layer 1 B2321083.01	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 2 B2321083.01	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	35%	Cellulose	50% 15%	Foam Perlite	None Detected
C-2 Layer 1 B2321083.02	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 2 B2321083.02	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	35%	Cellulose	50% 15%	Foam Perlite	None Detected
C-3 Layer 1 B2321083.03	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 2 B2321083.03	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	35%	Cellulose	50% 15%	Foam Perlite	None Detected
C-4 Layer 1 B2321083.04	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2321083
Date Received: 10-03-23
Date Analyzed: 10-04-23
Date Reported: 10-04-23

Project: SMHA Plaza Terrace, 0137-3995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B2321083.04	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	35% 	Cellulose 	50% 15%	Foam Perlite	None Detected
C-5 Layer 1 B2321083.05	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 2 B2321083.05	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	35% 	Cellulose 	50% 15%	Foam Perlite	None Detected
C-6 Layer 1 B2321083.06	Membrane	Heterogeneous Black,White Fibrous Tightly Bound	<1% 35%	Cellulose Synthetic Fiber	65%	Vinyl	None Detected
Layer 2 B2321083.06	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 3 B2321083.06	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	25% 10%	Cellulose Fiberglass	65%	Foam	None Detected
C-7 Layer 1 B2321083.07	Membrane	Heterogeneous Black,White Fibrous Tightly Bound	<1% 35%	Cellulose Synthetic Fiber	65%	Vinyl	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2321083
Date Received: 10-03-23
Date Analyzed: 10-04-23
Date Reported: 10-04-23

Project: SMHA Plaza Terrace, 0137-3995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B2321083.07	Built-Up Roofing	Heterogeneous Black,Brown Fibrous Bound	25% 25%	Cellulose Synthetic Fiber	50%	Tar	None Detected
Layer 3 B2321083.07	Insulation	Heterogeneous Yellow,Brown Fibrous Bound	25% 10%	Cellulose Fiberglass	65%	Foam	None Detected
F-1 Layer 1 B2321083.08	Silver Paint	Homogeneous Silver Non-fibrous Bound	5%	Cellulose	95%	Paint	None Detected
Layer 2 B2321083.08	Flashing	Heterogeneous Black,Brown Fibrous Bound	25%	Cellulose	75%	Tar	None Detected
F-2 Layer 1 B2321083.09	Silver Paint	Homogeneous Silver Non-fibrous Bound	5%	Cellulose	95%	Paint	None Detected
Layer 2 B2321083.09	Flashing	Heterogeneous Black,Brown Fibrous Bound	25%	Cellulose	75%	Tar	None Detected
Layer 3 B2321083.09	Residual Tar	Heterogeneous Gray,Matte Black Fibrous Bound	25%	Cellulose	73%	Tar	**2% Chrysotile**

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2321083
Date Received: 10-03-23
Date Analyzed: 10-04-23
Date Reported: 10-04-23

Project: SMHA Plaza Terrace, 0137-3995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
F-3	Flashing Membrane	Homogeneous	<1%	Cellulose	65%	Vinyl	None Detected
Layer 1		White,Gray	35%	Synthetic Fiber			
B2321083.10		Fibrous					
		Bound					
Layer 2	Mastic	Homogeneous	<1%	Cellulose	100%	Mastic	None Detected
B2321083.10		Clear,Yellow					
		Non-fibrous					
		Bound					
F-4	Flashing Membrane	Homogeneous	<1%	Cellulose	65%	Vinyl	None Detected
Layer 1		White,Gray	35%	Synthetic Fiber			
B2321083.11		Fibrous					
		Bound					
Layer 2	Mastic	Homogeneous	<1%	Cellulose	100%	Mastic	None Detected
B2321083.11		Clear,Yellow					
		Non-fibrous					
		Bound					

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LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST: Santi Nicolella
Santi Nicolella

APPROVED BY: Tianbao Bai
Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP TESTING
NVLAP LAB CODE 101768-0

11

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CHAIN OF CUSTODY

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:	
CEI Lab Code:	B2321083
CEI Lab I.D. Range:	

COMPANY INFORMATION		PROJECT INFORMATION
CEI CLIENT #:28147		Job Contact: Martin Kurkul
Company:Intertek-PSI		Email / Tel: 216-447-1335 / C: 216-973-6476
Address:5555 Canal Road		Project Name: SMHA Plaza Terrace
Cleveland, Ohio		Project ID#: 0137-3995
Email: martin.kurkul@intertek.com		PO #:
Tel:216-447-1335	Fax:216-642-7008	STATE SAMPLES COLLECTED IN: Ohio

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	■	☐	☐	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR*	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

**Blanks should be taken from the same sample lot as field samples.*

REMARKS / SPECIAL INSTRUCTIONS:
SEE ATTACHED SAMPLE LOG

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Alec Benedetti	10/2/2023		10·3·23 10:10

Samples will be disposed of 30 days after analysis

7736 0107 2280

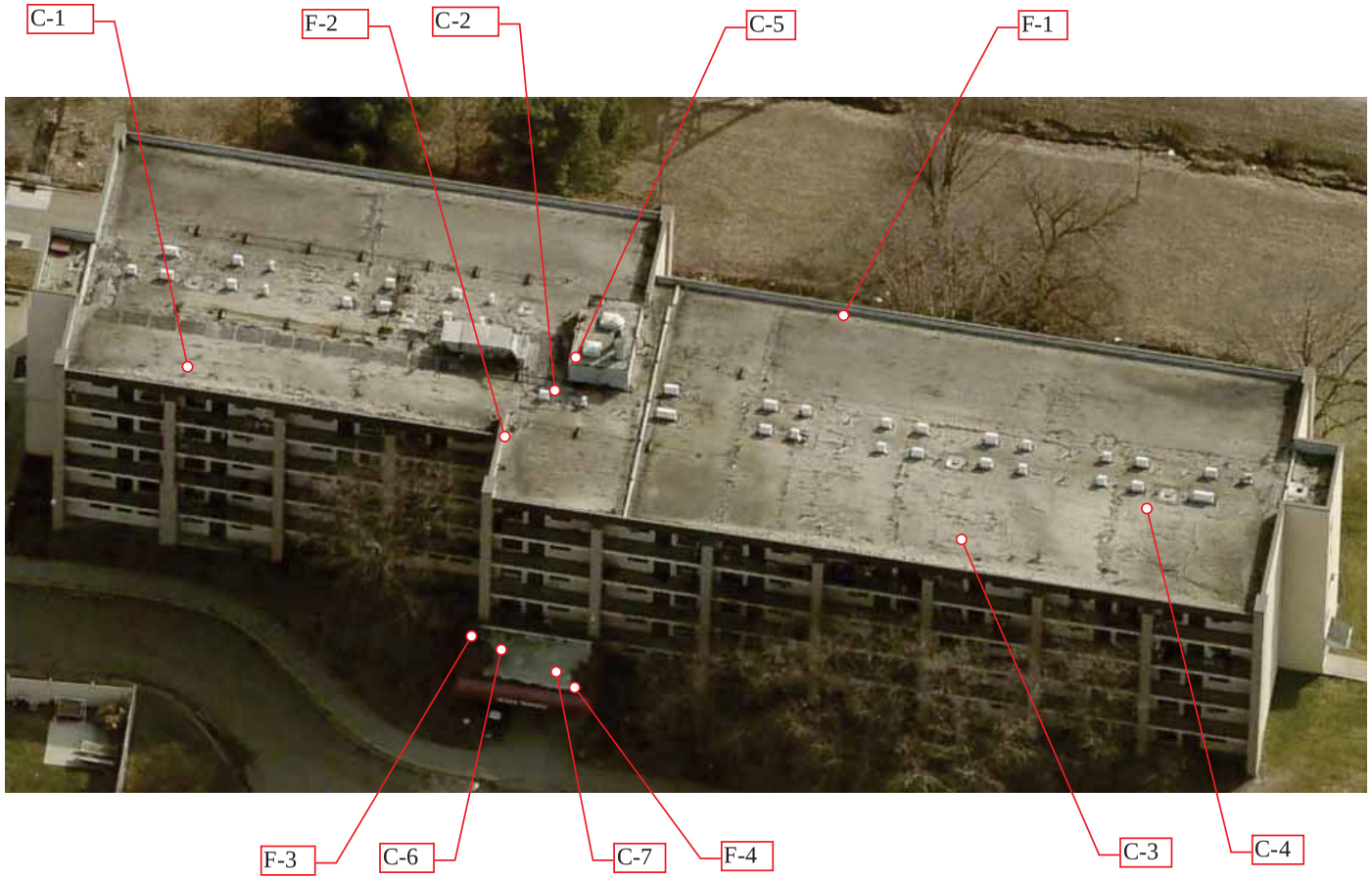
Project Name: SMHA Plaza Terrace Date: 10/2/2023

Project Location: Canton, Ohio Project Number:01373995

HA#		Material Description
C-1		Roof Core
C-2		Roof Core
C-3		Roof Core
C-4		Roof Core
C-5		Roof Core
C-6		Roof Core
C-7		Roof Core
F-1		Roof Flashing
F-2		Roof Flashing
F-3		Roof Flashing
F-4		Roof Flashing

Drawings

ROOF



Drawing Type:	Asbestos Sample Locations
Project Name:	**SMHA** **Plaza Terrace Apts.**
Project Location:	716 30th Street NW Canton, OH 44709
PSI Project:	01373995-2
Project Manager:	Martin Kurkul
Inspector:	Alec Benedetti
Sampled Date:	September 29, 2023

Legend:

ID# Sample Location

General Notes: Not to scale

intertek psi
5555 Canal Road • Cleveland, Ohio 44125
Phone 216-447-1335 • Fax 216-642-7008

Photographs

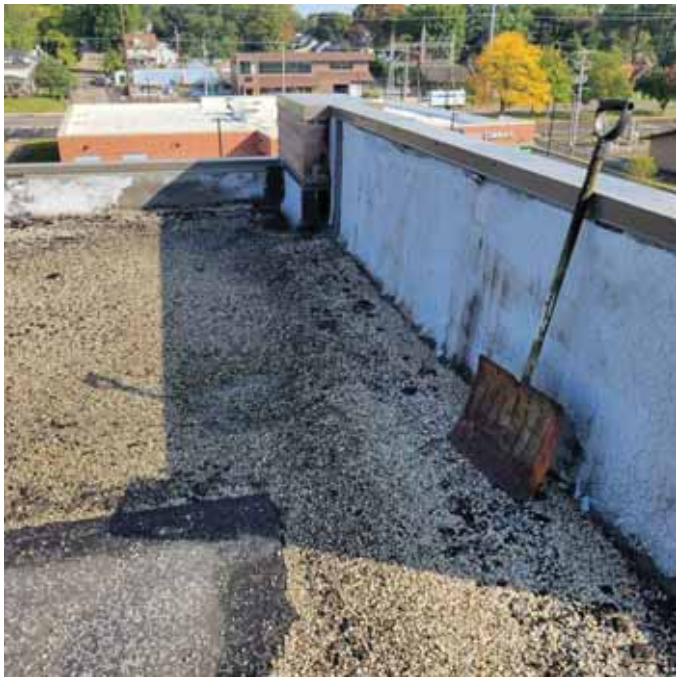


Photo 1: View of the Roof Flashing (F-1,2)

Photo 2: View of the Roof Field/Core (C-1,2,3,4)

Photo 3: View of the Roof Field/Core (C-1,2,3,4) looking West

Photo 4: View of the typical drain system of the roof

Photo 5: View of the Roof Flashing

Photo 6: View of the Roof Flashing

Photo 7: View of the condition of the roof

Photo 8: View of the North parapet wall

Photo 9: View of the Roof Flashing North

Photo 10: View of the Roof Flashing South

Photo 11: View of the West portion of the roof, note the standing water

Photo 12: View of the West portion of the roof

Photo 13: View of bubbling of the roof field

Photo 14: View of pinching/bubbling of the roof field

Photo 15: View of pinching/bubbling of the roof field

Photo 16: View of pinching/bubbling of the roof field

Photo 17: View of pinching/bubbling of the roof field

Photo 18: View of pinching/bubbling of the roof field

Photo 19: View of the elevator penthouse (C-5)

Photo 20: View of moss growth on the North side of the elevator penthouse

Photo 21: View of the elevator penthouse

Photo 22: View of flashing to substrate

Photo 23: View of the lower roof from the upper roof

Photo 24: View of the Roof Field/Core

Photo 25: View of the Roof Field/Core

Photo 26: View of moss growth on the North side of the elevator penthouse

Photo 27: View of the West portion of the roof

Photo 28: View of the lower roof Flashings (F-3,4)

Photo 29: View of the lower Roof Field/Core (C-6,7)

Photo 30: View of typical roof drain on the lower roof

Photo 31: View of the main entrance to the property

Laboratory Accreditations

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

Eurofins CEI, Inc.

730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

☑	**INDUSTRIAL HYGIENE**	Accreditation Expires: April 01, 2025
☐	**ENVIRONMENTAL LEAD**	Accreditation Expires:
☑	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: April 01, 2025
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O. Morton

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision20: 06/07/2022

Date Issued: 03/01/2023

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

Eurofins CEI, Inc.
730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025
Issue Date: 03/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Environmental Microbiology Laboratory Accreditation Program (EMLAP)

Initial Accreditation Date: 03/01/2013

EMLAP Scope Category	Field of Testing (FOT)	Component, parameter or characteristic tested	Method	Method Description *(for internal methods only)*
Fungal	Air - Direct Examination	Spore Trap	Method 110	In House: Quantifying and Identifying Airborne Fungi Spores from Spore Traps
Fungal	Bulk - Direct Examination	Bulk	Method 120	In House: Identifying Fungi Spores from Tape Lifts/Bulk/Swab Samples
Fungal	Surface - Direct Examination	Surface	Method 120	In House: Identifying Fungi Spores from Tape Lifts/Bulk/Swab Samples

A complete listing of currently accredited EMLAP laboratories is available on the AIHA LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

Eurofins CEI, Inc.
730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025
Issue Date: 03/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 03/01/2013

IHLAP Scope Category	Field of Testing (FOT)	Technology sub-type/Detector	Published Reference Method/Title of In-house Method	Component, parameter or characteristic tested
Asbestos/Fiber Microscopy Core	Phase Contrast Microscopy (PCM)	-	NIOSH 7400	Asbestos/Fibers

A complete listing of currently accredited IHLAP laboratories is available on the AIHA LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

March 31, 2023

Tianbao Bai
Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511

NVLAP Lab Code: 101768-0

Dear Dr. Bai,

Thank you for continuing your accreditation for Asbestos Fiber Analysis under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until March 31, 2024, provided that your laboratory continues to comply with the accreditation requirements contained in the NVLAP Procedures.

Your updated accreditation documents are enclosed. You may reproduce these documents in their entirety and use the NVLAP symbol and/or term to reference your accredited status in accordance with the requirements published in NIST Handbook 150, 1.8. Accreditation does not relieve your laboratory from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Shelby Conyers, Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, 100 Bureau Dr. Stop 2140, Gaithersburg, MD 20899-2140; .

Sincerely,

Dana S. Leaman, Chief
National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101768-0

Eurofins CEI, Inc.

Cary, NC

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

Asbestos Fiber Analysis

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

2023-04-01 through 2024-03-31

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511
Dr. Tianbao Bai
Phone: 919-481-1413 Fax: 919-481-1442
Email: tianbao.bai@eurofinset.com
http://www.eurofinsus.com/CEI

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101768-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

Inspector Accreditations

TSi TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540959 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540972 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

7/14/2023

Alec Benedetti
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36461
Expiration Date: 8/17/2024

Dear Alec Benedetti:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Brandon M. Schwendeman
Brandon Schwendeman
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43216-1049
epa.ohio.gov • (614) 644-3020 • (614) 644-3184 (fax)

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hletter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415323 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hetter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415336 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

11/29/2022

Martin Kurkul Jr.
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36332
Expiration Date: 11/29/2023

Dear Martin Kurkul Jr.:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Joshua S. Koch
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

.O. Box 1049 • Columbus, OH 43216-1049
4-3020 • (614) 644-3184 (fax)

Asbestos Survey Report

Shortridge Villa Apartments
4533 Stephen Circle NW
Canton, Ohio 44718

Prepared for:

TC Architects
430 Grant Street
Akron, Ohio 44311
330-867-1093

Prepared by:

Professional Service Industries, Inc.
5555 Canal Road
Cleveland, Ohio 44125
216-447-1335

October 23, 2023

PSI Project Number: 01373995-3

Martin Kurkul
Asbestos Inspector
ES# 36332

Jeff Chapman
Principal Consultant

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS OR ABBREVIATIONS

Acronym or Abbreviation	Definition
ACM	Asbestos-Containing Material
ACBM	Asbestos-Containing Building Material
AHERA	Asbestos Hazard Emergency Response Act
AIHA	American Industrial Hygiene Association
CAT. I NF	Category I Non-Friable
CAT. II NF	Category II Non-Friable
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
EPA	Environmental Protection Agency
HA	Homogeneous Area
HVAC	Heating, Ventilation, and Air Conditioning
MJP	Mudded Joint Packing
NESHAP	National Emission Standards for Hazardous Air Pollutants
NVLAP	National Voluntary Laboratory Accreditation Program
O&M	Operations & Maintenance
OSHA	Occupational Safety and Health Administration
PACM	Presumed Asbestos-Containing Material
PLM	Polarized Light Microscopy
PSI	Professional Service Industries, Inc., an Intertek company
PT	Point Count
RACM	Regulated Asbestos-Containing Material
TEM	Transmission Electron Microscopy
TSI	Thermal System Insulation
VFT	Vinyl Floor Tile
VJC	Vibration Joint Cloth
VSF	Vinyl Sheet Flooring

1.0 INTRODUCTION

PSI was retained by TC Architects to perform a survey for suspect ACM of the roofing areas at Shortridge Villa Apartments, located at 4533 Stephen Circle NW in Canton, Ohio 44718.

This project encompassed only the accessible roofing areas of the 40,000 square-foot, 3-story building, hereinafter referred to as the Project Area. The field work was conducted on September 22, 2023.

1.1 PURPOSE AND SCOPE OF SERVICES

The purpose of this survey was to provide general information for the Project Area regarding the presence, condition, and quantity of accessible and/or exposed friable and non-friable materials suspected to contain asbestos.

The survey of the Project Area was conducted in general accordance with the EPA AHERA and the NESHAP sampling guidelines to determine the presence and general locations of exposed and/or physically accessible suspect ACM, depict the sample locations, quantify the amount of ACM identified during the survey, and provide photographic documentation of each homogeneous area**.**

Each suspect material was touched, where possible, to determine the friability of the material. Samples were obtained only from suspect ACM that were readily exposed and/or physically accessible during the survey**.**

PSI also identified the roofing materials sampled during this survey and noted the composition and depths of the layers.

Samples were sent to Eurofin's CEI NVLAP accredited laboratory located at 730 SE Maynard Rd., in Cary, NC, for analysis. Each sample underwent PLM analysis for detection of asbestos fibers in the building materials.

1.1.1 INFORMATION PROVIDED BY THE CLIENT

No documents were provided by the client during the course of this survey.

1.2 AUTHORIZATION AND ACCESS

Authorization to perform the survey was given on September 18, 2023 by the receipt of a signed copy by PSI of PSI Proposal Number 0137-408489, between TC Architects and PSI.

Access to the property was provided by SMHA Facility Staff. PSI was not escorted during the field work for this survey.

1.3 LIMITATIONS

This asbestos survey was not intended to meet the requirements of the NESHAP for Asbestos renovation for the entire building. The survey included a thorough inspection of the reported areas of planned roofing renovation**.**

Destructive sampling, such as behind finished surfaces (plaster/drywall walls, above hard ceilings, etc.) inside mechanical chases, behind mirrored walls, under carpet or tiled floors, etc., was not generally conducted to assess inaccessible or concealed materials.

Although PSI made an attempt to identify all areas of ACM, an exhaustive investigation of void spaces was not included in the scope of services for this project. There may exist conditions which were unable to be identified within the scope of this survey.

Inaccessible is defined as areas of the building that were locked, or where admittance was not permitted. It also includes areas/materials that could not be tested (sampled) without destruction of the structure or a portion of the structure, and areas/materials that could not be safely reached by the inspector or inspection team. In the event that access to a portion of the building was not obtained (which otherwise would have been tested), such limitations specifically are identified in the Findings Section of this report.

PSI did not inspect for or sample materials in areas or locations which presented a hazard to the inspection team, such as those associated with energized electrical systems or within confined spaces.

PSI did not collect samples from building elements where the intended use would be compromised by testing, such as fire rated doors, vapor barriers, mirror mastics, etc. If observed, such materials were assumed to be asbestos-containing.

Due to the occupancy of the structure, PSI was generally not able to conduct ‘destructive’ sampling such as inside wall cavities or above plaster ceilings: therefore, the inspection was limited to areas that were accessible and exposed.

2.0 GENERAL PROPERTY, BUILDING AND SURVEY INFORMATION

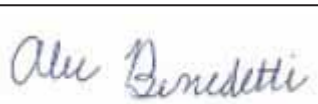
2.1 PROPERTY AND BUILDING INFORMATION

SUBJECT PROPERTY:	Shortridge Villa Apartments 4533 Stephen Circle NW Canton, Ohio 44718

CONSTRUCTION DATE:	1982
PREVIOUS RENOVATION DATE:	Not reported
NUMBER OF FLOORS:	3
ESTIMATED SQUARE FOOTAGE:	40,000
CONSTRUCTION TYPE:	Concrete decking and brick/CMU
VACANT? (YES/NO)	No
ADDITIONAL INFORMATION:	None Provided

2.2 SURVEY INFORMATION

NAME OF INSPECTOR:	Martin Kurkul
LICENSE/CERTIFICATION NUMBER:	ES# 36332
	

NAME OF INSPECTOR:	Alec Benedetti
LICENSE/CERTIFICATION NUMBER:	ES# 36461
	

DATE(S) OF SURVEY AND SAMPLING:	September 22, 2023
ESCORT:	No escort

3.0 METHODOLOGY

3.1 GENERAL REFERENCES

Survey, sampling, and analysis procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987 and the OSHA Asbestos Construction Standard, found in 29 CFR 1926.1101, and in the NESHAP regulation (40 CFR Part 61, April 6, 1973, revised 1990).

3.2 RECORD DOCUMENT REVIEW

If available, prior to conducting the visual inspection, PSI reviewed documents provided by the client including: drawings, floor plans, historical data, maintenance records, previous survey reports, laboratory reports, etc. for information regarding construction history and building materials. This data was used to focus the walk through and scope of work to be followed over the course of our visual inspection and sampling. Information obtained from the references was incorporated into the Findings Section of the report.

3.3 VISUAL INSPECTION PROCEDURES

An initial walkthrough of the Project Area was conducted to determine the presence and condition of suspect materials which were physically accessible and/or exposed. Materials which were similar in general appearance were grouped into HAs. In addition, the friability of the suspect material was determined. A material is defined as friable (F) if the material can be reduced to a powder by hand pressure when dry. Non-Friable (NF) materials that are damaged can also be considered friable.

3.3.1 HOMOGENEOUS AREA CLASSIFICATIONS

A walk-through of the Project Area was conducted to determine areas of materials which were visually similar in color, texture, general appearance, and which appeared to have been installed at the same time. Such materials are termed HAs by the EPA AHERA regulation. During this walk-through, the approximate locations of these HAs were also noted. Only materials which were physically accessible and/or exposed and suspected to contain asbestos were identified and placed in homogeneous areas.

Following the EPA AHERA inspection protocol, each identified HA was placed in one of the following AHERA classifications for the purposes of determining the number of samples to collect:

- Surfacing Materials: spray or trowel applied to building members;
- TSI: materials generally applied to various mechanical systems; or
- Miscellaneous Materials: any materials which do not fit either of the above categories.

Following the EPA NESHAP inspection protocol, each identified suspect homogeneous material that was confirmed as an ACM was also placed in one of the following NESHAP classifications:

- Friable Materials: NESHAP defines a friable ACM as any material containing more than one percent asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.
- Category I Non-Friable (Cat. I NF): NESHAP defines a Category I non-friable ACM as packing, gaskets, resilient floor covering (except vinyl sheet flooring products which are considered friable), and asphalt roofing products which contain more than one percent asbestos.
- Category II Non-Friable (Cat. II NF): NESHAP defines a Category II non-friable ACM as any material, except for a Category I non-friable ACM, which contains more than one percent asbestos and cannot be reduced to a powder by hand pressure when dry.

In the NESHAP regulation, a regulated asbestos-containing material (RACM) is defined as any (a) friable asbestos material; (b) Category I Non-Friable ACM that has become friable; (c) Cat. I NF 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.

3.4 ASBESTOS SAMPLING PROCEDURES

Following the walk-through, the inspector(s) collected selected samples of exposed and/or physically accessible materials identified as suspect ACM. Sampling was limited to those physically accessible materials not involving the destruction of walls, other building elements, physical barriers, or the structural integrity of the item being tested**.**

EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous area.

Where possible, samples of surfacing material, if present, were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October, 1985). The homogeneous area was divided into a grid of nine (9) sub-areas. If nine samples were taken, one sample was taken from each sub-area. If less than nine samples were taken, the EPA random numbering diagram was used to determine which sub-areas would be sampled. While an effort was made to extract the samples from approximately the middle of the sub-area, samples were taken preferentially from already damaged areas or areas which were the least visible.

After each sample was extracted, where applicable, a spray encapsulant and/patching was applied to the sampled area to prevent potential fiber release and temporarily restore the system's use.

Some suspect ACM could not be sampled. These suspect asbestos-containing materials were not sampled to avoid compromising the structural integrity of the material and because of existing safety/material concerns. Suspect asbestos-containing materials that were not sampled are assumed to be ACM. If materials that were assumed to be ACM are to be impacted during future renovation or demolition activities, then those materials, if practical, should be sampled and analyzed prior to that renovation or demolition activity or treated as ACM. Based on the analysis of the previously assumed ACM, further action may be required per the EPA NESHAP regulations.

In accordance with the agreement between PSI and the client, roofing materials were sampled by coring through the roof system to the base deck material. PSI applied a temporary patch to the roof core location following sample extraction. Due to the destructive nature of roof sampling however, PSI does not warrant a water tight condition following sample extraction, nor can PSI guarantee the continuance of any roof system warranties by other entities.

3.5 ASBESTOS ANALYSIS PROCEDURES

The samples were analyzed at Eurofin's CEI's Asbestos Laboratory, located in Cary, NC. The Eurofin's CEI Asbestos Laboratory is a NVLAP Accredited (ID number 101768-0) Laboratory. A copy of the Laboratory's Accreditation Certificate is included in the Appendix.

The samples were analyzed for asbestos by PLM in accordance with the "EPA Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116, July 1993). Analysis was performed by visually observing the bulk samples with a stereoscope, followed by slide preparation(s) for microscopic examination and identification.

Using a stereoscope, the microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample. Next, the samples were mounted on slides and analyzed by PLM for asbestos (chrysotile, amosite, crocidolite, anthophyllite, actinolite/tremolite), and fibrous non-asbestos constituents (mineral wool, fiberglass, cellulose, etc.). Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the non-asbestos constituents.

It should be noted that some ACM might not be accurately identified or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard PLM method. TEM is another method that can provide a more definitive analysis of these materials, but was not in the scope of work for this project.

3.6 QUANTIFICATION

Quantities of physically accessible and/or exposed confirmed ACM were estimated. This estimation was performed by taking approximate measurements in the field or estimating quantities based on as-built mechanical or structural drawings. Materials such as pipe insulation and associated MJP were categorized according to the outside diameter of the insulation. Pipe insulation was quantified by linear footage of the insulation while the actual number of MJPs was counted. Insulation on mechanical equipment such as boilers and duct work was quantified by the square footage of the surface area of suspect insulation. Similarly, fireproofings, plasters, ceiling and floor tiles, and cementitious panels were measured in square feet of surface area. The quantities of confirmed ACM that were identified during this investigation are reported in the Tables later in this report.

Quantities identified in this report are estimates, are intended as order of magnitude information or for general policy discussions, and should be confirmed by the roofing/abatement contractor since renovation or demolition is contemplated.

3.7 PHOTOGRAPHIC DOCUMENTATION

Photographs of HAs were taken during the course of this survey. While these photographs were not intended to provide a complete record of the survey, they do provide a visual description of the HA and/or representative layers. Photographs of HAs are intended to depict a representative portion of that HA. The captioned photographs taken during this survey are appended.

3.8 DRAWINGS

Drawings were prepared to indicate the location of the samples that were collected during the course of this survey. The drawings are not intended to be used for construction purposes. Drawings prepared during the course of this survey are appended.

4.0 FINDINGS

A total of fourteen samples were collected from three suspect HAs during the asbestos survey. In addition, no suspect HAs were observed during the asbestos survey.

The tables below list the suspect ACM observed throughout the building. Table 1 lists the materials that were sampled, along with the results of the inspection and laboratory analysis.

The table or tables provide a description of the materials, their general locations, condition, friability, and, if applicable and/or within the scope of work, EPA NESHAP Category, and estimated quantities.

In the following table or tables, items that are confirmed or assumed to be ACM are indicated in **bold** and items that contain less than 1% asbestos, but are not 'no asbestos detected' are indicated by *italics*.

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-1	Roof Core	Upper Roof	• 2" Ballast • 1/2" BUR • 1" FB • EPDM • 2" Foam • Total: 5 1/2"	NF	Good	NAD	N/A	Not Applicable
C-2	Roof Core	Upper Roof	• 2" Ballast • 1/2" BUR • 1" FB • EPDM • 2" Foam • Total: 5 1/2"	NF	Good	NAD	N/A	Not Applicable
C-3	Roof Core	Shingle/ Tar	Roof Shingle and Tar	NF	Good	NAD	N/A	Not Applicable
C-4	Roof Core	Shingle/ Tar	Roof Shingle and Tar	NF	Good	NAD	N/A	Not Applicable
C-5	Roof Core	Lower Roof	• EPDM • 1" Fiber Board • 2" Foam • Total: 3"	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
C-6	Roof Core	Lower Roof	• EPDM • 1" Fiber Board • 2" Foam • Total: 3"	NF	Good	NAD	N/A	Not Applicable
C-7	Roof Core	Entrance Roof	• EPDM • 1/2" Fiber Board • EPDM • 1 1/2" Pearlite • Total: 2"	NF	Good	NAD	N/A	Not Applicable
C-8	Roof Core	Entrance Roof	• EPDM • 1/2" Fiber Board • EPDM • 1 1/2" Pearlite • Total: 2"	NF	Good	NAD	N/A	Not Applicable
F-1	Roof Flashing	Upper Roof	• Mod Bit/ ASP VB • Tar	NF	Good	NAD	N/A	Not Applicable

TABLE 1 - SUSPECT ACM - SAMPLED								
HA & # of samples	**Material Description**	**Material Location**	**Profile**	**F/NF**	**Condition**	**% Asbestos & Type**	**EPA NESHAP Category**	**Estimated Quantity**
F-2	Roof Flashing	Upper Roof	• Mod Bit/ ASP VB • Tar	NF	Good	NAD	N/A	Not Applicable
F-3	Roof Flashing	Lower Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable
F-4	Roof Flashing	Lower Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable
F-5	Roof Flashing	Entrance Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable
F-6	Roof Flashing	Entrance Roof	• EPDM	NF	Good	NAD	N/A	Not Applicable

NOTES: F=Friable, NF=Non-Friable; Dam.=Damaged, Sig. Dam.=Significantly Damaged; NAD=No Asbestos Detected, CH=Chrysotile, AM=Amosite, CR=Crocidolite, TR=Tremolite, AC=Actinolite, AN=Anthophyllite, PT=Point Count Analysis; RACM=Regulated ACM, Cat. I NF=Category I Non-Friable ACM, Cat. II NF=Category II Non-Friable ACM; SF=square feet; LF=lineal feet; EA=each; N/A=Not Applicable

***Contractors should be aware of the potential for asbestos-containing roofing, from assumed older roofing, to be present adjacent to identified "NAD" roofing materials**

4.1 INACCESSIBLE OR UNACCESSED AREAS

PSI did not encounter areas where access was denied or prohibited at the time of the field activities.

4.2 NON-SUSPECT MATERIAL AND OTHER OBSERVATIONS

In addition, the following materials were observed but are considered 'non-suspect' ACM due to their composition (fiberglass, rubber, etc.):

- Fiberglass
- Foam
- Brick
- Concrete

PSI also made the following observations during this survey.

- Most roofing areas appeared to be free of standing water. The uppermost flat roof and flat roofing above the garage areas did have some moisture in the cores during the site work.

5.0 CONCLUSIONS

5.1 CONCLUSIONS

ACM (>1% asbestos) was not identified based on the samples collected from the materials at Shortridge Villa Apartments.

Assumed ACM was not identified in the project area at Shortridge Villa Apartments.

Low concentrations of asbestos (trace to 1%) were not identified in the materials sampled at Shortridge Villa Apartments.

6.0 WARRANTY AND THIRD PARTY RELIANCE

6.1 STANDARD OF CARE AND WARRANTIES

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence of accessible and/or exposed suspect ACM for the project area. PSI warrants that the findings contained herein have been prepared in general accordance with accepted professional practices at the time of its preparation as applied by professionals in the community. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey and analytical methods have been used to provide the client with information regarding the presence of accessible and/or exposed suspect ACM existing at the time of the survey. Test results are valid only for the material or materials tested. There is a distinct possibility that conditions may exist which could not be identified within the scope of the survey or which were not apparent during the site visit. This survey covered only those areas that were exposed and/or physically accessible to the Inspector.

PSI has assumed that factual information provided to us by the Client, or obtained from governmental sources, the public domain, interviews, and other sources is accurate, unbiased and complete. PSI assumes no liability for the accuracy of data provided to us by others and does not warrant or guarantee that the information provided by these sources is accurate, unbiased or complete.

Our services were not intended to be technically exhaustive. There is a possibility that with the proper application of methodologies, conditions may exist on the property that could not be identified within the scope of the survey or that were not reasonably identifiable from the available information. The report may not represent all conditions at the subject property or project area as it only reflects the information gathered from specific locations on the date of the survey. No inspection can wholly eliminate uncertainty regarding the potential for asbestos in connection with the subject property.

As directed by the client, PSI did not provide any service to investigate or detect the presence of moisture, mold or other biological contaminants in or around any structure, or any service that was designed or intended to prevent or lower the risk of the occurrence of the amplification of the same. Client acknowledges that mold is ubiquitous to the environment with mold amplification occurring when building materials are impacted by moisture. Client further acknowledges that site conditions are outside of PSI’s control, and that mold amplification will likely occur, or continue to occur, in the presence of moisture. As such, PSI cannot and shall not be held responsible for the occurrence or recurrence of mold amplification.

No other warranties are implied or expressed.

6.2 RELIANCE

TC Architects, PSI's client, may rely on this report. In addition, Stark Metropolitan Housing Authority may rely on this report on the condition that such reliance is subject to the limitations and conditions accepted by PSI's client in its contract with PSI.

6.3 THIRD PARTY RELIANCE

This report was prepared pursuant to a contract between PSI and its client. That contractual relationship included an exchange of information about the property that was unique and serves as the basis upon which this report was prepared. Because of the importance of these understandings, our assessment may not be sufficient for the intended purposes of another party.

Reliance or any use of this report by anyone other than those parties identified above for which it was prepared, except with express written permission, is prohibited and therefore not foreseeable to PSI. Any unauthorized reliance on or use of this report, including any of the information or conclusions contained herein, will be at the third party's risk. No warranties or representations expressed or implied in this report are made to any such third party.

Third party reliance letters may be issued:

- upon timely request;
- subject to the permission of our original client; and
- payment of the then-current fee for such letters.

All third parties relying on our report, by such reliance, agree that such reliance is limited by our proposal and/or General Conditions, as applicable.

Report of Bulk Sample Analysis and Chain-of-Custody

eurofins | CEI

September 29, 2023

Intertek - PSI
5555 Canal Rd
Cleveland, OH 44125

CLIENT PROJECT: SMHA Shortridge, 01373995
CEI LAB CODE: B2320768

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on September 28, 2023. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP® TESTING
NVLAP LAB CODE 101768-0

ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Intertek - PSI

CLIENT PROJECT: SMHA Shortridge, 01373995

LAB CODE: B2320768

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 09/29/23

TOTAL SAMPLES ANALYZED: 14

SAMPLES >1% ASBESTOS:

730 SE Maynard Road • Cary, NC 27511 • 919.481.1413

Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: SMHA Shortridge, 01373995 **LAB CODE: B2320768**

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
C-1	Layer 1	B2320768.01	Black	Roof Core Membrane	None Detected
	Layer 2	B2320768.01	Black	Roof Core	None Detected
	Layer 3	B2320768.01	Brown	Roof Core Insulation	None Detected
	Layer 4	B2320768.01	White	Roof Core Insulation	None Detected
C-2	Layer 1	B2320768.02	Black	Roof Core Membrane	None Detected
	Layer 2	B2320768.02	Black	Roof Core	None Detected
	Layer 3	B2320768.02	Brown	Roof Core Insulation	None Detected
	Layer 4	B2320768.02	White	Roof Core Insulation	None Detected
C-3	Layer 1	B2320768.03	Brown,Black	Shingle	None Detected
	Layer 2	B2320768.03	Black	Tar	None Detected
C-4	Layer 1	B2320768.04	Brown,Black	Shingle	None Detected
	Layer 2	B2320768.04	Black	Tar	None Detected
	Layer 3	B2320768.04	Gray,Black	Sealant	None Detected
C-5	Layer 1	B2320768.05	White	Roof Core Membrane	None Detected
	Layer 2	B2320768.05	Black	Roof Core Membrane	None Detected
	Layer 3	B2320768.05	Brown,Black	Roof Core Insulation	None Detected
	Layer 4	B2320768.05	White	Roof Core Insulation	None Detected
C-6	Layer 1	B2320768.06	White	Roof Core Membrane	None Detected
	Layer 2	B2320768.06	Brown,Black	Roof Core Insulation	None Detected
C-7	Layer 1	B2320768.07	White	Roof Core Membrane	None Detected
	Layer 2	B2320768.07	Gray,Brown	Roof Core Insulation	None Detected
C-8	Layer 1	B2320768.08	White	Roof Core Membrane	None Detected
	Layer 2	B2320768.08	Brown,Black	Roof Core Insulation	None Detected
F-1	Layer 1	B2320768.09	Gray,Black	Roof Flashing	None Detected
	Layer 2	B2320768.09	Black	Roof Flashing	None Detected
F-2	Layer 1	B2320768.10	Green,Black	Roof Flashing	None Detected
	Layer 2	B2320768.10	Black	Roof Flashing	None Detected
F-3		B2320768.11	White	Roof Flashing	None Detected
F-4		B2320768.12	White	Roof Flashing	None Detected
F-5		B2320768.13	White	Roof Flashing	None Detected
F-6		B2320768.14	White	Roof Flashing	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320768
Date Received: 09-28-23
Date Analyzed: 09-28-23
Date Reported: 09-29-23

Project: SMHA Shortridge, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-1 Layer 1 B2320768.01	Roof Core Membrane	Homogeneous Black Non-fibrous Tightly Bound			100%	Rubber	None Detected
Layer 2 B2320768.01	Roof Core	Heterogeneous Black Non-fibrous Bound	10%	Cellulose	90%	Tar	None Detected
Layer 3 B2320768.01	Roof Core Insulation	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose			None Detected
Layer 4 B2320768.01	Roof Core Insulation	Homogeneous White Non-fibrous Bound			100%	Foam	None Detected
C-2 Layer 1 B2320768.02	Roof Core Membrane	Homogeneous Black Non-fibrous Tightly Bound			100%	Rubber	None Detected
Layer 2 B2320768.02	Roof Core	Heterogeneous Black Non-fibrous Bound	40%	Cellulose	60%	Tar	None Detected
Layer 3 B2320768.02	Roof Core Insulation	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose			None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320768
Date Received: 09-28-23
Date Analyzed: 09-28-23
Date Reported: 09-29-23

Project: SMHA Shortridge, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 4 B2320768.02	Roof Core Insulation	Homogeneous White Non-fibrous Bound			100%	Foam	None Detected
C-3 Layer 1 B2320768.03	Shingle	Heterogeneous Brown,Black Non-fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
Layer 2 B2320768.03	Tar	Heterogeneous Black Non-fibrous Bound	5%	Cellulose	95%	Tar	None Detected
C-4 Layer 1 B2320768.04	Shingle	Heterogeneous Brown,Black Non-fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
Layer 2 B2320768.04	Tar	Heterogeneous Black Non-fibrous Bound	5%	Cellulose	95%	Tar	None Detected
Layer 3 B2320768.04	Sealant	Homogeneous Gray,Black Non-fibrous Bound			100%	Binder	None Detected
C-5 Layer 1 B2320768.05	Roof Core Membrane	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320768
Date Received: 09-28-23
Date Analyzed: 09-28-23
Date Reported: 09-29-23

Project: SMHA Shortridge, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B2320768.05	Roof Core Membrane	Homogeneous Black Non-fibrous Tightly Bound			100%	Rubber	None Detected
Layer 3 B2320768.05	Roof Core Insulation	Homogeneous Brown,Black Fibrous Loosely Bound	90%	Cellulose	10%	Tar	None Detected
Layer 4 B2320768.05	Roof Core Insulation	Homogeneous White Non-fibrous Bound			100%	Foam	None Detected
C-6 Layer 1 B2320768.06	Roof Core Membrane	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected
Layer 2 B2320768.06	Roof Core Insulation	Homogeneous Brown,Black Fibrous Loosely Bound	90%	Cellulose	10%	Tar	None Detected
C-7 Layer 1 B2320768.07	Roof Core Membrane	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected
Layer 2 B2320768.07	Roof Core Insulation	Heterogeneous Gray,Brown Fibrous Loosely Bound	90%	Cellulose	10%	Perlite	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320768
Date Received: 09-28-23
Date Analyzed: 09-28-23
Date Reported: 09-29-23

Project: SMHA Shortridge, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
C-8 Layer 1 B2320768.08	Roof Core Membrane	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Binder	None Detected
Layer 2 B2320768.08	Roof Core Insulation	Heterogeneous Brown,Black Fibrous Loosely Bound	90%	Cellulose	10%	Tar	None Detected
F-1 Layer 1 B2320768.09	Roof Flashing	Heterogeneous Gray,Black Non-fibrous Bound	40%	Synthetic Fiber	50% 10%	Tar Gravel	None Detected
Layer 2 B2320768.09	Roof Flashing	Heterogeneous Black Non-fibrous Bound	5% 15%	Cellulose Fiberglass	80%	Tar	None Detected
F-2 Layer 1 B2320768.10	Roof Flashing	Heterogeneous Green,Black Non-fibrous Bound	40%	Synthetic Fiber	50% 10%	Tar Gravel	None Detected
Layer 2 B2320768.10	Roof Flashing	Heterogeneous Black Non-fibrous Bound	5%	Cellulose	95%	Tar	None Detected
F-3 B2320768.11	Roof Flashing	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected

ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: **Intertek - PSI**
5555 Canal Rd
Cleveland, OH 44125

Lab Code: B2320768
Date Received: 09-28-23
Date Analyzed: 09-28-23
Date Reported: 09-29-23

Project: SMHA Shortridge, 01373995

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
F-4 B2320768.12	Roof Flashing	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected
F-5 B2320768.13	Roof Flashing	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected
F-6 B2320768.14	Roof Flashing	Homogeneous White Non-fibrous Tightly Bound	5%	Synthetic Fiber	95%	Vinyl	None Detected

LEGEND:

Non-Anth	= Non-Asbestiform Anthophyllite
Non-Trem	= Non-Asbestiform Tremolite
Calc Carb	= Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST: Nicholas Moore

APPROVED BY: Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP TESTING
NVLAP LAB CODE 101768-0

14

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CHAIN OF CUSTODY

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:	
CEI Lab Code:	B23207168
CEI Lab I.D. Range:	

COMPANY INFORMATION		PROJECT INFORMATION
CEI CLIENT #:28147		Job Contact: Martin Kurkul
Company:Intertek-PSI		Email / Tel: 216-447-1335 / C: 216-973-6476
Address:5555 Canal Road		Project Name: SMHA Lincoln / Shortridge
Cleveland, Ohio		Project ID#:01373995
Email: martin.kurkul@intertek.com		PO #:
Tel:216-447-1335	Fax:216-642-7008	STATE SAMPLES COLLECTED IN: Ohio

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME 4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	■	☐	☐	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR*	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

*Blanks should be taken from the same sample lot as field samples.

REMARKS / SPECIAL INSTRUCTIONS:
SEE ATTACHED SAMPLE LOG

dd Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
Alec Benedetti	9/26/2023	CM	9-28-23 9:40

Samples will be disposed of 30 days after analysis

7735 3861 4391

Version: CCOC.01.18.1/2.LD

intertek
psi

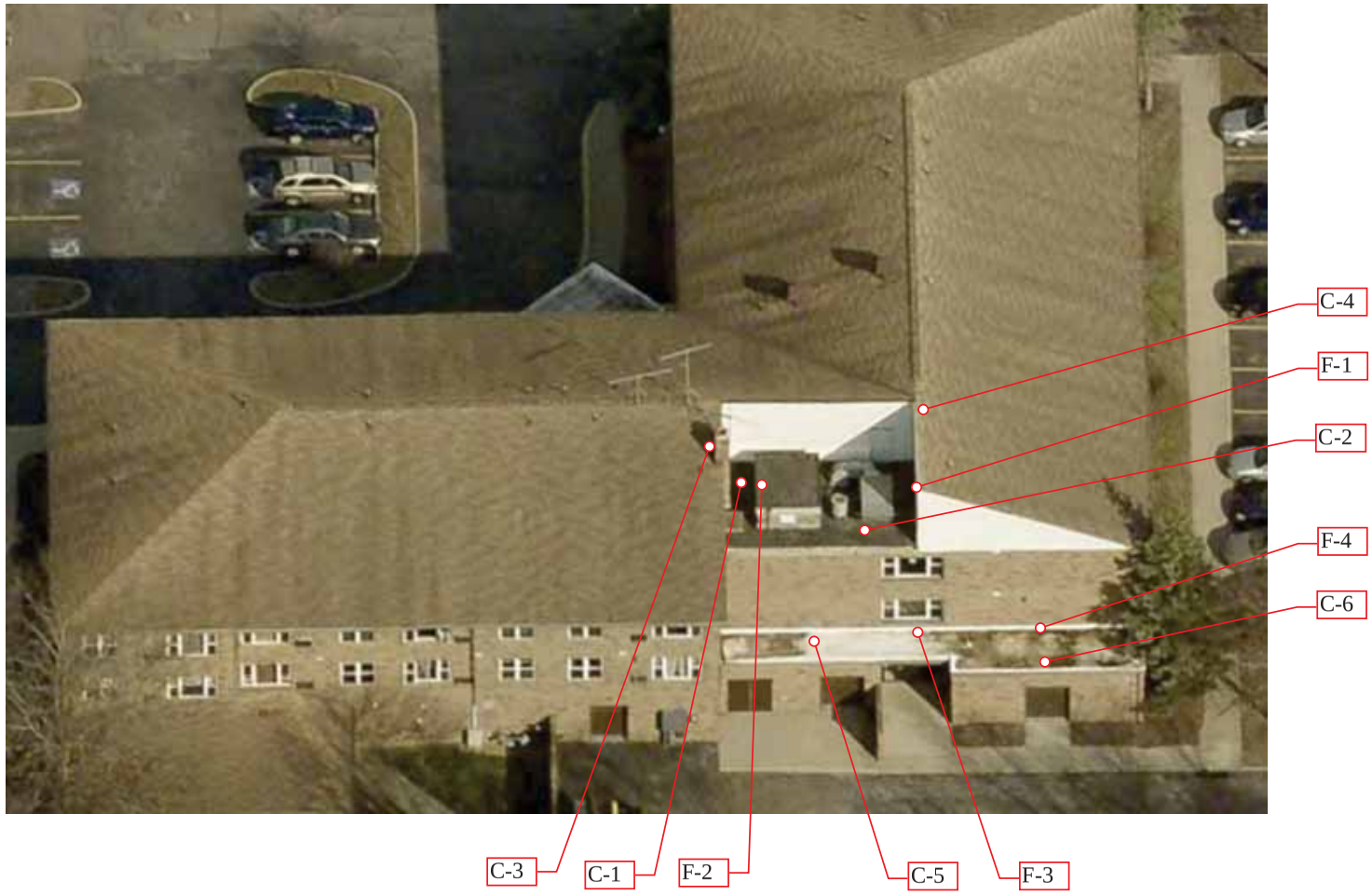
Project Name: Shortridge Apts Date: 9/26/2023

Project Location: Canton OH Project Number: 01373995

HA#		Material Description
C-1		Roof Core (Upper Roof)
C-2		Roof Core (Upper Roof)
C-3		Roof Core (Shingle/Tar)
C-4		Roof Core (Shingle/Tar)
C-5		Roof Core (Lower Roof)
C-6		Roof Core (Lower Roof)
C-7		Roof Core (Entrance Roof)
C-8		Roof Core (Entrance Roof)
F-1		Roof Flashing (Upper Roof)
F-2		Roof Flashing (Upper Roof)
F-3		Roof Flashing (Lower Roof)
F-4		Roof Flashing (Lower Roof)
F-5		Roof Flashing (Entrance Roof)
F-6		Roof Flashing (Entrance Roof)

Drawings

ROOF - BACK OF BLDG



Drawing Type:	Asbestos Sample Locations
Project Name:	**SMHA** **Shortridge Villa Apts.**
Project Location:	4533 Stephen Circle NW Canton, OH 44718
PSI Project:	01373995-3
Project Manager:	Martin Kurkul
Inspector:	Alec Benedetti
Sampled Date:	September 22, 2023

Legend:

ID# Sample Location

General Notes: Not to scale

intertek psi
5555 Canal Road • Cleveland, Ohio 44125
Phone 216-447-1335 • Fax 216-642-7008

ROOF - FRONT ENTRANCE

Drawing Type:	Asbestos Sample Locations
Project Name:	**SMHA** **Shortridge Villa Apts.**
Project Location:	4533 Stephen Circle NW Canton, OH 44718
PSI Project:	01373995-3
Project Manager:	Martin Kurkul
Inspector:	Alec Benedetti
Sampled Date:	September 22, 2023

Legend:

ID# Sample Location

General Notes: Not to scale

intertek psi
5555 Canal Road • Cleveland, Ohio 44125
Phone 216-447-1335 • Fax 216-642-7008

Photographs

Photo 1: View of the upper flat roofing area (C-1, 2)

Photo 2: View of the upper flat roofing area Roof Flashing (F-1,2)

Photo 3: View of the upper flat roofing area Field/Core

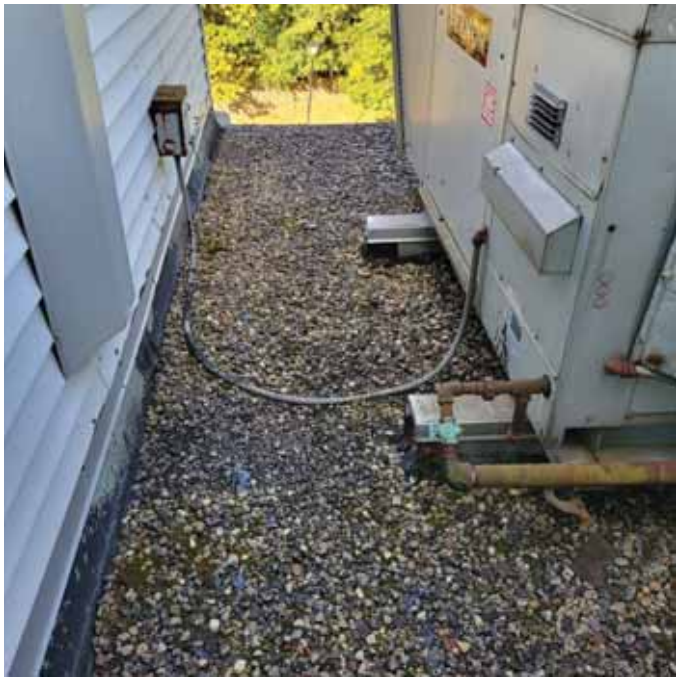


Photo 4: View of the upper flat roofing area

Photo 5: View of the upper flat roofing area

Photo 6: View of the upper flat roofing area

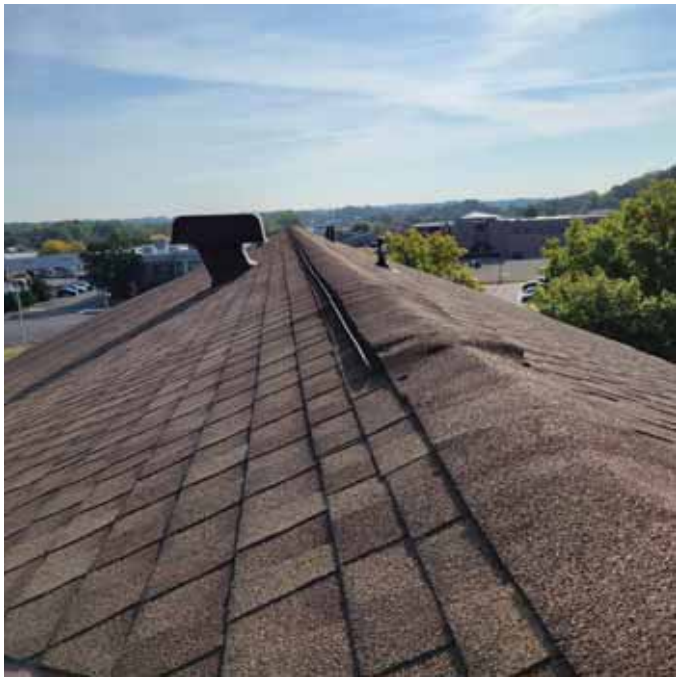


Photo 7: View of the upper shingled roofing areas

Photo 8: View of the upper shingled roofing areas

Photo 9: View of the upper shingled roofing areas and tar(C-3,4)

Photo 10: View of the upper shingled roofing areas and tar

Photo 11: View of the upper shingled roofing areas

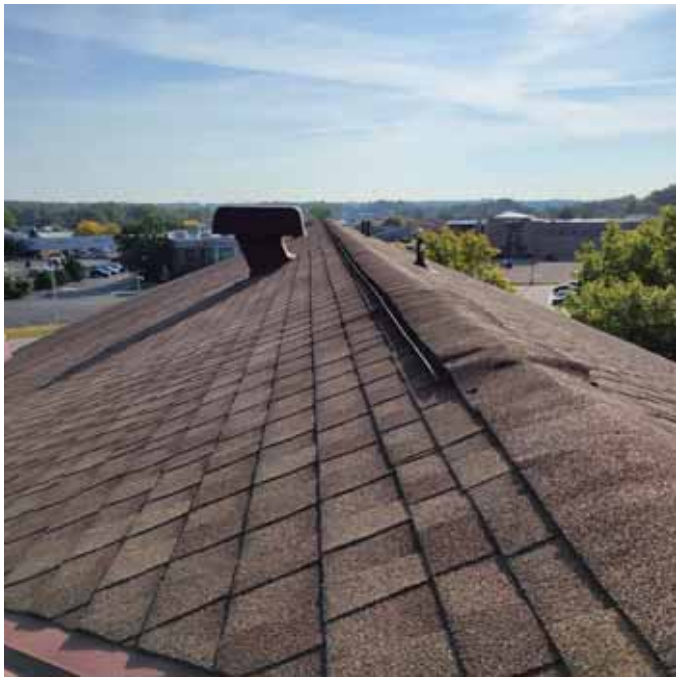


Photo 12: View of the upper shingled roofing areas

Photo 13: View of the lower roof areas (C-5,6)

Photo 14: View of the lower roof flashings (F-3,4)

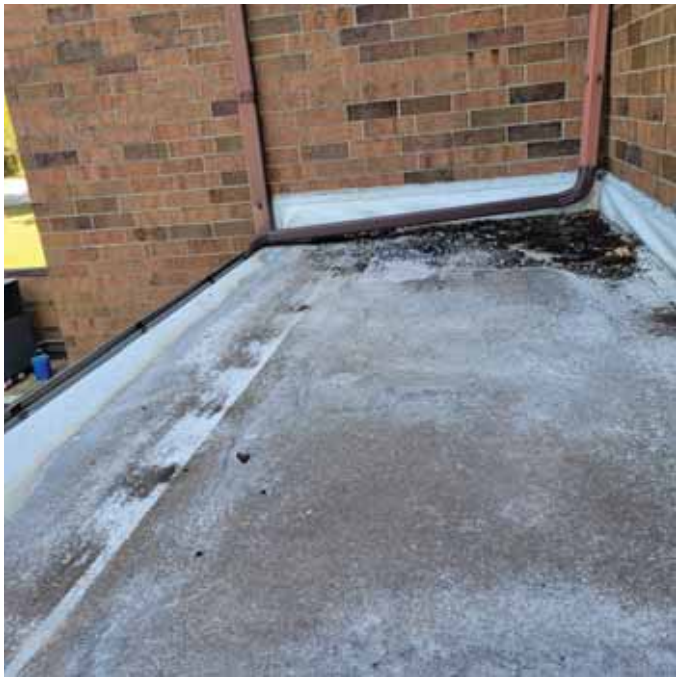


Photo 15: View of the lower roof areas

Photo 16: View of the lower roof areas

Photo 17: View of the lower roof areas

Photo 18: View of the lower roof areas

Photo 19: View of the lower roof areas

Photo 20: View of the lower roof areas

Photo 21: View of the front entrance roof flashings (F-5,6) and field/core (C-7,8)

Laboratory Accreditations

AIHA Laboratory Accreditation Programs, LLC

acknowledges that

Eurofins CEI, Inc.

730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA LAP), LLC accreditation to the ISO/IEC 17025:2017 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

☑	**INDUSTRIAL HYGIENE**	Accreditation Expires: April 01, 2025
☐	**ENVIRONMENTAL LEAD**	Accreditation Expires:
☑	**ENVIRONMENTAL MICROBIOLOGY**	Accreditation Expires: April 01, 2025
☐	**FOOD**	Accreditation Expires:
☐	**UNIQUE SCOPES**	Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2017 and AIHA LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Cheryl O. Morton

Cheryl O Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Revision20: 06/07/2022

Date Issued: 03/01/2023

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

Eurofins CEI, Inc.
730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025
Issue Date: 03/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Environmental Microbiology Laboratory Accreditation Program (EMLAP)

Initial Accreditation Date: 03/01/2013

EMLAP Scope Category	Field of Testing (FOT)	Component, parameter or characteristic tested	Method	Method Description *(for internal methods only)*
Fungal	Air - Direct Examination	Spore Trap	Method 110	In House: Quantifying and Identifying Airborne Fungi Spores from Spore Traps
Fungal	Bulk - Direct Examination	Bulk	Method 120	In House: Identifying Fungi Spores from Tape Lifts/Bulk/Swab Samples
Fungal	Surface - Direct Examination	Surface	Method 120	In House: Identifying Fungi Spores from Tape Lifts/Bulk/Swab Samples

A complete listing of currently accredited EMLAP laboratories is available on the AIHA LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

AIHA Laboratory Accreditation Programs, LLC

SCOPE OF ACCREDITATION

Eurofins CEI, Inc.
730 SE Maynard Rd Cary, NC 27511-5720

Laboratory ID: LAP-103025
Issue Date: 03/01/2023

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

Industrial Hygiene Laboratory Accreditation Program (IHLAP)

Initial Accreditation Date: 03/01/2013

IHLAP Scope Category	Field of Testing (FOT)	Technology sub-type/Detector	Published Reference Method/Title of In-house Method	Component, parameter or characteristic tested
Asbestos/Fiber Microscopy Core	Phase Contrast Microscopy (PCM)	-	NIOSH 7400	Asbestos/Fibers

A complete listing of currently accredited IHLAP laboratories is available on the AIHA LAP, LLC website at: *http://www.aihaaccreditedlabs.org*

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899

March 31, 2023

Tianbao Bai
Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511

NVLAP Lab Code: 101768-0

Dear Dr. Bai,

Thank you for continuing your accreditation for Asbestos Fiber Analysis under the National Voluntary Laboratory Accreditation Program (NVLAP). This accreditation is effective until March 31, 2024, provided that your laboratory continues to comply with the accreditation requirements contained in the NVLAP Procedures.

Your updated accreditation documents are enclosed. You may reproduce these documents in their entirety and use the NVLAP symbol and/or term to reference your accredited status in accordance with the requirements published in NIST Handbook 150, 1.8. Accreditation does not relieve your laboratory from observing and complying with any applicable existing laws and/or regulations.

We are pleased to have you participate in NVLAP and look forward to your continued association with this program. If you have any questions concerning your NVLAP accreditation, please direct them to Shelby Conyers, Program Manager, Laboratory Accreditation Program, National Institute of Standards and Technology, 100 Bureau Dr. Stop 2140, Gaithersburg, MD 20899-2140; .

Sincerely,

Dana S. Leaman, Chief
National Voluntary Laboratory Accreditation Program

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101768-0

Eurofins CEI, Inc.

Cary, NC

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

Asbestos Fiber Analysis

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

2023-04-01 through 2024-03-31

Effective Dates

For the National Voluntary Laboratory Accreditation Program

National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511
Dr. Tianbao Bai
Phone: 919-481-1413 Fax: 919-481-1442
Email: tianbao.bai@eurofinset.com
http://www.eurofinsus.com/CEI

ASBESTOS FIBER ANALYSIS **NVLAP LAB CODE 101768-0**

Bulk Asbestos Analysis

Code	*Description*
18/A01	EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples
18/A03	EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

Airborne Asbestos Analysis

Code	*Description*
18/A02	U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.

For the National Voluntary Laboratory Accreditation Program

ANAB
ANSI National Accreditation Board

CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511

Fulfills the requirements of

ISO/IEC 17025:2017

and

U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (DoD QSM V5.4)

In the field of

TESTING

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

R. Douglas Leonard Jr., VP, PILR SBU
Expiry Date: 1 February 2025
Certificate Number: ADE-3176

ANAB
ANSI National Accreditation Board

ilac-MRA

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

ANAB
ANSI National Accreditation Board

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

and

U.S. Department of Defense (DoD) Quality Systems Manual for Environmental Laboratories (DoD QSM V5.4)

Eurofins CEI, Inc.
730 SE Maynard Road
Cary, NC 27511
Tianbao Bai, Ph.D
919-481-1413

TESTING

Valid to: **February 1, 2025** Certificate Number: **ADE-3176**

Environmental

Non-Potable Water		
Technology	**Method**	**Analyte**
TEM	EPA 100.2	Asbestos
Solids and Chemicals		
Technology	**Method**	**Analyte**
TEM	EPA 600/R-93-116	Asbestos
PLM	EPA 600/R-93-116	Asbestos
Air and Emissions		
Technology	**Method**	**Analyte**
TEM	EPA AHERA	Asbestos
PCM	NIOSH 7400	Asbestos
Drinking Water		
Technology	**Method**	**Analyte**
TEM	EPA 100.2	Asbestos

1. This scope is formatted as part of a single document including Certificate of Accreditation No. ADE-3176.

R. Douglas Leonard Jr., VP, PILR SBU

Inspector Accreditations

TSi TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540959 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Alec Benedetti

XXX-XX-7167

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hutter	7/12/24	7/12/23	7/12/2023	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **23 TSI 540972 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Anne M. Vogel, Director

7/14/2023

Alec Benedetti
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36461
Expiration Date: 8/17/2024

Dear Alec Benedetti:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Brandon M. Schwendeman
Brandon Schwendeman
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

50 West Town Street • Suite 700 • P.O. Box 1049 • Columbus, OH 43216-1049
epa.ohio.gov • (614) 644-3020 • (614) 644-3184 (fax)

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Building Inspector Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Building Inspector Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hletter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415323 ir**

TSI TRAINING SERVICES INTERNATIONAL

Asbestos Management Planner Refresher

Certificate

This is to certify

Martin F. Kurkul Jr.

XXX-XX-9700

has attended and successfully completed the Asbestos Hazard Emergency Response Act mandatory course for the Asbestos Management Planner Refresher and has passed an examination in that course with a minimum score of 70% or better. Training was in accordance with 40 CFR Part 763 (AHERA). The above student received the requisite training for asbestos accreditation under Title II of the Toxic Substances Control Act and State of Indiana requirements under 326 IAC 18-2 and Chapter 3745-22 Ohio Administrative Code. and the Illinois Department of Public Health (IDPH) under section 855.120 of Title 77. IDPH recognition based on student request.

Robert Hetter	10/13/23	10/13/22	10/13/2022	Cleveland, OH
Training Manager	Expiration Date	Date(s) of Course	Examination Date	Course Location

33150 Lakeland Blvd.
Cleveland, OH 44095
www.TSItraining.com

Course Certificate No. **22 TSI 415336 mpr**

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

11/29/2022

Martin Kurkul Jr.
Intertek PSI
5555 Canal Road
Cleveland, OH 44125

RE: Evaluation Specialist
Certification Number: ES36332
Expiration Date: 11/29/2023

Dear Martin Kurkul Jr.:

This letter and enclosed certification card approves your request to be certified as an asbestos Evaluation Specialist. You must present your card upon request at any project site while performing duties. Copies of cards are not acceptable as proof of certification.

This certification may be revoked by the Director of the Ohio Environmental Protection Agency (EPA) for violation of any of the requirements of 3745-22 or 3745-20 of the Ohio Administrative Code.

If you have any questions, please contact the Asbestos Program at 614-644-0226 or by email at asbestoslicensing@epa.ohio.gov.

Sincerely,

Joshua S. Koch
Manager, Business Operations Support Section
Ohio EPA - Division of Air Pollution Control

.O. Box 1049 • Columbus, OH 43216-1049
4-3020 • (614) 644-3184 (fax)