Prepared for

General Services Administration
Denver, CO 80225

FINAL SPECIFICATIONS
(Issued for Construction)
March 31st, 2026

RONALD N. DAVIES FEDERAL BUILDING
3th Floor TI
GRAND FORKS, ND

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and drawing conventions.
7. Miscellaneous provisions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: **3rd Floor Tenant Improvement**

1. Project Location: **Ronald N. Davies Federal Building Courthouse, 102 N. 4th St., Grand Forks, North Dakota.**

B. Owner: US General Services Administration .

1. Owner's Representative: Kevin Spruell

C. Architect: Design Edge, PC.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Demolition of Existing Interior Construction, Hazardous Material Abatement, New Interior Construction, including Mechanical, Electrical, Plumbing, and Fire Alarm Systems.

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 WORK UNDER SEPARATE CONTRACTS

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

B. Subsequent Work: Tenant will award separate contract(s) for the following additional work to be performed at site following Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.

1. Systems Furniture: Installation of new work stations and furniture where indicated on the drawings..

1.5 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.6 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner and other Tenants will occupy site and existing adjacent spaces within building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.

2. Notify Owner not less than 72hours in advance of activities that will affect Owner's operations.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7am a.m. to 5 p.m., Monday through Friday, unless otherwise indicated. After Hours work will be permitted with applicable security clearances.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor-air intakes.

F. Controlled Substances: Use of tobacco products and other controlled substances within the existing building is not permitted.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

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

1. Imperative mood and streamlined language are generally used in the Specifications. 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.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

MISCELLANEOUS PROVISIONS

A. It is expected that hazardous material particularly asbestos will be encountered per the attached Limited Asbestos and Lead-Based Paint Survey Report dated February 9, 2018 (Terracon Project No. M1177147, and supplemental Limited Asbestos Survey report completed July 21, 2025

B. Abatement of hazardous material will be part of this contract.

END OF SECTION 011000

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

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

1.2 DEFINITIONS

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

1.3 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 CSI Form 13.1A .
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination 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 substitution 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 and 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. Research reports evidencing compliance with building code in effect for Project, from ICC-ES or appropriate authority having jurisdiction over the project.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. 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.
m. 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.

1.4 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.

PART 2 - PRODUCTS

2.1 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:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution will not adversely affect Contractor's construction schedule.

c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of the Work.
e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice of Award.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.
f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. 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 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

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

1. Coordination drawings.
2. Requests for Information (RFIs).
3. Project Web site.
4. Project meetings.

B. Related Requirements:
1. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Use CSI Form 1.5A. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Architect.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.

13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: AIA Document G716 or Software-generated form with substantially the same content as indicated above, acceptable to Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the Contract Time or the Contract Sum.
   e. Requests for interpretation of Architect's actions on submittals.
   f. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly . Use CSI Log Form 13.2B. or Use software log that is part of Project Web site. Include the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Tentative construction schedule.
    b. Phasing.
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Procedures for processing field decisions and Change Orders.
    f. Procedures for RFIs.
    g. Procedures for testing and inspecting.
    h. Procedures for processing Applications for Payment.
    i. Distribution of the Contract Documents.
    j. Submittal procedures.
    k. Preparation of record documents.
    l. Use of the premises.
    m. Work restrictions.
    n. Working hours.
    o. Owner's occupancy requirements.
    p. Responsibility for temporary facilities and controls.
    q. Procedures for moisture and mold control.
    r. Procedures for disruptions and shutdowns.
    s. Construction waste management and recycling.
    t. Parking availability.
    u. Office, work, and storage areas.
    v. Equipment deliveries and priorities.
    w. First aid.
    x. Security.
    y. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

   a. Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Review of mockups.
   i. Possible conflicts.
   j. Compatibility problems.
   k. Time schedules.
   l. Weather limitations.
   m. Manufacturer's written instructions.
   n. Warranty requirements.
   o. Compatibility of materials.
   p. Acceptability of substrates.
   q. Temporary facilities and controls.
   r. Space and access limitations.
   s. Regulations of authorities having jurisdiction.
   t. Testing and inspecting requirements.
   u. Installation procedures.
   v. Coordination with other work.
   w. Required performance results.
   x. Protection of adjacent work.
   y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at biweekly intervals.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in

planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

      1) Review schedule for next period.

   b. Review present and future needs of each entity present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Progress cleaning.
      10) Quality and work standards.
      11) Status of correction of deficient items.
      12) Field observations.
      13) Status of RFIs.
      14) Status of proposal requests.
      15) Pending changes.
      16) Status of Change Orders.
      17) Pending claims and disputes.
      18) Documentation of information for payment requests.

3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

END OF SECTION 013100

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Requirements:
   1. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
   2. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action.

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.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

   a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
   b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement .
   c. .

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. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow 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 10 business days 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 7 business days for review of each resubmittal.

D. Paper Submittals: In general, paper submittals are discouraged. Provide all submittals in electronic format. If absolutely required due to the nature of the submittal provide the following format:
1. Place a permanent label or title block on each submittal item for identification.

2. Indicate name of firm or entity that prepared each submittal on label or title block.
3. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
4. Include the following information for processing and recording action taken:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.
    e. Name of subcontractor.
    f. Name of supplier.
    g. Name of manufacturer.
    h. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

    i. Number and title of appropriate Specification Section.
    j. Drawing number and detail references, as appropriate.
    k. Location(s) where product is to be installed, as appropriate.
    l. Other necessary identification.

5. Additional Paper 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.

    a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return without review submittals received from sources other than Contractor.
    a. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

        1) Project name.
        2) Date.
        3) Destination (To:).
        4) Source (From:).
        5) Name and address of Architect.
        6) Name of Construction Manager.
        7) Name of Contractor.
        8) Name of firm or entity that prepared submittal.
        9) Names of subcontractor, manufacturer, and supplier.
        10) Category and type of submittal.
        11) Submittal purpose and description.
        12) Specification Section number and title.
        13) Specification paragraph number or drawing designation and generic name for each of multiple items.
        14) Drawing number and detail references, as appropriate.
        15) Indication of full or partial submittal.
        16) Transmittal number, numbered consecutively.
        17) Submittal and transmittal distribution record.
        18) Remarks.
        19) Signature of transmitter.

E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.

    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.

4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:

    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Names of subcontractor, manufacturer, and supplier.
    h. Category and type of submittal.
    i. Submittal purpose and description.
    j. Specification Section number and title.
    k. Specification paragraph number or drawing designation and generic name for each of multiple items.
    l. Drawing number and detail references, as appropriate.
    m. Location(s) where product is to be installed, as appropriate.
    n. Related physical samples submitted directly.
    o. Indication of full or partial submittal.
    p. Transmittal number, numbered consecutively.
    q. Submittal and transmittal distribution record.
    r. Other necessary identification.
    s. Remarks.

F. Options: Identify options requiring selection by Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

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

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

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Submit electronic submittals via email as PDF electronic files.

2. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document fileAction Submittals: Submit Five paper copies of each submittal unless otherwise indicated. Architect will return two copies.
3. Informational Submittals: Submit Five paper copies of each submittal unless otherwise indicated. Architect will not return copies.
4. Certificates and Certifications Submittals: Provide 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.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

   a. Manufacturer's 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. For equipment, include the following in addition to the above, as applicable:

   a. Wiring diagrams showing 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 or concurrent with Samples.
6. Submit Product Data in the following format:
   a. Six paper copies of Product Data unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

   a. 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. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 24 x 36 inches
3. Submit Shop Drawings in the following format:
   a. Six opaque copies of each submittal. Architect will retain two copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of applicable Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit Two 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.

5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit Two sets of Samples. Architect will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.

1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. 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. Submit product schedule in the following format:

a. PDF electronic file.

F. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

G. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."

J. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

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

L. 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.

M. 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.

N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

P. 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.

Q. 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.

R. 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.

S. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 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 not sufficient 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 electronic file and three 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.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action 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**. Submittals that have not been reviewed by the contractor will be returned without Architect's review.**

B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. 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.

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

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 013600 – CONSTRUCTION-OPERATIONS BUILDING INFORMATION EXCHANGE (COBie)

PART 1 GENERAL

1.1 SUMMARY

A. Construction to Operations Building information exchange (COBie) is a standard to manage important building data such as equipment lists, product data sheets, warranties, spare parts lists, and preventive maintenance schedules. This information is then used to support operations, maintenance, and asset management once the building is in service. The use of COBie is intended to replace the paper, CDs, flash drives, and other media typically delivered at the end of construction projects and supplants the need for a months-long manual data entry period once a building is already being operated.

B. The COBie standard is the minimum information requirement for facilities maintenance (FM) handover packages. The standard is captured in an electronic file based on Microsoft Excel.

C. The Building Information Modeling (BIM) and Computerized Maintenance Management Systems (CMMS) software applications referenced in the Owner's Project Requirements (OPR) come with the ability to read and write COBie data in MS Excel and other file formats. The Contractor shall maintain an all-encompassing COBie implementation approach, from Concept Design through Construction, with regard to the alignment/integration of standards and data for BIM, COBie, and NASA's Maximo CMMS.

D. A COBie file is a standardized Microsoft Excel workbook that contains important information about the facility including such things as equipment lists, product data sheets, warranties, spare parts lists, and preventive maintenance schedules. The file contains a series of tabs and each tab has a series of columns. Project-specific COBie files must always be identical in structure to the COBie standard template. These files must always retain the series of worksheet tabs as found in the COBie standard template, and the tabs must always retain the same order as the template. Similarly, within each tab, all the columns in the template must be retained and kept in the same order as the template. Changing of the tabs or the columns within each of the tabs is not allowed.

E. COBie standards define the meaning of each tab and the meaning of each column within each tab. It also defines milestones for when each tab and each column within a tab are required during the course of the design and construction of a building. Changing the meaning of tabs, columns, or milestones is not allowed.

F. The COBie requirement applies to projects during planning, design, construction, turnover and project closeout and operations.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.
   1. U.S. General Services Administration BIM and COBie Guidance and Documents:
   2. NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)
   3. NBIMS-US V3: (2014) United States National Building Information Model

Standard

4. INTERNATIONAL STANDARDS ORGANIZATION (ISO): ISO 16739: (2013) Industry Foundation Classes (IFC) for data sharing in the construction and facility management industries

1.3 ADMINISTRATIVE REQUIREMENTS

Failure to provide approved COBie-Specific Submittals (COBie-Specific Submittals) will result in the following withholdings. The withholding will be released following the compliance with the specifications and Government approval of the required COBie data set. These withholdings reflect the cost to the Government to independently recreate the required COBie Data and Document Files.

A. Construction Mobilization Phase

An additional *($15,000)* withholding will be held if COBie data is not provided upon delivery of the Construction Documents Set.

B. Construction 60% Complete

An additional *($20,000)* withholding will be held if COBie data is not provided at the earlier of 70% fiscal completion or four months prior to the date of beneficial occupancy.

C. Beneficial Occupancy Phase

An additional *($25,000)* withholding will be held if COBie data is not provided on the date of beneficial occupancy.

D. Fiscal Completion

An additional *($30,000)* withholding will be held if COBie data is not provided with the as-built drawings at fiscal completion of the project.

1.4 SUBMITTALS

Submit the following in accordance with 01 33 00 SUBMITTAL PROCEDURES:

A. COBie Information Delivery Plan

Provide a COBie Information Delivery Plan using the Building Smart Alliance COBie Information Delivery Plan Template to document their plan to complete the work described in this specification.

B. COBie-Specific Submittals

Provide COBie-Specific submittals at the major project milestones listed below:

1. COBie File Construction Mobilization Phase COBie File

2. Construction 60% Fiscally Complete COBie File

3. Beneficial Occupancy Phase COBie File

4. Fiscal Completion Phase COBie File

C. COBie-Formatted Submittals

Provide the following submittals, required elsewhere in this contract, in COBie-compatible format:

1. As-Installed Equipment
2. Schedule As-Installed
3. Warranty Tags Approved Submittal
4. Door Schedule
5. Hardware Schedule
6. Signage Schedule
7. Warranty Certificates and Data
8. Operations and Maintenance Manuals

D. COBie Equipment Photographs

Provide a complete set of installed equipment photographs with each of the following COBie-Specific Submittals:

1. Construction 60% Fiscally Complete COBie File
2. Beneficial Occupancy Phase COBie File
3. Fiscal Completion Phase COBie File

1.5 QUALITY ASSURANCE

A. COBie-Specific Submittal Quality

Meet the following minimum quality standards for all COBie-Specific Submittals:

1. COBie Guide Public Release 3 version 5 – General Requirements

   The UNITED STATES NATIONAL BUILDING INFORMATION MODEL STANDARD (NBIMSUS) defines the minimum quality standards for COBie submittals.

2. GSA National Computerized Maintenance Management System (N-CMAMS) Minimum COBie Requirements

3. COBie Data File – Facility Asset Scope

   Provide one COBie-Specific Submittal Set for each facility identified in a project.

4. COBie Data File – Site Asset Scope

   Provide one COBie-Specific Submittal Set for SITE assets, if SITE assets are used by multiple facilities.

5. COBie Data File - Reported Errors

   Update all COBie Data files until zero errors are reported from the relevant COBie Quality Control Report.

6. COBie Data File– Reported Warnings

   Document and submit, for Government Approval, the reason for warnings reported from the relevant COBie Quality Control Report.

7. COBie Data File – Construction Phase

B. COBie-Formatted Submittal Quality

Meet the minimum quality standards for all COBie-Formatted Submittals as noted below.

1. COBie-Formatted Submittal Contents: Ensure that the information contained in COBie-Formatted Submittals accurately reflects the current state of the as-built project at the time of the submission.

C. COBie Data File Quality

Ensure that location of all linked COBie in either COBie-Specific Submittals or COBie-Formatted Submittals conform to the following standards:

1. Document Files: Utilize PDF files for all document-based files. Create documents to be compatible with Adobe Acrobat Reader Version 6.0 and later. Provide files from original sources, text-searchable, and saved in “Standard” resolution.

2. Photograph Files: Utilize JPEG files for all photograph and image files. A maximum resolution of 300 Pixels Per Inch/Dots Per Inch (PPI/DPI). Publish 5x7 photographs

3. File Linking: Link COBie Document Files and Photographs to the relevant records in the COBie Data File per COBie specification.

4. File Protection: Do not restrict COBie Data Files, Document Files or Photographic Files from being modified or copied.

5. Manufacturer-Specific Documents: Provide document files for each product family based on the manufacturer on-line documentation. Do not submit document files containing multiple product catalogs from the same manufacturer, or product data from multiple manufacturers.

6. Operations and Maintenance Manual Documents: To support the production of electronic Operations & Maintenance manuals, either (a) split single manufacturer files to ensure that the file contains information from on a single product type and split specific manufacturers’ product type specific files to ensure that the file contains information pertaining to a single submittal type or (b) provide electronic bookmarks within these documents that link to product type and submittal type.

1.6 INFORMATION DELIVERY, STORAGE, AND HANDLING

A. Delivery Method – COBie-Specific Submittals: Provide COBie-Specific Submittals on electronic storage media and GSA's Project Management System as directed. Document this format in the COBie Information Delivery Plan. Specifically address the following minimum requirements in the COBie Information Delivery Plan:

1. Electronic Media: Provide data on either disk-based (CD or DVD) or portable hard drive media. Select and apply technology used for COBie electronic data transmission to ensure that the full data set is provided on one single "disk" or "drive." Document the selection of disk-based on drive-based media in the COBie Information Delivery Plan.

a. Disk-Based Media: If disk-based media are provided, then apply a printed label to the data disk and list the name of the project, project location, contract number, design firm or prime Contractor company's name, title of submission, and security classification of the data contained on the disk on the label. Also include on the label the name and contact information of the individual who produced the final data disk to ensure that any problems with the data or media can be easily resolved.

b. Drive-Based Media: If drive-based media are provided, then legibly label the drive content and date on the outside of the drive. Include the phrase "COBie DATA" and the appropriate contract or task order number. Also include the name and contact information of the individual who produced the final data disk to ensure that any problems with the data or media may be easily resolved.

2. Transmission of Physical Media: When media is not hand-delivered by Contractor personnel, it shall be delivered using an accountable commercial delivery service. Provide the tracking number and request a return receipt acknowledging the Government office receiving the package. Wrap all Storage media within a separate envelope with a full mailing address in case the exterior envelope is damaged.

B. Encryption: Encrypt COBie data as directed by Area/Resident/Project Office Engineer. Document the encryption to be used in the COBie Information Delivery Plan.

PART 2 PRODUCTS

2.1 GOVERNMENT FURNISHED INFORMATION

2.2 APPLICATION

A. COBie Information Delivery Plan Application: Within *(90)* calendar days following Notice to Proceed provide an Information Delivery Plan describing the roles and responsibilities, software and services that will be used to capture COBie data including, but not be limited to, the topics below:

1. COBie Quality Control Responsibility: Designate one individual and one alternate party responsible for the production of COBie submittals in accordance with this specification.

2. COBie Creation and Capture Responsibility: Prepare a table that identifies any party responsible for the creation and/or capture of each specific COBie data

element.

3. COTS Software Selection: Identify each COTS software product used in the production of COBie submittals.

4. Authoritative Sources: Describe the way in which the selected COTS Software are used to collect COBie data and provide that data in the appropriate COBie-Specific Submittals or COBie-Formatted Submittals

5. Multiple Data Source Merging: Explicitly identify how the COTS Software and/or COBie Tool Kit are used to merge electronic information provided by multiple design consultants and/or subcontractors.

6. Request to Eliminate Paper Manuals: If approved by the Government, COBie deliverables may be submitted in lieu of paper-based handover documents specified elsewhere in this contract. COBie Implementation Plan shall document the results of any request to eliminate paper-based handover documents.

A. COBie-Specific Submittal Set

Provide a complete set of files in each COBie-Specific Submittal Set as described below:

1. COBie Data File: Prove one COBie Data File with each COBie-Specific Submittal Set.

2. COBie Data File Quality Control Report: Provide one COBie Quality Control Report with each COBie-Specific Submittal Set, Quality Control report for Design or Construction depending on the phase of the COBie Data File.

3. COBie Document Files: Create individual Portable Document Format (PDF) files for each approved submittal and link in the COBie Data File to the related facility information.

B. COBie-Specific Submittal Application

Provide COBie-Specific Submittal Sets as described below, as documented in the COBie Information Delivery Plan:

1. Construction Mobilization Phase: Within 90 days following construction Notice to Proceed the Contractor shall provide a Construction Mobilization COBie file that contains the same information found on the Construction Documents (100% Design) COBie file as updated to include all contract amendments. The Contractor's Information Delivery Plan discusses the re-use and updating of this COBie file as the basis for the delivery of subsequent COBie deliverables.

2. Construction 60% Fiscal Complete Phase: Provide a Construction 60% Fiscal Complete COBie file updated to reflect the current state of the project at this milestone. This COBie deliverable reflects all changes to COBie data resulting from executed modifications at the time of the submission of this file. The Information Delivery Plan discusses the re-use and updating of this COBie file as the basis for the delivery of subsequent COBie deliverables.

3. Beneficial Occupancy Phase: Provide a Beneficial Occupancy Phase COBie file updated to reflect the current state of the project at the time of Beneficial Occupancy. This COBie deliverable reflects all changes to COBie data resulting from executed modifications at the time of the submission of this file. Include COBie data needed to inform the facility manager of the maintenance activity conducted prior to Beneficial Occupancy. The Information Delivery Plan discusses the re-use and updating of this COBie file as the basis for the delivery of subsequent COBie deliverables.

4. Fiscal Completion Phase: Provide a Fiscal Completion Phase COBie file updated to reflect the current state of the project at the time of Fiscal Completion. Include COBie data needed to inform the facility manager of the maintenance activity conducted between the previous COBie deliverable and this final COBie deliverable. This file must fully reflect the as-built conditions and include changes required to COBie data resulting from all contract amendments and modifications.

C. COBie-Formatted Submittal Application

Provide COBie-Formatted Submittal Sets as described below, as documented in the COBie Information Delivery Plan:

1. Approved Submittals: Prepare and submit monthly updates of all approved submittal line items. At a minimum provide the following information in COBie format: product type, specification section, document name, document type, document website location. Also provide a compressed, but legible, PDF of the approved submittal document. If the submittal document contains multiple sub-types of documents, split the file into documents each of a category (Single Purpose Files).

2. Diagnostic Testing Plans: Prepare and submit information on preventative maintenance testing requirements. Provide the following minimum information in COBie format: product type, manufacturer, model number, test name, expected test values and/or testing limits, actual test value.

3. As-Installed Equipment Schedule: Submit monthly updates of installed equipment. Provide the following minimum information in COBie format: component name, installed manufacturer, installed model number, serial number, manufacturer's catalog reference number, room number from which equipment is operated, specification section and paragraph, installation date, and start-up date.

4. As-Installed Warranty Tags: Submit monthly updates of information provided on installed equipment tags. Provide the following minimum information in COBie format: product or material name, product type, manufacturer name, installed model number, serial number, responsible contractor contact information, warranty start date, warranty duration, warranty contact information, warranty response time priority code.

5. Parts Schedule: Submit information on spare parts. Provide the following minimum information in COBie format: product type, manufacturer, model number, manufacturers part number, part name, minimum stock level, replacement ordering level, part supplier, supplier part number, and related manufacturer or commissioning agent documents.

6. Warranty Certificates and Data: Submit information on product warranties. Provide the following minimum information in COBie format: product type, manufacturer contact information, model number, suppliers contact information, warranty guarantors contact information, warranty description, durations, warranty start date, expected warranty response time, and related manufacturer warranty certificate documents.

7. Preventative Maintenance Plans: Submit information on preventative maintenance. Provide the following minimum information in COBie format: product type, manufacturer, model number, job name, job description, required tools, materials, and training, and related manufacturer or commissioning agent documentation.

8. Repair and Replacement Plans: Submit information on product and system troubleshooting, repair, and replacement. Provide the following minimum information in COBie format: product type, manufacturer, model number, job name, job description, required tools, materials, and training, and related manufacturer or commissioning agent documentation.

9. Operations and Maintenance Manuals: Submit two sets of electronic operations and maintenance manuals.. Update any documents to ensure that each manufacturer catalog is either split into individual files, or referenced by electronic bookmark and noted in the COBie Documents as a linked data file. The need to provide paper copies of this electronic set of O&M manuals will be determined by the Government and documented in the COBie Implementation Plan.

10. Door Schedule: Submit information on installed doors. Provide the following minimum information in COBie format: door type, door number, door size, frame type, fire rating, door finish, operating room number, connecting room number.

11. Hardware Schedule: Submit information on installed hardware. Provide the following minimum information in COBie format: hardware set type, installed manufacturer, installed model number, manufacturer’s catalog reference number, quantity used, size, finish, BHMA finish designation, fire rating, key control number.

PART 3 EXECUTION

3.1 COBie DELIVERABLE

A. The final deliverable is subject to GSA's acceptance. When a GSA or GSA representative (e.g. commissioning agent or GSA COBie expert) determines that the final deliverable is unacceptable due to incompleteness, the Contractor shall provide additional information to obtain GSA's final approval at no extra cost.

END OF SECTION 01 36 00

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 DEFINITIONS

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

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

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

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

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.2 INDUSTRY STANDARDS

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

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

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

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

1.3 ABBREVIATIONS AND ACRONYMS

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

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

AA	Aluminum Association (The)
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABAA	Air Barrier Association of America
ABMA	American Bearing Manufacturers Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AF&PA	American Forest & Paper Association
AGA	American Gas Association
AHAM	Association of Home Appliance Manufacturers
AHRI	Air-Conditioning, Heating, andRefrigeration Institute, The
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction

AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALSC	American Lumber Standard Committee, Incorporated
AMCA	Air Movement and Control Association International, Inc.
ANSI	American National Standards Institute
AOSA	Association of Official Seed Analysts, Inc.
APA	APA - The Engineered Wood Association
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASCE/SEI	American Society of Civil Engineers/Structural Engineering Institute (See ASCE)
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International (American Society of Mechanical Engineers International)
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International (American Society for Testing and Materials International)
ATIS	Alliance for Telecommunications Industry Solutions
AWCMA	American Window Covering Manufacturers Association (Now WCMA)
AWCI	Association of the Wall and Ceiling Industry
AWI	Architectural Woodwork Institute
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association)
AWS	American Welding Society

AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
BICSI	BICSI, Inc.
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International)
BISSC	Baking Industry Sanitation Standards Committee
CCC	Carpet Cushion Council
CDA	Copper Development Association
CEA	Consumer Electronics Association
CFFA	Chemical Fabrics & Film Association, Inc.
CGA	Compressed Gas Association
CIMA	Cellulose Insulation Manufacturers Association
CISCA	Ceilings & Interior Systems Construction Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CRI	Carpet and Rug Institute (The)
CRSI	Concrete Reinforcing Steel Institute
CSA	CSA International (Formerly: IAS - International Approval Services)
CSI	Construction Specifications Institute (The)
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute)
DHI	Door and Hardware Institute
ECA	Electrical Components Association
EIA	Electronic Industries Alliance

EIMA	EIFS Industry Members Association
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
ESD	ESD Association (Electrostatic Discharge Association)
ETL SEMCO	Intertek ETL SEMCO (Formerly: ITS - Intertek Testing Service NA)
FM Approvals	FM Approvals LLC
FM Global	FM Global (Formerly: FMG - FM Global)
FSA	Fluid Sealing Association
FSC	Forest Stewardship Council
GA	Gypsum Association
GANA	Glass Association of North America
GRI	(Part of GSI)
GS	Green Seal
GSI	Geosynthetic Institute
HI	Hydronics Institute
HI/GAMA	Hydronics Institute/Gas Appliance Manufacturers Association Division of Air-Conditioning, Heating, and Refrigeration Institute (AHRI)
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
HPW	H. P. White Laboratory, Inc.
IAPSC	International Association of Professional Security Consultants
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association, Inc.
ICRI	International Concrete Repair Institute, Inc.

ICPA	International Cast Polymer Association
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IES	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGMA	Insulating Glass Manufacturers Alliance
ISA	Instrumentation, Systems, and Automation Society, The
ISO	International Organization for Standardization
ISSFA	International Solid Surface Fabricators Association
ITS	Intertek Testing Service NA (Now ETL SEMCO)
ITU	International Telecommunication Union
LGSEA	Light Gauge Steel Engineers Association
LMA	Laminating Materials Association (Now part of CPA)
LPI	Lightning Protection Institute
MCA	Metal Construction Association
MFMA	Maple Flooring Manufacturers Association, Inc.
MFMA	Metal Framing Manufacturers Association, Inc.
MH	Material Handling (Now MHIA)
MHIA	Material Handling Industry of America
MIA	Marble Institute of America
MPI	Master Painters Institute
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers

NACE	NACE International (National Association of Corrosion Engineers International)
NADCA	National Air Duct Cleaners Association
NAIMA	North American Insulation Manufacturers Association
NBGQA	National Building Granite Quarries Association, Inc.
NCMA	National Concrete Masonry Association
NCTA	National Cable & Telecommunications Association
NEBB	National Environmental Balancing Bureau
NECA	National Electrical Contractors Association
NeLMA	Northeastern Lumber Manufacturers' Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFHS	National Federation of State High School Associations
NFPA	NFPA (National Fire Protection Association)
NFRC	National Fenestration Rating Council
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association)
NOMMA	National Ornamental & Miscellaneous Metals Association
NRCA	National Roofing Contractors Association
NRMCA	National Ready Mixed Concrete Association
NSF	NSF International (National Sanitation Foundation International)
NSSGA	National Stone, Sand & Gravel Association
NTMA	National Terrazzo & Mosaic Association, Inc. (The)

NWFA	National Wood Flooring Association
PCI	Precast/Prestressed Concrete Institute
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
SAE	SAE International
SCAQMD	South Coast Air Quality Management District
SCTE	Society of Cable Telecommunications Engineers
SDI	Steel Deck Institute
SDI	Steel Door Institute
SEFA	Scientific Equipment and Furniture Association
SEI/ASCE	Structural Engineering Institute/American Society of Civil Engineers (See ASCE)
SIA	Security Industry Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMPTE	Society of Motion Picture and Television Engineers
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)
SPIB	Southern Pine Inspection Bureau (The)
SPRI	Single Ply Roofing Industry

SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
SWI	Steel Window Institute
SWPA	Submersible Wastewater Pump Association
TCA	Tilt-Up Concrete Association
TCNA	Tile Council of North America, Inc.
TEMA	Tubular Exchanger Manufacturers Association
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance
TMS	The Masonry Society
TPI	Truss Plate Institute, Inc.
TPI	Turfgrass Producers International
TRI	Tile Roofing Institute
UL	Underwriters Laboratories Inc.
UNI	Uni-Bell PVC Pipe Association
USGBC	U.S. Green Building Council
USITT	United States Institute for Theatre Technology, Inc.
WASTEC	Waste Equipment Technology Association
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Window Covering Manufacturers Association
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California)
WMMPA	Wood Moulding & Millwork Producers Association
WSRCA	Western States Roofing Contractors Association
WWPA	Western Wood Products Association

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

IAPMO International Association of Plumbing and Mechanical Officials

ICC International Code Council

ICC-ES ICC Evaluation Service, Inc.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

COE Army Corps of Engineers

CPSC Consumer Product Safety Commission

DOC Department of Commerce

DOD Department of Defense

DOE Department of Energy

EPA Environmental Protection Agency

FAA Federal Aviation Administration

FCC Federal Communications Commission

FDA Food and Drug Administration

GSA General Services Administration

HUD Department of Housing and Urban Development

LBL Lawrence Berkeley National Laboratory

NCHRP National Cooperative Highway Research Program
(See TRB)

NIST National Institute of Standards and Technology

OSHA Occupational Safety & Health Administration

PBS Public Buildings Service
(See GSA)

PHS Office of Public Health and Science

RUS Rural Utilities Service

(See USDA)

SD State Department

TRB Transportation Research Board

USDA Department of Agriculture

USP U.S. Pharmacopeia

USPS Postal Service

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

ADAAG Americans with Disabilities Act (ADA)
Architectural Barriers Act (ABA)
Accessibility Guidelines for Buildings and Facilities
Available from U.S. Access Board

CFR Code of Federal Regulations
Available from Government Printing Office

DOD Department of Defense Military Specifications and Standards
Available from Department of Defense Single Stock Point

DSCC Defense Supply Center Columbus
(See FS)

FED-STD Federal Standard
(See FS)

FS Federal Specification
Available from Department of Defense Single Stock Point

Available from Defense Standardization Program

Available from General Services Administration

Available from National Institute of Building Sciences

FTMS Federal Test Method Standard
(See FS)

MIL (See MILSPEC)

MIL-STD (See MILSPEC)

MILSPEC Military Specification and Standards

Available from Department of Defense Single Stock Point

UFAS Uniform Federal Accessibility Standards

TENANT REFERENCED STANDARDS:

A. United States Government

1. USC

2. ANSI

a. ANSI A117.1-2017: Accessible and Usable Buildings

3. CFR

a. 29 CFR 1910: Occupational Safety and Health Standards (OSHA)

b. 29 CFR 1926: Safety and Health Regulations for Construction

c. 29 CFR 1960: OSHA Basic Program Elements for Federal Employees

d. 36 CFR 1911: Americans with Disabilities Act Accessibility Guidelines (ADAAG); Architectural Barriers Act Accessibility Standards (ABAAS)

e. 47 CFR 1.1307: Telecommunications Act of 1996, FCC 04-281 Bulletin 65, OSHA 1926.54 Non-Ionizing Radiation

4. ODNI

a. ICD 705 (U): Intelligence Community Directive, Sensitive Compartmented Information Facilities

b. ICS 705-1 (U): Intelligence Community Standard, Physical and Technical Security Standard for Sensitive Compartmented Information Facilities

c. IC Tech Spec 705 (U): Intelligence Community Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities

5. DOD

a. CNSSAM TEMPEST/01.13 (U): Committee on National Security Systems Advisory Memorandum, Red/Black Installation Guidance (FOUO)

b. CNSSI No. 7003, (U): Committee on National Security Systems Instruction - Protective Distribution System (PDS)

6. ISC: Interagency Security Committee Security Design Criteria, General Services Administration (GSA)

B. Industry

1. AABC

2. ACCA

3. ATIS

a. ANSI/ATIS T1.403-1995: Network-to-Customer Installation, DS1 Metallic Interface

4. ACGIH

a. ACGIH 2098 Industrial Ventilation: A Manual of Recommended Practice for Design, 26th Edition Plates VS-85-01, and VS-85-02

5. ACI

a. ACI 301: Specifications for Structural Concrete

6. ALI

a. ANSI/ALI ALCTV:2011: Standard for Automotive Lifts: Safety Requirements for Construction, Testing, and Validation

7. ASHRAE

a. ASHRAE Handbooks (Fundamentals: HVAC Applications HVAC Systems, and Equipment)

b. ANSI/ASHRAE 52.2: Methods of Testing General Ventilation Air Cleaning Devices for Removal by Particle Size

c. ANSI/ASHRAE Standard 55: Thermal Environmental Conditions for Human Occupancy

d. ANSI/ASHRAE Standard 62.1: Ventilation for Acceptable Indoor Air Quality

e. ANSI/ASHRAE/IES Standard 90.1: Energy Standard for Buildings Except Low-Rise Residential Buildings

f. ANSI/ASHRAE Standard 111: Practices for Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems

g. ANSI/ASHRAE Standard 135: BACnet: A Data Communication Protocol for Building Automation and Control Networks

h. ANSI/ASHRAE/IES Standard 189.1: Standard for the Design of High Performance Green Buildings

8. ASME

a. ASME A17.1/CSA B44: Safety Code for Elevators

b. ASME A17.3: Safety Code for Existing Elevators

c. ASME Y14.100: Engineering Drawing Practices

9. ASSP

a. ANSI/ASSP A1264.2: Standard for the Provisions of Slip Resistance on Walking/Working Surfaces

10. ASTM

a. ASTM F 1679: Standard Test Method for Using a Variable Incidence Tribometer

b. ASTM F 2508: Standard Practice for Validation, Calibration, and Certification of Walkway Tribometers Using Reference Surfaces

11. AWI

a. AWS Architectural Woodwork Standards, 2nd edition

12. BICSI

a. BICSI 005-2016: Electronic Safety and Security (ESS) System Design and Implementation Best Practices

b. ANSI/BICSI 002-2019: Data Center Design and Implementation Best Practices

13. ICC

a. IMC

b. IBC

c. IFC

d. IPC

e. IECC

f. IGCC

14. MSS

15. NEC

16. NFPA

a. NFPA 1: Fire Code

b. NFPA 10: Standard for Portable Fire Extinguishers

c. NFPA 13: Standard for the Installation of Sprinkler Systems

d. NFPA 14: Standard for the Installation of Standpipes and Hose Systems

e. NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection

f. NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances

g. NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems

h. NFPA 30: Flammable and Combustible Liquids Code

i. NFPA 30A: Code for Motor Fuel Dispensing Facilities and Repair Garages

j. NFPA 70: National Electrical Code®

k. NFPA 72: National Fire Alarm and Signaling Code

l. NFPA 80: Standard for Fire Doors and Other Opening Protectives

m. NFPA 88A: Standard for Parking Structures

n. NFPA 90A: Standard for the Installation of Air-Conditioning and Ventilating System

o. NFPA 101: Life Safety Code®

p. NFPA 110: Standard for Emergency and Standby Power Systems

q. NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations

r. NFPA 780: Standard for the Installation of Lightning Protection Systems

17. SMACNA

a. SMACNA HVAC Systems: Duct Design

b. SMACNA 1966 Duct Construction Standards: Metal and Flexible

c. SMACNA 1972 CD HVAC Air Duct Leakage: Test Manual

d. SMACNA 1819 Fire, Smoke, and Radiation Damper: Installation Guide for HVAC Systems

18. TIA

a. ANSI/TIA 445-78 Rev. B: FOTP-78 IEC 60793-1-40: Optical Fibres, Part 1-40, Measurement Methods and Test Procedures Attenuation

b. ANSI/TIA-526-7 Rev. A: Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant

c. ANSI/TIA-526-14 Rev. C: Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant

d. ANSI/TIA-568.1 Rev. D: Commercial Building Telecommunications Infrastructure Standard

e. ANSI/TIA-568.2 Rev. D: Balanced Twisted-Pair Telecommunications Cabling and Components Standards

f. ANSI/TIA-568.3 Rev. D: Optical Fiber Cabling and Components Standard

g. ANSI/TIA-568.4 Rev. D: Broadband Coaxial Cabling and Components Standard

h. ANSI/TIA-569 Rev. D: Telecommunications Pathways and Spaces

i. ANSI/TIA-606 Rev. C: Administration Standard for Telecommunications Infrastructure

j. ANSI/TIA-607 Rev. C: Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises

k. ANSI/TIA-758 Rev. B: Customer-Owned Outside Plant Telecommunications Infrastructure Standard

l. ANSI/TIA-942 Rev. B: Telecommunications Infrastructure Standard for Data Centers

19. TUI

END OF SECTION 014200

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Division 01 Section "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

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

1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable

product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. Refer to Divisions 02 through 33. Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated].
    b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
    b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

    1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

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

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner-installed products.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.
9. Correction of the Work.

B. Related Requirements:

1. Division 01 Section "Summary" for limits on use of Project site.

1.2 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection

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

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings. If discrepancies are discovered, notify Architect promptly.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

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

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

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

C. Temporary Support: Provide temporary support of work to be cut.

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

E. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

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

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

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 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. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
2. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

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

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.4 MAINTENANCE MATERIAL SUBMITTALS

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

1.5 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. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
2. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Submit maintenance material submittals specified in individual Divisions 02 through 33 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 where applicable.

    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 Architect's signature for receipt of submittals.

4. Submit test/adjust/balance records.
5. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.
6. 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. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
6. Complete final cleaning requirements, including touchup painting.
7. Touch up 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. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "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. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 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. Use CSI Form 14.1A.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in the following format:

   a. MS Excel electronic file. Architect will return annotated copy.

1.8 SUBMITTAL OF PROJECT WARRANTIES

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

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

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) 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.
4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

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

PART 2 - PRODUCTS

2.1 MATERIALS

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

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: 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. Remove tools, construction equipment, machinery, and surplus material from Project site.
   b. Remove debris and surface dust from limited access spaces, including roofs, plenums, , attics, and similar spaces.
   c. Sweep concrete floors broom clean in unoccupied spaces.
   d. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
   e. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

f. Remove labels that are not permanent.
g. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
h. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
i. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
j. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
k. Leave Project clean and ready for occupancy.

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 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Requirements:

1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
2. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit marked-up record prints as follows.

B. Submit PDF electronic files of scanned record prints and one set(s) of file printsRecord Specifications: Submit one paper copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised Drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

b. Record data as soon as possible after obtaining it.
c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:

a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file .

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.

3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as annotated PDF electronic file .

2.4 MISCELLANEOUS RECORD SUBMITTALS

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

B. Format: Submit miscellaneous record submittals as PDF electronic file .

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's and Construction Manager's reference during normal working hours.

END OF SECTION 017839

SECTION 024119 - SELECTIVE STRUCTURE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or recycled.

1.2 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: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

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

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

1.3 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site .

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For refrigerant recovery technician.

B. Predemolition Photographs or Video: Submit before Work begins.

C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician.

1.5 CLOSEOUT SUBMITTALS

A. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.6 QUALITY ASSURANCE

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

1.7 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: Hazardous materials are present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

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.

1.8 WARRANTY

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

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. 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.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs .

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: 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. Arrange to shut off indicated utilities with utility companies.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed.

a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

C. Refrigerant: Remove refrigerant from mechanical equipment to be selectively demolished according to 40 CFR 82 and regulations of authorities having jurisdiction.

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.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. 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.
2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
3. 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.
4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

B. 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 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be 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.
4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

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

3.6 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 024119

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Plywood backing panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:
   1. Fire-retardant-treated wood.

PART 2 - PRODUCTS

2.1 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.
   1. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
   2. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841.

B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

C. Application: Treat all miscellaneous carpentry unless otherwise indicated. items indicated on Drawings, and the following:
   1. Concealed blocking.
   2. Plywood backing panels.

2.2 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.

B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber of any species.

C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine, No. 3 grade; SPIB.
2. Northern species, No. 3 Common grade; NLGA.

2.3 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: DOC PS 1, , fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness. **Fire Retardant rating markings must be visible upon completion. Do not paint over markings-mask to ensure the markings remain visible.**

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M .

B. Power-Driven Fasteners: NES NER-272.

C. Screws for Fastening to Metal Framing: ASTM C 1002 , length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit.

B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

C. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.

E. Do not splice structural members between supports unless otherwise indicated.

F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.
2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

END OF SECTION 061053

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Plastic-laminate cabinets.
   2. Plastic-laminate countertops.
   3. Solid-surfacing-material countertops.
   4. Shop finishing of woodwork.

B. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips unless concealed within other construction before woodwork installation.

1.2 ACTION SUBMITTALS

A. Product Data: For solid-surfacing material cabinet hardware and accessories handrail brackets and finishing materials and processes.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

C. Samples:
   1. Plastic-laminates, for each type, color, pattern, and surface finish.
   2. Solid-surfacing materials.

1.3 INFORMATIONAL SUBMITTALS

A. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates .

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of woodwork.

B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards."

   1. Provide AWI Quality Certification Program labels and certificates for woodwork.

1.5 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood Products:
   1. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.
   2. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
   3. Softwood Plywood: DOC PS 1, Medium Density Overlay.

B. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.

C. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.

D. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. E. I. du Pont de Nemours and Company.
      b. Wilsonart International; Div. of Premark International, Inc.

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural woodwork, except for items specified in Division 08 Section "Door Hardware (Scheduled by Describing Products)."

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening.

C. Back-Mounted Pulls: BHMA A156.9, B02011.

D. Wire Pulls: Back mounted, solid metal, 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

E. Catches: Magnetic catches, BHMA A156.9, B03141, Push-in magnetic catches, BHMA A156.9, B03131, Roller catches, BHMA A156.9, B03071 Drawer Slides: BHMA A156.9, B05091.
   1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.
   2. Box Drawer Slides: Grade 1HD-100; for drawers not more than 6 inches (150 mm) high and 24 inches (600 mm) wide.

F. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
   1. Satin Stainless Steel: BHMA 630.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

B. Adhesives, General: Adhesives shall not contain urea formaldehyde.

2.4 FABRICATION

A. General: Complete fabrication to maximum extent possible before shipment to Project site. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

B. Plastic-Laminate Cabinets:

   1. AWI Type of Cabinet Construction: Flush overlay .
   2. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate as follows:

      a. Horizontal Surfaces Other Than Tops: Grade HGS .
      b. Postformed Surfaces: Grade HGP.
      c. Vertical Surfaces: Grade VGS.
      d. Edges: PVC tape, 0.018-inch (0.460-mm) minimum thickness, matching laminate in color, pattern, and finish.

   3. Materials for Semiexposed Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, Grade VGS Thermoset decorative panels.
   4. Drawer Sides and Backs: Thermoset decorative panels.
   5. Drawer Bottoms: Thermoset decorative panels.

C. Colors, Patterns, and Finishes: As indicated on drawings.Plastic-Laminate Countertops:

   1. High-Pressure Decorative Laminate Grade: HGS .
   2. Colors, Patterns, and Finishes: . As indicated on drawings.
   3. Edge Treatment: Same as laminate cladding on horizontal surfaces .
   4. Core Material at Sinks: Particleboard made with exterior glue Medium-density fiberboard made with exterior glue or exterior-grade plywood.

D. Solid-Surfacing-Material Countertops:

   1. Solid-Surfacing-Material Thickness: 3/4 inch (19 mm).
   2. Colors, Patterns, and Finishes: As indicated by manufacturer's designations and indicated on drawings .
   3. Fabricate tops in one piece with shop-applied backsplashes . Comply with solid-surfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas. Examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

B. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

C. Install woodwork level, plumb, true, and straight to a tolerance of 1/8 inch in 96 inches. Shim as required with concealed shims.

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.

1. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish .

G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Calk space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

END OF SECTION 064023

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Latex joint sealants.
4. Acoustical joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Preconstruction compatibility and adhesion test reports.

C. Preconstruction field-adhesion test reports.

D. Field-adhesion test reports.

E. Warranties.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 WARRANTY

A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

2.2 SILICONE JOINT SEALANTS

A. Neutral-Curing Silicone Joint Sealant : ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. BASF Building Systems.
b. Dow Corning Corporation.
c. GE Advanced Materials - Silicones.
d. May National Associates, Inc.
e. Pecora Corporation.
f. Polymeric Systems, Inc.
g. Schnee-Morehead, Inc.
h. Sika Corporation; Construction Products Division.
i. Tremco Incorporated.

2. Type: Single component (S) or multicomponent (M).
3. Grade: Pourable (P) or nonsag (NS).
4. Class: 50 .
5. Uses Related to Exposure: Nontraffic (NT).

2.3 URETHANE JOINT SEALANTS

A. Urethane Joint Sealant : ASTM C 920.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. BASF Building Systems.
   b. Bostik, Inc.
   c. Pacific Polymers International, Inc.
   d. Pecora Corporation.
   e. Polymeric Systems, Inc.
   f. Sika Corporation; Construction Products Division.
   g. Tremco Incorporated.

2. Type: Single component (S) or multicomponent (M).
3. Grade: Pourable (P)] or nonsag (NS).
4. Class: 50 ,25.
5. Uses Related to Exposure: Traffic (T), Nontraffic (NT).

2.4 LATEX JOINT SEALANTS

A. Latex Joint Sealant : Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. BASF Building Systems.
   b. Bostik, Inc.
   c. May National Associates, Inc.
   d. Pecora Corporation.
   e. Schnee-Morehead, Inc.
   f. Tremco Incorporated.

2.5 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

   a. Pecora Corporation.
   b. USG Corporation.

2.6 JOINT SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) Type O (open-cell material) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

1. Remove laitance and form-release agents from concrete.
2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.2 INSTALLATION

A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.

F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.

G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.3 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
   a. Perimeter joints between interior wall surfaces and frames of interior doors windows

2. Joint Sealant: Latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors .

B. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Sealant Location:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.

2. Joint Sealant: Silicone.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors .

C. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces In acoustical rated walls and openings

1. Joint Location:

a. Acoustical joints where indicated.
b. Other joints as indicated.

2. Joint Sealant: Acoustical.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Flush Acoustical Steel Doors.

B. Steel frames.

1.2 RELATED SECTIONS

A. Division 09 Section “Paints and Coatings.”

1.3 REFERENCES

A. ANSI/NFPA 80 - Standard for Fire Doors and Windows.

B. ANSI/DHI A 115.IG - Installation Guide for Doors and Hardware.

C. ANSI/BHMA A 156 - Specifications for Hardware Preparations in Standard Steel Doors and Frames.

D. ANSI/BHMA A156.7 - Hinge Template Dimensions.

E. ANSI A 250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcing.

F. ANSI/SDI A 250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames.

G. ANSI A 250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.

H. ANSI A 250.11 - Recommended Erection Instructions for Steel Frames.

I. ASTM A 366/A 366M - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

J. ASTM A 1008/1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.

K. ASTM E 90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

L. ASTM E 152 - Standard Methods of Fire Tests of Door Assemblies.

M. ASTM E 413 - Classification for Rating Sound Insulation.

N. SDI-111 - Recommended Standard Details for Steel Doors & Frames.

O. NAAMM/HHMA-820 TN01 - Grouting Hollow Metal Frames

P. NAAMM/HHMA-820 TN03 - Guidelines for Glazing of Hollow Metal Transom, Sidelight and Windows

Q. NAAMM/HMMA-840 - Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

R. ANSI/UL 10C - Standard for Safety for Positive Pressure Fire Tests of Door Assemblies.

S. NFPA 252 - Standard Method of Fire Tests of Door Assemblies.

T. Federal Emergency Management Agency (FEMA) 361 Guidelines.

U. UL - Building Materials Directory; Underwriters Laboratories Inc.

V. WH - Certification Listings; Warnock Hersey International Inc.

1.4 SUBMITTALS

A. Submit under provisions of Section 013000.

B. Product Data: Manufacturer's standard details and catalog data indicating compliance with referenced standards, and manufacturer's installation instructions.

C. Certificates:
   1. Manufacturer's certification that products comply with referenced standards.
   2. Evidence of manufacturer's membership in the Steel Door Institute.

D. Shop Drawings: Door, frame, and hardware schedule in accordance with SDI 111D. Show types, quantities, dimensions, specified performance, and design criteria, materials and similar data for each opening required.
   1. Indicate frame configuration, anchor types and spacing, location of cutouts for hardware, reinforcement, to ensure doors and frames are properly prepared and coordinated to receive hardware.
   2. Indicate door elevations, internal reinforcement, closure method, and cutouts for glass lights and louvers.

1.5 QUALITY ASSURANCE

A. Supplier: A direct account of the manufacturer who has on permanent staff, an Architectural Hardware Consultant (AHC), a Certified Door Consultant (CDC) or an Architectural Openings Consultant (AOC), who will be available to consult with the Architect and Contractor regarding matters affecting the door and frame openings.

B. Fire Rated Doors and Frames: Underwriters' Laboratories and Warnock Hersey, labeled fire doors and frames:
   1. Label fire doors and frames in accordance with Underwriters Laboratories standard UL10C, and Positive Pressure Fire Tests of Door Assemblies.
   2. Construct and install doors and frames to comply with current issue of ANSI/NFPA 80.
   3. Manufacture Underwriters' Laboratories labeled doors and frames under the UL factory inspection program and in strict compliance to UL procedures, and provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
   4. Manufacture Intertek Testing Services / Warnock Hersey labeled doors and frames under the ITS/WH factory inspection program and in strict compliance to ITS/WH procedures, and provide the degree of fire protection capability indicated by the opening class.
   5. Manufacture FM labeled doors and frames under the FM factory inspection program and in strict compliance to FM procedures, and provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
   6. Affix a physical label or approved marking to each fire door or fire door frame, at an authorized facility as evidence of compliance with procedures of the labeling agency. Label embossment is not permitted.
   7. Conform to applicable codes for fire ratings. It is the intent of this specification that hardware and its application comply or exceed the standards for labeled openings. In case of conflict between types required for fire protection, furnish type required by NFPA and UL.
   8. Fire door assemblies in exit enclosures and exit passageways; maximum transmitted temperature end point rating of not more than 250 degrees F (121 degrees C) above ambient at the end of 30 minutes of the standard fire test exposure.

C. Manufacturer Qualifications: Member of the Steel Door Institute.

D. Installer: Minimum five years documented experience installing products specified this Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Handle, store and protect products in accordance with the manufacturers printed instructions and ANSI/SDI A250.10 and NAAMM/HMMA 840.

B. Store doors vertically in a dry area, under a proper vented cover. Place on 4 inch (102 mm) high wood sills to prevent rust or damage. Provide 1/4-inch (6 mm) space between doors to promote air circulation.

C. Store frames in an upright position with heads uppermost under cover. Place on 4 inch (102 mm) high wood sills to prevent rust and damage. Store assembled frames five units maximum in a stack with 2 inch (51 mm) space between frames to promote air circulation.

D. Do not use non-vented plastic or canvas shelters to prevent rust or damage.

E. Should wrappers become wet, remove immediately.

1.7 COORDINATION

A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items.

B. Coordinate Work with frame opening construction, door and hardware installation.

C. Sequence installation to accommodate required door hardware.

D. Verify field dimensions for factory assembled frames prior to fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Acceptable Manufacturer:

a. Steelcraft, Div. of IR Security Technologies.

b. Curries, Div of ASSA Abloy.

c. Ceco, Div of ASSA Abloy

A. Requests for substitutions will be considered in accordance with provisions of Section 016000.
1. Provide all steel doors and frames from a single manufacturer.

2.2 DOORS

2.3 DOOR FRAMES

A. General: Construct interior metal door frames to the following designs and gages;
1. Interior Frames in stud wall construction: cold rolled steel, ASTM A 1008/A 1008M.
2. Thickness:16 gage (1.3 mm).

B. Flush Steel Frames:
1. Acceptable Product: Steelcraft F-Series.
2. Performance:
a. Physical performance: 5 million cycles per ANSI A250.4
3. Construction: Factory or local dealer shop-welded three sided frames. Doors in Wall type 1,4,and 5 can be knock down type hollow metal frames.
4. Face welded: Weld miter joints between head and jamb faces completely along their length either internally or externally. The remaining elements of the frame profile (soffit, stop and rabbets) are not welded. Grind and finish face joints smooth.
5. Profile: 2 inches (51 mm) face dimension with 5/8 inch (16 mm) high stop, and types and throat dimensions indicated on the Door Schedule.
6. Provide following reinforcement and accessories:
a. Hinge Preparation for 4-1/2 inches (114 mm) high, standard weight, or heavy weight, full mortise hinges; with plaster guard.

b. Hinge Preparation for 5 inch (127 mm) high, universal standard weight, or heavy weight, full mortise hinges; with plaster guard.
c. Strike preparation (single doors) for 4-7/8 inch (123 mm) universal strike; with plaster guard.
d. Silencers. Prepare frames to receive inserted type door silencers, 3 per strike jamb on single doors, and 2 per head for pair of doors. Stick-on silencers are not permitted.

C. Fire Rating: Supply frame units bearing Labels for fire ratings indicated in Door Schedule for the locations indicated.

D. Finish: Factory prime finish in accordance with ANSI A 250.10.

2.4 ACCESSORIES

A. Anchors: Manufacturer's standard framing anchors, specified in manufacturer's printed installation instructions for project conditions.

B. Astragals for pairs of doors: Manufacturer's standard for labeled and non-labeled openings.

C. Plaster Guards: Same material as door frame, minimum 24 gage (0.6 mm) minimum; provide for all strike boxes.

D. Silencers: Resilient rubber, Inserted type, three per strike jamb for single openings and two per head for paired openings. Stick-on silencers shall not be permitted except on hollow metal framing systems.

E. Glazing: Specified in Section 088000.

2.5 FABRICATION

A. Steel Frames:

B. Factory or local dealer shop-welded frames: Head and jamb intersecting corners mitered at 45 degrees, with back welded joints ground smooth.
1. Continuous face weld the joint between the head and jamb faces along their length either internally or externally. Grind, prime paint, and finish smooth face joints with no visible face seams.
2. Externally weld, grind, prime paint, and finish smooth face joints at meeting mullions or between mullions and other frame members per a current copy of ANSI/SDI A250.8.
3. Provide temporary steel spreaders (welded to the jambs at each rabbet of door openings) on welded frames during shipment. Remove temporary steel spreaders prior to installation of the frame.

2.6 FINISHES

A. Chemical Treatment: Treat steel surfaces to promote paint adhesion.

B. Factory Prime Finish: Meet requirements of ANSI A250.10.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are acceptable before beginning installation of frames.
   1. Verify that completed openings to receive knock-down wrap-around frames are of correct size and thickness.
   2. Verify that completed concrete or masonry openings to receive butt type frames are of correct size.

B. Do not begin installation until conditions have been properly prepared.

C. Correct unacceptable conditions before proceeding with installation.

3.2 INSTALLATION

A. Install doors and frames in accordance with manufacturer's printed installation instructions and with Steel Door Institute's recommended erection instructions for steel frames ANSI A250.11 and NAAMM/HMMA 840.

B. Fire Doors and Frames: Install in accordance with ANSI/NFPA 80.

C. Remove temporary steel spreaders prior to installation of frames.

D. Set frames accurately in position; plumb, align and brace until permanent anchors are set. After wall construction is complete, remove temporary wood spreaders.
   1. Field splice only at approved locations indicated on the shop drawings.
   2. Weld, grind, and finish as required to conceal evidence of splicing on exposed faces.

E. Provide full height 3/8 inch (9.5 mm) to 1-1/2 inch (38 mm) thick strip of polystyrene foam blocking at frames requiring grouting where continuous hinges are specified. Apply the strip to the back of the frame, where the hinge is to be installed, to facilitate field drilling or tapping.

F. Glaze and seal exterior transom, sidelight and window frames in accordance with HMMA-820 TN03.

G. Apply hardware in accordance with hardware manufacturers' instructions and Section 087100 of these Specifications. Install hardware with only factory-provided fasteners. Install silencers. Adjust door installation to provide uniform clearance at head and jambs, to achieve maximum operational effectiveness and appearance.

3.3 ADJUST AND CLEAN

A. Adjust doors for proper operation, free from binding or other defects.

B. Clean and restore soiled surfaces. Remove scraps and debris and leave site in a clean condition.

C. Prime Coat Touch-Up: Immediately after erection, sand smooth rusted or damaged areas of prime coat, and apply touch-up of compatible air-drying primer.

3.4 PROTECTION

A. Protect installed products and finished surfaces from damage during construction.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Sections:

1. Division 088816 Vision Glass" for glass view panels in flush wood doors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door indicated. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.

1. Indicate dimensions and locations of mortises and holes for hardware.
2. Indicate dimensions and locations of cutouts.
3. Indicate requirements for veneer matching.
4. Indicate doors to be factory finished and finish requirements.
5. Indicate fire-protection ratings for fire-rated doors.

C. Samples: For factory-finished doors.

1.3 QUALITY ASSURANCE

A. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

B. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Algoma Hardwoods, Inc.
2. Ampco, Inc.
3. Eagle Plywood & Door Manufacturing, Inc.
4. Eggers Industries.
5. Graham; an Assa Abloy Group company.
6. Ideal Architectural Doors & Plywood.
7. Marlite.
8. Marshfield Door Systems, Inc.
9. Mohawk Flush Doors, Inc.; a Masonite company.
10. VT Industries Inc.

2.2 DOOR CONSTRUCTION, GENERAL

A. WDMA I.S.1-A Performance Grade:

1. Heavy Duty unless otherwise indicated.

B. Structural-Composite-Lumber-Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.
   a. Screw Withdrawal, Edge: 400 lbf.

C. Fire-Protection-Rated Doors: Provide core specified or mineral core as needed to provide fire-protection rating indicated.

1. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
2. Pairs: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Comply with specified requirements for exposed edges.

2.3 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors :

1. Grade: Premium, with Grade A faces.
2. Species: White oak.
3. Match between Veneer Leaves: Slip match.
4. Assembly of Veneer Leaves on Door Faces: Running match.
5. Core: Structural composite lumber.
6. Construction: Five or seven plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

1. Comply with requirements in NFPA 80 for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied.

C. Openings: Cut and trim openings through doors in factory.

1. Light Openings: Trim openings with moldings of material and profile indicated.

2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Finish doors at factory that are indicated to receive transparent finish. Field finish doors indicated to receive opaque finish.

C. Use only paints and coatings that comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Transparent Finish:

1. Grade: Custom.
2. Finish: AWI conversion varnish or catalyzed polyurethane system.
3. Staining: As selected by Architect from manufacturer's full range .
4. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hardware: For installation, see Division 08 Section "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.

1. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.

Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

1. Clearances: Provide 1/8 inch at heads, jambs, and between pairs of doors. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.

    a. Comply with NFPA 80 for fire-rated doors.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Access doors and frames for walls.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each door face material.

D. Schedule: Types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES FOR WALLS.

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Access Panel Solutions.
2. Acudor Products, Inc.
3. Babcock-Davis.
4. Cendrex Inc.
5. Elmdor/Stoneman Manufacturing Co.; Div. of Acorn Engineering Co.
6. Jensen Industries; Div. of Broan-Nutone, LLC.
7. J. L. Industries, Inc.; Div. of Activar Construction Products Group.
8. Larsen's Manufacturing Company.

B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

C. Flush Access Doors with Exposed Flanges :

1. Basis-of-Design Product: Accudor UF 5000
2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
3. Locations: Wall .

4. Door Size: 24x24
5. Steel Sheet for Door: 16 ga door, 16 ga mounting frame

   a. Finish: White Alkyd Baking Enamel factory primed for paint.
6. Frame Material: Same material, and finish as door .
7. Hinges: Manufacturer's standard .
8. Hardware: Cylinder Lock and Key.

D. Hardware:
   1. Lock: Cylinder.

2.2 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access doors to types of supports indicated.

2.3 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. Steel and Metallic-Coated-Steel Finishes:

   1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.2 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware for:

a. Swinging doors.

B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 07 Section “Joint Sealants” for sealant requirements applicable to threshold installation specified in this section.
2. Division 26 sections for connections to electrical power system and for low-voltage wiring.
3. Division 28 sections for coordination with other components of electronic access control system.

1.3 REFERENCES

A. UL - Underwriters Laboratories

1. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

C. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.4 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.

B. Action Submittals:

1. Product Data: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:

   a. Wiring Diagrams: For power, signal, and control wiring and including:
      1) Details of interface of electrified door hardware and building safety and security systems.
      2) Schematic diagram of systems that interface with electrified door hardware.
      3) Point-to-point wiring.
      4) Risers.

3. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

   a. Door Index; include door number, heading number, and Architects hardware set number.
   b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
   c. Type, style, function, size, and finish of each hardware item.
   d. Name and manufacturer of each item.
   e. Fastenings and other pertinent information.
   f. Location of each hardware set cross-referenced to indications on Drawings.
   g. Explanation of all abbreviations, symbols, and codes contained in schedule.
   h. Mounting locations for hardware.
   i. Door and frame sizes and materials.
   j. Name and phone number for local manufacturer's representative for each product.
   k. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches,

magnetic holders or closer/holder units, and access control components). Operational description should include how door will operate on egress, ingress, and fire and smoke alarm connection.

1) Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

4. Key Schedule:

   a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
   b. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
      1) Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

   f. Prepare key schedule by or under supervision of supplier, detailing Owner’s final keying instructions for locks.

5. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
2. Product Certificates for electrified door hardware, signed by manufacturer:

   a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Certificates of Compliance:

   a. Certificates of compliance for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
   b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
   c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.

4. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by qualified testing agency, for door hardware on doors located in accessible routes.
5. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data : Provide in accordance with Division 01 and include:

   a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
   b. Catalog pages for each product.
   c. Name, address, and phone number of local representative for each manufacturer.
   d. Parts list for each product.
   e. Final approved hardware schedule, edited to reflect conditions as-installed.
   f. Final keying schedule
   g. Copies of floor plans with keying nomenclature
   h. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
   i. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.5 QUALITY ASSURANCE

A. Product Substitutions: Comply with product requirements stated in Division 01 and as specified herein.

1. Where specific manufacturer's product is named and accompanied by "No Substitute," including make or model number or other designation, provide product specified. (Note: Certain products have been selected for their unique characteristics and particular project suitability.)

   a. Where no additional products or manufacturers are listed in product category, requirements for "No Substitute" govern product selection.

2. Where products indicate "acceptable manufacturers" or "acceptable manufacturers and products", provide product from specified manufacturers, subject to compliance with specified requirements and "Single Source Responsibility" requirements stated herein.

B. Supplier Qualifications and Responsibilities: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

4. Coordination Responsibility: Coordinate installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.

    a. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

C. Installer Qualifications: Qualified tradesmen, skilled in application of commercial grade hardware with record of successful in-service performance for installing door hardware similar in quantity, type, and quality to that indicated for this Project.

D. Architectural Hardware Consultant Qualifications: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
2. Can provide installation and technical data to Architect and other related subcontractors.
3. Can inspect and verify components are in working order upon completion of installation.
4. Capable of producing wiring diagrams.
5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

F. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release latch. Locks do not require use of key, tool, or special knowledge for operation.

G. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of wrist and that operate with force of not more than 5 lbf (22.2 N).
2. Maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
    b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.

3. Bevel raised thresholds with slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from open position of 70 degrees, door will take at least 3 seconds to move to 3 inches (75 mm) from latch, measured to leading edge of door.

H. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01.

1. Attendees: Owner, Contractor, Architect, Installer, and Supplier’s Architectural Hardware Consultant.
2. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
b. Preliminary key system schematic diagram.
c. Requirements for key control system.
d. Requirements for access control.
e. Address for delivery of keys.

I. Pre-installation Conference:

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

J. Coordination Conferences:

1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.

a. Attendees: Door hardware supplier, door hardware installer, Contractor.
b. After meeting, provide letter of compliance to Architect, indicating when meeting was held and who was in attendance.

2. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

a. Attendees: electrified door hardware supplier, doors and frames supplier, electrified door hardware installer, electrical subcontractor, Owner, Architect and Contractor.
b. After meeting, provide letter of compliance to Architect, indicating when coordination conference was held and who was in attendance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

2. Provide secure lock-up for door hardware delivered to Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

F. Deliver keys to Owner by registered mail or overnight package service.

1.7 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Direct shipments not permitted, unless approved by Contractor.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Years from date of Substantial Completion, for durations indicated.

a. Closers:
1) Mechanical: 25 years.

b. Exit Devices:
1) Electrified: 1 year.

c. Locksets:
1) Mechanical: 3 years.

2) Electrified: 1 year.

d. Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.9 MAINTENANCE

A. Maintenance Tools:

1. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and particular project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as ”Scheduled Manufacturer ” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

D. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

E. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.

2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

2.3 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Ives 5BB series
2. Acceptable Manufacturers and Products: Hager BB series, McKinney TA/T4A series,

B. Requirements:

1. Provide five-knuckle, ball bearing hinges conforming to ANSI/BHMA A156.1.
2. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

   a. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

3. 2 inches or thicker doors:

   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

4. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
5. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins

6. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.
7. Doors 36 inches (914 mm) wide or less furnish hinges 4-1/2 inches (114 mm) high; doors greater than 36 inches (914 mm) wide furnish hinges 5 inches (127 mm) high, heavy weight or standard weight as specified.

2.4 CONTINUOUS HINGES

A. Stainless Steel

1. Manufacturers:

    a. Scheduled Manufacturer: Ives
    b. Acceptable Manufacturers: Markar, Stanley

2. Requirements:

    a. Provide pin and barrel continuous hinges conforming to ANSI/BHMA A156.26, Grade 2.
    b. Provide pin and barrel continuous hinges fabricated from 14 gauge, type 304 stainless steel.
    c. Provide twin self-lubricated nylon bearings at each hinge knuckle, with 0.25-inch (6 mm) diameter stainless steel pin.
    d. Provide hinges capable of supporting door weights up to 600 pounds, and successfully tested for 1,500,000 cycles.
    e. On fire-rated doors, provide pin and barrel continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
    f. Provide pin and barrel continuous hinges with electrified options as scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware.
    g. Install hinges with fasteners supplied by manufacturer.
    h. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.5 ELECTRIC POWER TRANSFER

A. Manufacturers:

    a. See schedule

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.6 MORTISE LOCKS

A. Manufacturers and Products:

    a. See schedule

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Provide lock

case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.

2. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainless steel.
3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
4. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide a request to exit (RX) switch that is actuated with rotation of inside lever.
5. Provide motor based electrified locksets with electrified options as scheduled in the hardware sets and comply with the following requirements:

    a. Universal input voltage – single chassis accepts 12 or 24V DC to allow for changes in the field without changing lock chassis.
    b. Fail Safe/Fail Secure – changing mode between electrically locked (fail safe) and electrically unlocked (fail secure) is field selectable without opening the lock case
    c. Low maximum current draw – maximum 0.4 amps to allow for multiple locks on a single power supply.
    d. Low holding current – maximum 0.01 amps to produce minimal heat, eliminate "hot levers" in electrically locked applications, and to provide reliable operation in wood doors that provide minimal ventilation and air flow.
    e. Request to Exit Switch (RX) –
        1) Modular Design – provide electrified locks capable of using, adding, or changing a modular RX switch without opening the lock case.
        2) Monitoring – where scheduled, provide a request to exit (RX) switch that detects rotation of the inside lever.

    f. Connections – provide quick-connect Molex system standard.
    g. UL Listed – 3 hour fire door

6. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.

    a. See schedule

2.7 HIGH SECURITY LOCKS

A. Deadlocks:

1. Manufacturers and Products:

    a. See schedule

2.8 EXIT DEVICES

A. Manufacturer and Product:

    a. See schedule

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3-2014 Grade 1, UL listed for Panic Exit or Fire Exit Hardware.
2. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
3. Quiet Operation: Incorporate fluid damper or other device that eliminates noise of exit device operation.
4. Touchpad: Extend minimum of one half of door width, but not the full length of exit device rail. Provide end-cap with two-point attachment to door. Match exit device finish, stainless steel for US26, US26D, US28, US32, and US32D finishes; and for all other finishes, provide compatible finish to exit device. Provide compression springs in devices, latches, and outside trims or controls; tension springs prohibited.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrical requirements.
6. Provide exit devices with manufacturer's approved strikes.
7. Provide exit devices cut to door width and height. Locate exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
8. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
9. Provide UL labeled fire exit hardware for fire rated openings.
10. Provide electrified options as scheduled in the hardware sets.

2.9 POWER SUPPLIES

A. Manufacturers and Products:

   a. See schedule

B. Requirements:

1. Provide power supplies, recommended and approved by manufacturer of electrified locking component, for operation of electrified locks, electrified exit devices, magnetic locks, electric strikes, and other components requiring power supply.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply , and UL class 2 listed.
4. Options:

   a. Provide power supply, where specified, with internal capability of charging sealed backup batteries 24 VDC, in addition to operating DC load.
   b. Provide sealed batteries for battery back-up at each power supply where specified.
   c. Provide keyed power supply cabinet.

5. Provide power supply in an enclosure, complete, and requiring 120VAC to fused input.
6. Provide power supply with emergency release terminals, where specified, that allow release of all devices upon activation of fire alarm system complete with fire alarm input for initiating "no delay" exiting mode.

2.10 CYLINDERS

A. Manufacturers:

a. See schedule

B. Requirements:

1. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision, Section 12, Grade 1; permanent cylinders; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.

   a. High Security: UL437 category cylinder with permanent core requiring restricted, patented keyway at locations determined by Owner.
   b. Conventional Patented Restricted: cylinder with permanent core with patented, restricted keyway at non-high security locations determined by Owner.

2.11 KEYING

A. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

   a. Master Keying system as directed by the Owner.

2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements shall be cause for replacement of cylinders/cores involved at no additional cost to Owner.
3. Provide keys with the following features:

   a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)

4. Identification:

   a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Blind code marks shall not include actual key cuts.
   b. Identification stamping provisions must be approved by the Architect and Owner.
   c. Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
   d. Failure to comply with stamping requirements shall be cause for replacement of keys involved at no additional cost to Owner.

e. Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

2.12 DOOR CLOSERS

A. Manufacturers and Products:

a. See schedule

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-1/2 inch (38 mm) diameter with 11/16 inch (17 mm) diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and all weather requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and back check.
7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide stick on templates, special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.13 DOOR STOPS

A. Manufacturers:

1. Scheduled Manufacturer: Ives
2. Acceptable Manufacturers: Burns, Rockwood

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.14 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International
2. Acceptable Manufacturers: No substitute.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
2. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.15 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives
2. Acceptable Manufacturers: Burns, Rockwood

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.16 DOOR VIEWERS

A. Manufacturers:

1. Scheduled Manufacturer: New Vu
2. Acceptable Manufacturers: No substitute.

B. Provide appropriate door viewer for door type and rating with minimum of 180-degree view area.

2.17 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Door Closers: Powder Coat to Match
2. Wall Stops: BHMA 630 (US32D)
3. Weatherstripping: Clear Anodized Aluminum
4. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. Wiring: Coordinate with Division 26, ELECTRICAL sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.

5. Testing and labeling wires with Architect's opening number.

I. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

J. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.

K. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

L. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

M. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

N. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

O. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 FIELD QUALITY CONTROL

A. Architectural Hardware Consultant: Engage qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

A. Provide training for Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 DOOR HARDWARE SCHEDULE

A. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

SEE FOLLOWING PAGE

HW SET: 1

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	IVE
1	EA	PASSAGE SET	L9010	SCH
1	EA	WALL STOP	WS406	IVE

FUNCTION: (F01) PASSAGE LATCH. LATCH RETRACTED BY LEVER EITHER SIDE. BOTH LEVERS ALWAYS UNLOCKED.

HW SET: 2

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	IVE
1	EA	PRIVACY W/DEADBOLT	L9440	SCH
1	EA	OH STOP	90S	GLY

FUNCTION: (F19) PRIVACY LOCK. LATCHBOLT RETRACTED BY LEVER EITHER SIDE. OUTSIDE LEVER LOCKED BY ROTATING INSIDE THUMB TURN, EXTENDING DEADBOLT.
OUTSIDE LEVER UNLOCKED BY ROTATING INSIDE THUMB TURN TO RETRACT DEADBOLT, ROTATING INSIDE LEVER (RETRACTS LATCHBOLT AND DEADBOLT), OR BY OUTSIDE EMERGENCY KEY.

HW SET: 3

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	IVE
1	EA	CLASSROOM LOCK	L9070	SCH
1	EA	CYLINDER CORE	AS REQUIRED	
1	EA	WALL STOP	WS406	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER

FUNCTION: (F05) CLASSROOM LOCK. OUTSIDE LEVER LOCKED AND UNLOCKED BY OUTSIDE KEY. INSIDE LEVER ALWAYS UNLOCKED. AUXILIARY LATCH DEADLOCKS LATCHBOLT WHEN DOOR IS CLOSED.

HW SET: 4

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	IVE
1	EA	STOREROOM LOCK	L9080	SCH
1	EA	CYLINDER CORE	AS REQUIRED	
1	EA	SURFACE CLOSER	4050A REG	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406	IVE

FUNCTION: (F07) STOREROOM LOCK. FIXED OUTSIDE TRIM - OUTSIDE KEY RETRACTS LATCH. INSIDE LEVER ALWAYS UNLOCKED. AUXILIARY LATCH DEADLOCKS LATCH BOLT WHEN DOOR IS CLOSED.

HW SET: 5

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	EU STOREROOM LOCK	L9092EU RX	SCH
1	EA	FSIC CYLINDER CORE	BY TENANT	B/O
1	EA	SURFACE CLOSER	4050A REG	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406	IVE
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: ELECTRIFIED STOREROOM LOCK - FAIL SECURE. OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. OUTSIDE LEVER UNLOCKED BY CREDENTIAL READER. INSIDE LEVER ALWAYS UNLOCKED. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET: 5A

QTY		DESCRIPTION	CATALOG NUMBER	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	EU STOREROOM LOCK	L9092EU RX	SCH
1	EA	CYLINDER CORE	AS REQUIRED	
1	EA	SURFACE CLOSER	4050A SCUSH	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER
1	EA	MOUNTING BRACKET	870SPB	ZER
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: ELECTRIFIED STOREROOM LOCK - FAIL SECURE. OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. OUTSIDE LEVER UNLOCKED BY CREDENTIAL READER. INSIDE LEVER ALWAYS UNLOCKED. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED.

HW SET: 5B

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	112HD EPT	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	COMBINATION DEADLOCK	KABA MAS CDX-10	KAB
1	EA	EU STOREROOM LOCK	L9092EU RX	SCH
1	EA	FSIC CYLINDER CORE	BY TENANT	B/O
1	EA	SURFACE CLOSER	4050A EDA	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER
2	EA	MOUNTING BRACKET	870SPB	ZER
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: ELECTRIFIED STOREROOM LOCK - FAIL SECURE. OUTSIDE KEY OR INSIDE LEVER RETRACTS LATCH. OUTSIDE LEVER UNLOCKED BY CREDENTIAL READER. INSIDE LEVER ALWAYS UNLOCKED. UPON LOSS OF POWER, OUTSIDE LEVER REMAINS LOCKED. COMBINATION DEADLOCK: VALID COMBINATION UNLOCKS DEADBOLT. INSIDE KNOB RETRACTS DEADBOLT FOR EGRESS. WHEN UNLOCKED, LIFE SAFETY SWITCH HOLDS DEADBOLT RETRACTED FOR AUTHORIZED ENTRY BY ACCESS CONTROL.

HW SET: 6

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	112HD EPT	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	ELEC PANIC HARDWARE	RX-QEL-9857-DT	VON
1	EA	LATCH GUARD	LGO-3	VON
1	EA	SURFACE CLOSER	4050A EDA	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	EA	WALL STOP	WS406	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER
1	EA	THRESHOLD	63A	ZER
3	EA	MOUNTING BRACKET	870SPB	ZER
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: DUMMY TRIM PANIC HARDWARE WITH ELECTRIC LATCH RETRACTION. FIXED OUTSIDE TRIM - NO KEY ACCESS. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. ELECTRIC LATCH RETRACTED BY ELECTRONIC ACCESS CONTROL SYSTEM FOR PUSH/PULL OPERATION.

HW SET: 9A

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	112HD EPT	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-QEL-9957-DT-F	VON
1	EA	LATCH GUARD	LGO-3	VON
1	EA	SURFACE CLOSER	4050A SCUSH	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER
1	EA	THRESHOLD	63A	ZER
3	EA	MOUNTING BRACKET	870SPB	ZER
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: DUMMY TRIM PANIC HARDWARE WITH ELECTRIC LATCH RETRACTION. FIXED OUTSIDE TRIM - NO KEY ACCESS. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS. ELECTRIC LATCH RETRACTED BY ELECTRONIC ACCESS CONTROL SYSTEM FOR PUSH/PULL OPERATION.

HW SET: 9B

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	112HD EPT	IVE
1	EA	POWER TRANSFER	EPT10	VON
1	EA	FSIC CYLINDER HOUSING	AS REQUIRED	SCH
1	EA	ELEC FIRE EXIT HARDWARE	RX-QEL-9857-NL-F	VON
1	EA	LATCH GUARD	LGO-3	VON
1	EA	FSIC CYLINDER CORE	BY TENANT	B/O
1	EA	SURFACE CLOSER	4050A SCUSH	LCN
1	EA	KICK PLATE	8400 10"	IVE
1	SET	GASKETING	870	ZER
1	EA	DOOR BOTTOM	369	ZER
1	EA	THRESHOLD	63A	ZER
3	EA	MOUNTING BRACKET	870SPB	ZER
1	EA	KEYPAD	BY SECURITY SUPPLIER	B/O
1	EA	DOOR POSITION SWITCH	BY SECURITY SUPPLIER	B/O
1	EA	POWER SUPPLY	PS902 900-2RS	VON
1	EA	WIRING DIAGRAMS	RISER AND POINT-TO-POINT	

FUNCTION: NIGHT LATCH PANIC HARDWARE WITH ELECTRIC LATCH RETRACTION. FIXED OUTSIDE TRIM - LATCH RETRACTED BY KEY. INSIDE PUSH PAD RETRACTS LATCH FOR EGRESS.
ELECTRIC LATCH RETRACTED BY ELECTRONIC ACCESS CONTROL SYSTEM FOR PUSH/PULL OPERATION.

END OF SECTION

SECTION 088713 - WINDOW FILM

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Safety and security window film.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
   2. ASTM D 624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
   3. ASTM D2240 - Standard Method for Rubber Property - Durometer Hardness.
   4. ASTM D5895 - Standard Test Methods for Evaluating Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders.
   5. ASTM D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
   6. ASTM D1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).
   7. ASTM D4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
   8. ASTM E84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
   9. ASTM E903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.
   10. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
   11. ASTM D2582 - Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
   12. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
   13. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
   14. ASTM F1642 - Standard Method of Test for Glazing and Glazing Systems Subject to Airblast Loadings.
   15. ASTM F2912 - Standard Specification for Glazing and Glazing Systems Subject to Airblast Loadings.
B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.
C. Consumer Products Safety Commission (CFR):
   1. 16 CFR, Part 1201 - Safety Standard for Architectural Glazing Materials.
D. United States General Services Administration (GSA):
   1. GSA-TS01-2003 - Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings.
E. International Standards Organization (ISO):
   1. ISO 16933, International Standard for Glass in Building: Explosion-resistant security

glazing - Test and classification for arena air-blast testing.

F. Underwriters Laboratories Inc. (UL):
   1. UL 972 - Burglary Resisting Glazing Material.
   2.

G. Flammability: Surface burning characteristics when tested in accordance ASTM E 84, demonstrating film applied to glass rated Class A for Interior Use:
   1. Flame Spread Index: No greater than 25.
   2. Smoke Developed Index: No greater than 55.

H. Submit under provisions of Section 01 30 00 - Administrative Requirements.

I. Product Data: Manufacturer's current technical literature on each product to be used, including:
   1. Manufacturer's Data Sheets.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods.

J. 3rd Party Test Report Submittal Requirements. Submit the following 3rd Party test reports indicating compliance with the test values listed in this section.
   1. Flammability Testing, ASTM E84.
   2. Film Properties Testing, ASTM D882.
   3. Abrasion Resistance Testing, ASTM D1044.
   4. Peel Strength Testing, ASTM D3330
   5. Safety Glazing Impact Testing, ANSI Z97.1 or 16 CFR 1201.

K. Verification Samples: For each film specified, two samples representing actual film color and pattern.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten years experience.
   1. Provide documentation that the adhesive used on the specified film is a Pressure Sensitive Adhesive (PSA).

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.
   1. Provide documentation that the installer is authorized by the Manufacturer to perform Work specified in this section.
   2. Provide a commercial building reference list of 5 properties where the installer has applied window film. This list will include the following information:
      a. Name of building.
      b. The name and telephone number of a management contact.
      c. Type of glass.
      d. Type of film and/or film attachment system.
      e. Amount of film and/or film attachment system installed.
      f. Date of completion.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Follow Manufacturer's instructions for storage and handling.
B. Store products in manufacturer's unopened packaging until ready for installation.
C. Store and dispose of any hazardous materials, and materials contaminated by hazardous materials, in accordance with requirements of local authorities having jurisdiction.

1.5 PROJECT CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.6 WARRANTY
A. At project closeout, provide to Owner's Representative an executed current copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.
B. In order to validate warranty, installation must be performed by an Authorized 3M dealer. Verification of Authorized 3M dealer can be confirmed by submission of active 3M dealer code number.

PART 2 PRODUCTS

2.1 MANUFACTURERS
B. Acceptable Manufacturer: 3M Commercial Solutions, which is located at:
3M Center, Bldg. 223
St. Paul, MN 55144-1000
Toll Free Tel: 888-650-3497
Tel: 651-737-1081
Substitutions: Not permitted.
C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2 CLEAR MICROLAYERED SAFETY AND SECURITY WINDOW FILM
A. 3M Safety Exterior S70. Optically clear polyester film with a durable acrylic abrasion resistant coating over one surface and a pressure sensitive adhesive over the other.
1. Physical / Mechanical Performance Properties:
a. Film Color: Clear.
b. Thickness: Nominal 7 mils.
c. Tensile Strength (ASTM D 882): 25,000 psi.
d. Break Strength (ASTM D 882): 140 lbs/in.
2. Uniformity: No noticeable pin holes, streaks, thin spots, scratches, banding or other optical defects.
3. Variation in Total Transmission across the Width: Less than 2% over the average at any portion along the length.
4. Identification: Labeled as to Manufacturer as listed in this Section.
5. Solar Performance Properties: Film applied to 1/4 Inch (6 mm) thick clear glass.
a. Visible Light Transmission (ASTM E 903): 88%.
b. Ultraviolet Transmission (ASTM E 903): Less than 0.5%.
6. Impact Resistance for Safety Glazing: Tested on 1/4 inch (6 mm) annealed glass.
a. Safety Rating (CPSC 16 CFR, Part 1201): Category I (150 ft.-lbs).

PART 3 EXECUTION

3.1 EXAMINATION

A. Film Examination:

1. If preparation of glass surfaces is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
2. Glass surfaces receiving new film should first be examined to verify that they are free from defects and imperfections, which will affect the final appearance.
3. Do not proceed with installation until glass surfaces have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.
4. Commencement of installation constitutes acceptance of conditions.

B. Impact Protection Attachment Sealant Examination:

1. If application of window film is/was the responsibility of another installer, notification in writing shall be made of deviations from manufacturer's recommended installation tolerances and conditions.
2. Filmed glass surfaces receiving new attachment should first be examined to verify that they are free from defects and imperfections, and that the film edges extend sufficiently to the frame edges.
3. Do not proceed with installation until film and frame surfaces have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.
4. Conduct an adhesion test to the frame surface may be conducted by applying a 4 - 6 inch long bead, approximately 0.5 - 1 inch in width, masking one side of the frame surface underneath the strip with tape. Allow the Impact Protection Attachment Sealant to cure for 7 days and test adhesion by pulling up on the masked end and a 90 degree angle. If cohesive failure is observed (adhesive residue left behind on the frame surface), adhesion is acceptable; if adhesive failure is observed (clean peel from the frame), adhesion is unacceptable and product is not recommended.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Refer to Manufacturer's installation instructions for methods of preparation for Impact Protection Attachment Sealant film attachment systems.

3.3 INSTALLATION

A. Film Installation:

1. Install in accordance with manufacturer's instructions.
2. Cut film edges neatly and square at a uniform distance of 1/8 inch (3 mm) to 1/16 inch (1.5 mm) of window sealant. Use new blade tips after 3 to 4 cuts.
3. Spray the slip solution, composed of one capful of baby shampoo or dishwashing liquid to 1 gallon of water, on window glass and adhesive to facilitate proper positioning of film.
4. Apply film to glass and lightly spray film with slip solution.
5. Squeegee from top to bottom of window. Spray slip solution to film and squeegee a second time.

6. Bump film edge with lint-free towel wrapped around edge of a 5-way tool.
7. Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly, and to allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

B. Impact Protection Attachment Sealant Installation:
1. The film attachment system shall be applied according to the specifications of the Manufacturer by an Authorized Dealer/Applicator. Refer to 3M publication, 70-0709-0322-7, 3M Impact Protection Attachment Sealant Attachment System Installation Instructions.
   a. Provide minimum 4-sided ¾" structural silicone wet glazing with minimum 3/8" bead overlap on window frame and film (excluding glazing stops or compression gaskets)
2. To ensure a straight and consistent bead width is achieved, masking tape may be applied to film and frame surfaces prior to application.
3. With prior approval of the building owner or property manager, existing compression gaskets may be partially removed or trimmed to allow for a thinner bead and stronger anchorage. If removing the gaskets, sections shall be trimmed approximately 3 inches in length and inserted with appropriate spacing along all sides of the window to help secure the glazing during application and curing of the Impact Protection Attachment Sealant.
4. The Impact Protection Attachment Sealant shall be dispensed with a caulk gun with nozzle opening diameter sized to match the approximate size of the desired bead width.
5. A plastic putty knife or other tool with a clean straight edge shall be used to trowel and smooth out the adhesive. The completed adhesive bead shall be relatively triangular in shape.
6. Any masking tape used shall be carefully removed within 10 minutes after applying the wet glaze.

3.4 CLEANING AND PROTECTION

A. Remove left over material and debris from Work area. Use necessary means to protect film before, during, and after installation.
B. Touch-up, repair or replace damaged products before Substantial Completion.
C. After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents and bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.

END OF SECTION

SECTION 088816 - VISION CONTROL GLASS

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes:
1. Vision control glass with [adjustable] cordless louvers.
2. Manual operators.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 081416 - Flush Wood Doors

1.2 REFERENCES

A. American National Standards Institute (ANSI) Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

B. ASTM International (ASTM)):
1. C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
2. C920 - Standard Specification for Elastomeric Joint Sealants.
3. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
4. C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
5. C1294 - Standard Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials.
6. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
7. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
8. E2190 - Standard Specification for Insulating Glass Units Performance and Evaluation.

C. Consumer Product Safety Commission (CPSC) 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

D. Glass Association of North America (GANA) - Engineering Standards Manual.

E. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Descriptive data and performance attributes for vision control glass.

B. Closeout Submittals:

1. Maintenance Instructions: Manufacturer's printed instructions for cleaning and maintenance of glazed units, including operators.

1.4 SYSTEM DESCRIPTION

A. Vision Control Glass: Control vision through insulated glass unit assemblies by means of rotating, cordless, interlocking, horizontal, extruded aluminum louvers with rotation controlled manually. Rotation of louvers results in reduction in or elimination of vision through glazed assemblies.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Provide tempered safety glass for locations subject to human impact as required by Building Code.
2. Safety glass: Tested and labeled to CPSC 16 CFR 1201.

B. Fire Rated Glass Assemblies: Conform to ASTM E119 and UL 263.

C. Perform Work in accordance with GANA Glazing Manual.

D. 120 Volt Electrical Components: Listed by ULC.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver and store glass units in upright position, on blocks, in dry and safe location.

B. Do not place units in direct sunlight.

C. Handle units using corner protectors.

1.7 WARRANTIES

A. Vision Control Glass in Interior Locations: Furnish manufacturer's 10year warranty providing coverage against material obstruction of glass units by dust or film formation due to failure of hermetic seal.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on Vision Control by Unicel Architectural, 800-668-1580, www.unicelarchitectural.com.

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS - GLASS

A. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.

2.3 MATERIALS - LOUVERS, FRAMES, AND OPERATORS

A. Louvers: Hollow extruded aluminum, interlocking profile, 1/2 inch thick x 1-3/8 inches deep; Duracron [K-1285 Glossy White] [K-20794 Metallic Gray] finish.

B. Manual Operators: Hand crank type.

2.4 ACCESSORIES

A. Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 70 to 90 Shore A durometer hardness.

B. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 50 to 60 Shore A durometer hardness.

C. Glazing Sealant:
1. ASTM C920, Type S, Grade NS, Class 25; single component polysulfide type, low modulus, non sag.
2. Sealant backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.
3. Compatible with glass unit edge seals; tested to ASTM C1294.

2.5 FABRICATION

A. Sealed Insulating Glass Units:
1. Comply with ASTM E2190.
2. Fabricate spacer bar frame of tubular aluminum filled with desiccant.
3. Bond spacer bar frame to glass panes.
4. Fill space outside frame to glass edge with elastomeric sealant.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean glazing rabbets; remove loose and foreign matter.

B. Remove protective coatings on metal surfaces.

C. Clean glass just prior to installation.

3.2 INSTALLATION - GENERAL

A. Install glass in accordance with glass manufacturer's instructions.

B. Maintain manufacturer's recommended edge and face clearances between glass and frame members.

3.3 INSTALLATION - SEALANT GLAZING METHOD

A. Apply sealant to full depth of permanent stops.

B. Press glass into sealant with slight lateral movement to ensure adhesion.

C. Apply sealant to full depth of removable stops. Secure stops in position, forcing contact with sealant bead and completely filling joint.

3.4 PROTECTION

A. After installation, mark glass with an 'X' using removable plastic tape.

END OF SECTION

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 INTERIOR GYPSUM BOARD

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Gypsum.
2. CertainTeed Corp.
3. Georgia-Pacific Gypsum LLC.
4. Lafarge North America Inc.
5. National Gypsum Company.
6. USG Corporation.

B. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Thickness: 5/8” (12.7 mm).
2. Long Edges: Tapered .

C. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: .

D. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: 1/2 inch (12.7 mm).
2. Long Edges: Tapered.

2.3 TILE BACKING PANELS

A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. CertainTeed Corp.; GlasRoc Tile Backer.
b. Georgia-Pacific Gypsum LLC; DensShield Tile Backer.

2. Core: 1/2 inch (12.7 mm), regular type .
3. Mold Resistance: ASTM D 3273, score of 10.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet .

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
3. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

2.6 AUXILIARY MATERIALS

A. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.

C. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing). Provide 3 ½" thick mineral wool acoustical insulation.
   1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Thermafiber SAFB (www.thermafiber.com) as manufactured by Owens Corning.
      b. Roxul AFB (www.roxul.com)

D. Acoustical Joint Sealant: ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings as demonstrated by testing according to ASTM E 90.

   a. Products: Subject to compliance with requirements,available products that may be incorporated into the Work include, but are not limited to, the following:Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
   b. Grabber Construction Products; Acoustical Sealant GSC.
   c. Pecora Corporation; AC-20 FTR AIS-919.
   d. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
   e. USG Corporation; SHEETROCK Acoustical Sealant.

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

A. Comply with ASTM C 840.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. Install trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
   1. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

E. Prefill open joints and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

   1. Level 1: Concealed areas, and where indicated.
   2. Level 2: Panels that are substrate for tile .
   3. Level 3: Wall locations above Ceiling per wall details

4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated . All walls will be finished smooth with no texture.

    a. Primer and its application to surfaces are specified in other Division 09 Sections.

H. Protect adjacent surfaces from drywall compound and texture finishes and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

I. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

SECTION 093000 - TILING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Porcelain Tile

B. Product Data: For each type of product indicated.

C. Samples:

1. Each type and composition of tile and for each color and finish required.
2. Assembled samples, with grouted joints, for each type and composition of tile and for each color and finish required.

1.2 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 TILE PRODUCTS

A. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

B. Tile Type : Porcelain Wall and Floor Tile as Indicated on drawings

1. Module Size: As Indicated on the drawings
2. Tile Color and Pattern: As indicated by manufacturer's designations .
3. Grout Color: As selected by Architect from manufacturer's full range .
4. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

a. Base: Straight, module size As Indicated.
b. Wainscot Cap: Bullnose cap , module size 4x12.
c. External Corners for Thin-Set Mortar Installations: Bullnose shape , same size as adjoining flat tile.

d. Internal Corners: Field-butted square corners.

2.2 SETTING MATERIALS

A. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Bonsal American; an Oldcastle company.
   b. Bostik, Inc.
   c. C-Cure.
   d. Custom Building Products.
   e. Laticrete International, Inc.
   f. MAPEI Corporation.
   g. TEC; a subsidiary of H. B. Fuller Company.

2. For wall applications, provide nonsagging mortar.

B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following :
   a. Bostik, Inc.
   b. C-Cure.
   c. Laticrete International, Inc.
   d. MAPEI Corporation.
   e. Mer-Kote Products, Inc.
   f. TEC; a subsidiary of H. B. Fuller Company.

2. Prepackaged, dry-mortar mix to which only water must be added.

2.3 GROUT MATERIALS

A. Sand-Portland Cement Grout: ANSI A108.10.

B. Standard Cement Grout: ANSI A118.6.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following :
   a. C-Cure.
   b. Laticrete International, Inc.
   c. MAPEI Corporation.
   d. TEC; a subsidiary of H. B. Fuller Company.

2.4 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Division 07 Section "Joint Sealants."

B. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dow Corning Corporation; Dow Corning 786.
   b. GE Silicones, a division of GE Specialty Materials; Sanitary 1700.
   c. Laticrete International, Inc.; Latasil Tile & Stone Sealant.
   d. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
   e. Tremco Incorporated; Tremsil 600 White.

C. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bostik, Inc.; Chem-Calk 550.
   b. Degussa Building Systems; Sonneborn Sonolastic SL 2.
   c. Pecora Corporation; NR-200 Urexpan.
   d. Sika Corporation; Sikaflex-2c SL.
   e. Tremco Incorporated.; THC-900 .

2.5 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, white zinc alloy, nickel silver, or stainless steel, ASTM A 666, 300 Series exposed-edge material.

C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints and that does not change color or appearance of grout.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

   a. Bonsal American, an Oldcastle company; Grout Sealer.
   b. Bostik, Inc.; CeramaSeal .
   c. C-Cure; Penetrating Sealer 978.

d. MAPEI Corporation; KER 003, Silicone Spray Sealer for Cementitious Tile Grout, 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
e. TEC, a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone, TA-257 Silicone Grout Sealer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with adhesives or thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

C. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION

A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
   a. Tile floors in wet areas.
   b. Tile floors composed of tiles 8 by 8 inches (200 by 200 mm) or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
1. Paver Tile: 1/4 inch
2. Glazed Wall Tile: 1/8 inch
3. Decorative Thin Wall Tile: 1/8 inch.

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

I. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

J. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

K. Install fiber-cement underlayment and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

L. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

M. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

3.4 INTERIOR TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Tile Installation F113: Thin-set mortar; TCA F113.

a. Location: At all floors indicated to have tile
b. Thin-Set Mortar: Latex- portland cement mortar.
c. Grout: Sand-portland cement grout.

B. Interior Wall Installations, Metal Studs or Furring:

1. Tile Installation W245: Thin-set mortar on coated glass-mat, water-resistant gypsum backer board; TCA W245.

Tile Type: .As indicated on Drawings ad Schedules
a. Thin-Set Mortar: Latex- portland cement mortar.Standard unsanded cement

3.5 TILE SCHEDULE: See drawings

END OF SECTION 093000

SECTION 095123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes acoustical tiles and concealed suspension systems for ceilings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Evaluation reports.

C. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Provide extra materials equal to 5% of the overall installation for Owner's maintenance stock.

PART 2 - PRODUCTS (Not Applicable)

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 .

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL TILE CEILINGS, GENERAL

A. Acoustical Tile Standard: Comply with ASTM E 1264.

B. Metal Suspension System Standard: Comply with ASTM C 635.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

2.3 WARRANTY

A. Manufacturers standard 30 year warranty that the following ceiling products will be free from defects in materials and workmanship at the time of manufacture.

2.4 ACOUSTICAL TILES C-1

A. Basis-of-Design Product: Subject to compliance with requirements, provide product by one of the following:
   1. USG Interiors, Inc.; Subsidiary of USG Corporation. Mars High NRC tiles. #89134

B. Acoustical Panels Type ACT

   1. Panel Size: 2 ft x 4 ft
   2. Thickness: 7/8
   3. Edge Profile: Square
   4. Color: Flat White (050)
   5. Material: Mineral Fiber
   6. Average Recycled Content: 72%
   7. GREENGUARD Certification: Yes

C. Performance

   1. Sound Absorption (NRC): 0.85
   2. Sound Attenuation (CAC): 35
   3. Light Reflectance (LR): 0.90
   4. Fire Rating: Class A
   5. Smoke Developed: 50 or less
   6. Flame Spread: 25 or less
   7. Humidity Resistance: Yes
   8. Sag Resistance: Yes
   9. Mold Resistance: Meets
   10. Warranty: ClimaPlus™
   11. Performance ASTM E1264-23 Classification: Type A, Form A2.1 & A2.2, Pattern E & G

D. Request for Substitutions per Division 01 subject to compliance with product specifications

2.5 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Subject to compliance with requirements, provide Suspension Grid: Donn DXL 15/16-inch Suspension System.

B. Color: Flat White 050

C. Structural Classification: Intermediate -duty system when tested in accordance with ASTM C635/C635M.

D. Access: Upward .

E. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Manufacturer's standard moldings for edges and penetrations complying with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install acoustical tile ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

C. Arrange directionally patterned acoustical tiles as indicated on reflected ceiling plans.

END OF SECTION 095123

SECTION 096200 – HISTORIC WOOD FLOOR REFINISHING (SHPO COMPLIANT)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Work includes refinishing historic wood flooring in a manner consistent with preservation standards acceptable to ND SHPO.

B. Primary goal: Retention and preservation of historic fabric and character.

1.3 PERFORMANCE REQUIREMENTS

A. Comply with the Secretary of the Interior's Standards:
   1. Repair rather than replace
   2. Preserve historic character
   3. Avoid removal of historic materials

B. Apply the "least invasive means possible" standard.

1.4 SUBMITTALS

A. Submit all items required in Section 013300

B. No work shall proceed without approval of mockups.

1.5 QUALITY ASSURANCE

A. Contractor shall demonstrate experience with SHPO-reviewed projects.

B. Approved mockups shall serve as control standard.

PART 2 - PRODUCTS

2.1 WOOD REPAIR MATERIALS

A. Salvaged or new wood matching existing in:
   1. Species
   2. Grain
   3. Dimension

B. Replacement limited to areas of severe deterioration.

2.2 FINISH MATERIALS

A. Acceptable:
   1. Penetrating oils
   2. Shellac
   3. Wax systems
   4. Low-sheen polyurethane (only if approved)

B. Finish Appearance Requirements:

1. Matte to satin sheen
2. No artificial or modernized appearance

C. Prohibited:

1. High-gloss finishes
2. Heavy film coatings obscuring wood texture

PART 3 - EXECUTION

3.1 EXAMINATION

A. Document existing conditions prior to work.

B. Identify character-defining features including:

1. Wear patterns
2. Tool marks
3. Historic finish remnants

3.2 TREATMENT APPROACH

A. General:

1. Preserve existing flooring to the maximum extent feasible
2. Maintain evidence of age and use

B. Hierarchy of Treatment:

1. Cleaning
2. Screening and recoating
3. Limited sanding (only if necessary)
4. Selective repair
5. Replacement (last resort)

3.3 SURFACE PREPARATION

A. Cleaning:

1. Use non-destructive cleaning methods

B. Sanding:

1. Shall be minimized and justified in submittals
2. Use orbital or buffer sanding methods
3. Drum sanding requires explicit approval

C. Prohibited Methods:

1. Abrasive blasting
2. Aggressive sanding removing historic material

3.4 REPAIRS

A. Repair deteriorated areas using matching materials

B. Retain original boards whenever feasible

C. Do not replace flooring solely for aesthetic uniformity

3.5 FINISHING

A. Color and Stain:
   1. Match historic appearance based on testing
   2. Avoid introducing new or anachronistic colors

B. Application:
   1. Apply thin coats
   2. Avoid heavy build-up
   3. Maintain visibility of grain and texture

C. Appearance Standard:
   1. Finished floor shall not appear “new”
   2. Some variation and patina shall remain visible

3.6 FIELD QUALITY CONTROL

A. Work shall be evaluated against:
   1. Approved mockups
   2. Submitted documentation

B. Rejection Criteria:
   1. Over-sanding
   2. Loss of historic patina
   3. Incompatible finish appearance

3.7 PROTECTION AND CLOSEOUT

A. Protect finished floors from damage

B. Submit final documentation for SHPO closeout:
   1. Photographs of completed work
   2. Description of any deviations from approved scope

END OF SECTION 096200

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Vinyl composition floor tile.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: Full-size units of each color and pattern of floor tile required.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Provide extra materials equal to 5% of the overall installation or one full box whichever is greater, for Owner's maintenance stock.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

   1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

1.5 WARRANTY

A. Manufacturers standard warranty for commercial flooring products, to be free from manufacturing defects as of the date of purchase through the Limited Warranty Period offered by Manufacturer.

1.6 PROJECT CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer in spaces to receive floor tile.

B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer.

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE VCT

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   1. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture
   2. Mannington Mills, Inc.; Essentials.

B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile .

C. Wearing Surface: Smooth .

D. Thickness: 0.125 inch .

E. Size: 12 by 12 inches.

F. Colors and Patterns: As indicated by manufacturer's designations .

2.2 RESILIENT BASE (RB):

A. Resilient Base:

   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following :
      a. Johnsonite.

B. Resilient Base Standard: ASTM F 1861.

   1. Material Requirement: Type TS (rubber, vulcanized thermoset) .
   2. Manufacturing Method: Group I (solid, homogeneous) .
   3. Style: Cove (base with toe) .

C. Minimum Thickness: 0.125 inch .

D. Height: 4 inches .

E. Lengths: Coils in manufacturer's standard length .

F. Outside Corners: Preformed .

G. Inside Corners: Job formed or preformed.

H. Colors and Patterns: As Indicated on Drawings

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.

C. FloorScore Compliance: Resilient tile flooring shall comply with requirements of FloorScore Standard.

1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
b. Rubber Floor Adhesives: Not more than 60 g/L.

2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
4. Moisture Testing: Perform tests recommended by floor covering manufacturer. Proceed with installation only after substrates pass testing.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until they are same temperature as space where they are to be installed.

1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.2 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles square with room axis .

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern) .

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.

B. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.

1. Apply two coat(s).

C. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 096813 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes modular, tufted carpet tile.

B. Related Requirements:
   1. Division 09 Section "Resilient Base and Accessories Resilient Tile Flooring" for resilient wall base and accessories installed with carpet tile.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

   1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:

      a. Review delivery, storage, and handling procedures.
      b. Review ambient conditions and ventilation procedures.
      c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
   2. Include installation recommendations for each type of substrate.
   3. For carpet tile, documentation indicating compliance with testing and product requirements of CRI's "Green Label Plus" program.
   4. For installation adhesive, documentation including printed statement of VOC content.

B. Shop Drawings: Show the following:

   1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
   2. Carpet tile type, color, and dye lot.
   3. Type of subfloor.

4. Type of installation.
5. Pattern of installation.
6. Pattern type, location, and direction.
7. Pile direction.
8. Type, color, and location of insets and borders.
9. Type, color, and location of edge, transition, and other accessory strips.
10. Transition details to other flooring materials.

C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

1. Carpet Tile: Full-size Sample.
2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- (300-mm-) long Samples.

D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:

1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II Master II certification level.

B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups at locations and in sizes shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104.

1.10 FIELD CONDITIONS

A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.

C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 WARRANTY

A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE – CPT-1

A. Products: Subject to compliance with requirements, provide product shown on drawings

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation. **Adhesives should be used over underlayment only. Do not use adhesives over existing building wood floors**

1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

D. VELCRO® Brand Universal Flooring Tape for floor installation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.
1. .

B. For wood subfloors, verify the following:

1. Underlayment over subfloor complies with requirements specified in Division 06 Section "Rough Carpentry."
2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider and protrusions more than 1/32 inch (0.8 mm) unless more stringent requirements are required by manufacturer's written instructions. **Minimize patching of floors to spot repairs only. Where large sections (larger than 12" x 12") of floor require leveling plywood underlayment should be used to provide a smooth level surface for installation of carpet tile**

C. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.

B. Installation Method: Only use Velcro Brand Universal Flooring Tape to install carpet tile directly to existing original building wood floors. Carpet tile can be glued down to underlayment where installed.

C. Maintain dye lot integrity. Do not mix dye lots in same area.

D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.

E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

G. Install pattern as indicated.

H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

3.4 CLEANING AND PROTECTION

A. Perform the following operations immediately after installing carpet tile:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
2. Remove yarns that protrude from carpet tile surface.
3. Vacuum carpet tile using commercial machine with face-beater element.

B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."

C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 099000 PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Interior paint and coatings systems including surface preparation.

1.2 RELATED SECTIONS

A. –Division 08 Hollow Metal Doors and Frames.

B. Division 09 Gypsum Board Assemblies.

C. Section 23 05 00 - Common Work Results for HVAC.

D. Section 26 05 00 - Common Work Results for Electrical.

1.3 REFERENCES

A. Steel Structures Painting Council (SSPC):
1. SSPC-SP 1 - Solvent Cleaning.
2. SSPC-SP 2 - Hand Tool Cleaning.
3. SSPC-SP 3 - Power Tool Cleaning.
4. SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
5. SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
6. SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
7. SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
8. SSPC-SP11, Power Tool Cleaning to Bare Metal.
9. SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
10. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.

B. Safety Data Sheets / Environmental Data Sheets: Per manufacturer's SDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.
1. GS-11 Standard for Paints and Coatings (1st Edition, May 20,1993).
2. GC-03 - Environmental Criteria for Anti-Corrosive Paints.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: For each paint system indicated, including.
1. Product characteristics.
2. Surface preparation instructions and recommendations.
3. Primer requirements and finish specification.
4. Storage and handling requirements and recommendations.
5. Application methods.
6. Cautions for storage, handling and installation.

C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.

D. Verification Samples: For each finish product specified, submit samples that represent actual

product, color, and sheen.

E. Only submit complying products based on project requirements (i.e. LEED). One must also comply with the regulations regarding VOCs (CARB, OTC, SCAQMD, LADCO). To ensure compliance with district regulations and other rules, businesses that perform coating activities should contact the local district in each area where the coating will be used.
   1.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.

D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish surfaces for verification of products, colors and sheens.
   2. Finish area designated by Architect.
   3. Provide samples that designate primer and finish coats.
   4. Do not proceed with remaining work until the Architect approves the mock-up.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
   1. Product name, and type (description).
   2. Application and use instructions.
   3. Surface preparation.
   4. VOC content.
   5. Environmental handling.
   6. Batch date.
   7. Color number.

B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design Manufacturer: Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request infospecifications@sherwin.com; Web:www.swspecs.com.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Benjamin Moore & Co
2. Devoe Paints
3. Glidden Professional
4. Pittsburgh Paints (Formerly PPG Paints)

2.2 PAINT MATERlALS - GENERAL

A. Paints and Coatings:
1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.

B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

D. Color: Refer to Finish Schedule for paint colors, and as selected.

2.3 INTERIOR PAINT SYSTEMS

A. METAL - (Ferrous Metal)
1. Alkyd Systems (Water based):
a. Semi-Gloss Finish:
1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry).
2) 2nd Coat: S-W ProMar 200 Waterbased Acrylic-Alkyd Semi-Gloss, B34-8200 Series.

3) 3rd Coat: S-W ProMar 200 Waterbased Acrylic-Alkyd Semi-Gloss, B34-8200 Series (4.0 mils wet, 1.7 mils dry per coat).

B. DRYWALL - (Walls, Ceilings, Gypsum Board and similar items)
1. Latex Systems:
a. Eg-Shel / Satin Finish:
1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
2) 2nd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series.
3) 3rd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils wet, 1.7 mils dry per coat).
b. Flat Finish:
1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
2) 2nd Coat: S-W ProMar 200 Zero VOC Latex Flat, B30-2600 Series.
3) 3rd Coat: S-W ProMar 200 Zero VOC Latex Flat, B30-2600 Series (4 mils wet, 1.6 mils dry per coat).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.2 SURFACE PREPARATION

A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must

be sanded smooth and all dust removed prior to painting.

C. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.

D. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

3.3 INSTALLATION

A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.

B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.

C. Apply coatings using methods recommended by manufacturer.

D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.

E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.

F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.

G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.4 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
   1. Toilet and Shower accessories.
   2. Underlavatory guards.

B. ACTION SUBMITTALS

C. Product Data: For each type of product indicated. Include the following:

   1. Construction details and dimensions.
   2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
   3. Material and finish descriptions.
   4. Features that will be included for Project.
   5. Manufacturer's warranty.

D. Samples: Full size, for each accessory item to verify design, operation, and finish requirements.

   1. Approved full-size Samples will be returned and may be used in the Work.

E. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

   1. Identify locations using room designations indicated.
   2. Identify products using designations indicated.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.7 WARRANTY

A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

I. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES:

A. Refer to drawings for location and description of all accessories.

2.3 PUBLIC-USE SHOWER ROOM ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. A & J Washroom Accessories, Inc.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc.
4. Bradley Corporation.

B. Shower Curtain Rod (SCR):
1. Basis of Design: Bobrick Model B-207 x 36. Length: 36 inch (915mm). Shower Curtain Rods With Concealed Mounting
2. Description: 1 ¼" thick 18 ga. thick stainless steel.
3. Material: Satin Finish Stainless Steel

C. Shower Curtain (SC):

1. Basis-of-Design Product: Bobrick B204-2 Vinyl Shower Curtain.
2. Size: Minimum 6 inches (152 mm) wider than opening by 72 inches (1828 mm) high.
3. Material: Vinyl, minimum 0.006 inch (0.15 mm) thick, opaque, matte.
4. Color: White.
5. Grommets: Corrosion resistant at minimum 6 inches (152 mm) o.c. through top hem.
6. Shower Curtain Hooks: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

D. Folding Shower Seat (SEAT):

1. Basis-of-Design Product: Bobrick B 518 Reversible Folding Shower Seat.:.
2. Configuration: L-shaped seat, designed for wheelchair access.
3. Seat: Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.
4. Mounting Mechanism: Stainless steel, No. 4 finish (satin).
5. Dimensions: 33" Wide- 22" Projection.

E. Towel Hook(TH)

1. Basis-of-Design Product: Bobrick B 7671
2. Description: Single Hook unit.

3. Material and Finish: Bright-polished stainless steel. Flange is 2" x 2" (50 x 50mm). Hook is 1 5⁄8" high, 13⁄16" wide (40 x 20mm). Projects 1 5⁄8" (40mm) from wall.
4. Flange & Support Arm: 18-8 S, type-304, 22-gauge (0.8mm) stainless steel. Concealed, 18-gauge (1.2mm) stainless steel mounting bracket. All-welded construction. Secured to wall plate with a stainless steel setscrew.
5. Concealed Wall Plate: 18-8 S, type-304, 19-gauge (1.0mm) stainless steel.
6. Cap 18-8 S, type-304, 14-gauge (2.0mm) stainless steel. Welded to the support arm

2.4 UNDERLAVATORY GUARDS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Plumberex Specialty Products, Inc.
2. Truebro by IPS Corporation.

C. Underlavatory Guard:
1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

SECTION 104413 - FIRE EXTINGUISHER AND CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fire extinguishers and fire protection cabinets for fire extinguishers.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each exposed product and for each color and texture specified.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.4 QUALITY ASSURANCE

A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire protection cabinets with wall depths.

C. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

D. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

E. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fails in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

B. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear) .

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. J. L. Industries, Inc.; a division of Activar Construction Products Group.
   b. Larsen's Manufacturing Company.

2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type: UL-rated 4-A:60-B:C 10lb nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.

2.3 FIRE PROTECTION CABINET FEC

A. Cabinet Type: Suitable for fire extinguisher.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. J. L. Industries, Inc., a division of Activar Construction Products Group; Larsen's Manufacturing Company;

B. Cabinet Construction: Nonrated .

C. Cabinet Material: Steel sheet.

D. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.

E. Door Material: Steel sheet.

F. Door Style: Vertical duo panel with frame.

G. Door Glazing: Tempered float glass (clear).

H. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

I. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle .
3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect .

a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER ."

1) Location: Applied to cabinet glazing .
2) Application Process: Silk-screened.
3) Lettering Color: Red.
4) Orientation: Vertical.

J. Finishes:

1. Manufacturer's standard baked-enamel paint for the following:

a. Exterior of cabinet door trim , door, and trim, except for those surfaces indicated to receive another finish.
b. Interior of cabinet and door.

2. Steel: Baked enamel or powder coat.

a. Color and Gloss: As selected by Architect from manufacturer's full range .

2.4 FABRICATION

A. Fire Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Miter and weld joints and grind smooth.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at 54" above finished floor to top of cabinet. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.

B. Identification: Apply decals at locations indicated.

C. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

D. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

E. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

END OF SECTION 104413

SECTION 112216 – BULLET RESISTANT EQUIPMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Composite Fiberglass Panels:
   1. Bullet Resistant Fiberglass Composite.

B. Transaction Deal Trays

C. Speakers.

D. Glazing.

1.2 RELATED SECTIONS

A. Section 05 50 00 - Metal Fabrications.
B. Section 06 10 00 - Rough Carpentry.
C. Section 09 90 00 - Painting and Coating.

1.3 REFERENCES

A. ASTM International:
   1. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.
   2. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants.
   3. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass.
   4. ASTM D 2000 - Standard Classification System for Rubber Products in Automotive Applications.
   5. ASTM E 84 - Test method for the Surface Burning Characteristics of Building Materials.
   6. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

B. AWS D1.1 - Structural Welding Code-Steel.

C. NIJ Standard 0108.01 - (National Institute of Justice) Standard for Ballistic Resistant Protective Materials (September, 1985).

D. UL 752 - Standard for Bullet Resisting Equipment (January 27, 1995)

1.4 SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Shop Drawings:
   1. Submit shop drawings prepared by the manufacturer showing plans, sections, elevations, layouts, profiles and product component locations, including finishes.

2. Include dimensioned elevation of each type opening assembly in project; indicate sizes and locations of hardware, and lites if applicable.
3. Schedule: Indicate each opening assembly in project; cross-referenced to plans, elevations, and details.

D. Design Data: Bullet resistance analysis design calculations for specific project conditions, certifying system conformance to specified performance requirements.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified with a minimum documented experience of five years.

B. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, and manufacturer's installation instructions.

C. Coordination of Work: Coordinate layout and installation of components with other construction supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system, and partitions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's unopened, undamaged packaging, with manufacturer's labels intact.

B. Remove wraps or covers from doors and frames upon delivery at the building site; clean and touch-up scratches or disfigurement caused by shipping or handling promptly.

C. Store products in manufacturer's unopened packaging until ready for installation. Store assemblies, off the ground and on end, to prevent damage to face corners and edges. Store assemblies covered to protect them from damage but permitting air circulation.

1.7 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Armortex® Inc., which is located at: 5926 Corridor Pkwy.; Schertz, TX 78154; Toll Free Tel: 800-880-8306; Tel: 210-661-8306; Fax: 210-661-8308; Email:request info (rsnelling@armortex.com); Web:www.armortex.com

B. Requests for substitutions will be considered in accordance with provisions of Section 016000 - Product Requirements and Section 012500 – Substitution Requests

2.2 COMPOSITE FIBERGLASS PANELS

A. Design Requirements: Provide bullet resistant sheet of "non-ricochet type" intended to permit capture and retention of attacking projectile, lessening potential of random injury or lateral penetration.

B. Bullet resistant Fiberglass Sheet:
1. Product: ARMORTEX Opaque Fiberglass.
2. Construction: Manufactured from multiple layers of woven roving ballistic grade fiberglass cloth impregnated with thermoset polyester resin, compressed into flat rigid sheets.
3. Control Method: Provide controlled internal delaminating to permit capture of penetrating projectile.
4. Ballistic Level: 3, tested to UL 752 SPSA.

C. Adhesives and Fasteners: Type recommended by bullet resistant sheet manufacturer for specific application.

2.3 TRANSACTION DRAWERS AND TRAYS

A. Deal Tray:
1. Flip Lid RMDT 1416

2.4 BULET RESISTANT SPEAKERS AND GUN PORTS

A. Bullet Resistant Voice Devices:
1. SC300 Counter Mount Intercom System.

2.5 BULLET RESISTANT WINDOW AND GLAZING

A. Glazing: SP 1.25 Acrylic Level 3.
1. UL Listed Acrylic polycarbonate composite.
2. Bottom edge of glazing panel provided with 18 gage stainless steel cap.

B. Window Frame
1. Stainless Steel Sheet:
2. ASTM A666, cold rolled, free from scale, pitting, coil breaks, and other surface defects.
3. Ballistic Steel: Hi-Hard Ballistic Steel, of UL Ballistic Level equal to specified frame ballistic protection level.
4. Stainless Steel: No. 3 brushed finish.

2.6 FABRICATION

A. Frames:
1. Fabricate from 12 gage stainless steel lined with ballistic steel.
2. Weld frame corners; knock-down and mechanical joints not acceptable.
3. Frame modules capable of being joined with other frame modules to form continuous line.
4. Install glass in frames at factory.

B. Dip Tray: Model RMDT1416, 16 gage stainless steel, 14 x 16 inches to outside edge of flanges, clear 1-5/8 inch open depth under glazing.

C. Welding: In accordance with AWS D1.6/D1.6M. Grind exposed welds flush and smooth.

D. Finish work neat and free from defects.

E. Allowable Tolerances: Plus or minus 1/16 inch for frame opening width, height, diagonal dimensions, and overall width and height (outside to outside).

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until openings and installing surfaces have been properly prepared.

B. Verify openings are in accordance with approved shop drawings

C. Verify that all supports have been installed in accordance with the Drawings.

D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and requirements of UL 752. Install all equipment plumb, level, rigid and in true alignment.

B. Set equipment in accordance with the manufacturer's printed recommendations. Use proper anchoring devices for the material to be anchored to. All exposed anchor holes shall be used for anchoring.

C. Install fire-rated assemblies in accordance with NFPA 80.

D. Bullet Resistant Fiberglass panels can be installed using an industrial adhesive, mastic, screws or bolts. Method of application shall maintain the bullet resistive rating at junctures with the concrete floor slab, concrete roof slab, bullet resistive door frames, bullet resistive window frames, and all required penetrations.
   1. All joints reinforced by a back-up layer of bullet resistive material.
   2. Bullet resistance of the joint, as reinforced, shall be at least equal to that of the panel.
   3. Minimum width of reinforcing layer at joint shall be 4 inches (2 inches on each panel or a 2 inches (51 mm) minimum overlap).

E. Fiberglass Sheet:
   1. Install in accordance with manufacturer's instructions. Cut panels to fit at perimeter and around penetrations.

2. Reinforce joints between sheets with minimum 4 inches (102 mm) wide backup layer of bullet resistant sheet, centered on joint. Bullet-resistance of reinforced joint at least equal to ballistic level of panel.
3. Fasten or adhere panels to supports in manner to maintain bullet-resistive rating at perimeter, junctures with other materials, and penetrations

F. Install hardware as specified in Section 08 71 53 - Security Door Hardware in accordance with the hardware manufacturer's recommendations and templates.

G. Field painting is specified in Section 09 90 00 - Painting and Coating.

H. Installation tolerances: Do not exceed the following installation tolerances:
1. Squareness: Plus or minus 1/16 inch (1.6 mm) measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb.
2. Alignment: Plus or minus 1/16 inch (1.6 mm) measured on jambs on a horizontal line parallel to the plane of the wall.
3. Twist: Plus or minus 1/16 inch (1.6 mm) measured at face corners of jambs on parallel lines perpendicular to the plane of the wall.
4. Plumb: Plus or minus 1/16 inch (1.6 mm) measured on the jamb at the floor.

I. Adjust installed doors for correct swings and site tolerances.

J. Adjust installed for smooth non-binding operation and site tolerances.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 122113 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Horizontal louver blinds with aluminum slats.

B. Related Requirements:

1. Division 06 Section "Miscellaneous Rough Carpentry" for wood blocking and grounds for mounting horizontal louver blinds and accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication and installation details for horizontal louver blinds.

C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long.

D. Samples for Initial Selection: For each type and color of horizontal louver blind.

1. Include similar Samples of accessories involving color selection.

E. Samples for Verification: For each type and color of horizontal louver blind indicated.

1. Slat: Not less than 12 inches (300 mm) long.
2. Tapes: Full width, not less than 6 inches (150 mm) long.
3. Horizontal Louver Blind: Full-size unit, not less than 16 inches (400 mm) wide by 24 inches (600 mm) long.
4. Valance: Full-size unit, not less than 12 inches (300 mm) wide.

F. Window-Treatment Schedule: For horizontal louver blinds. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of horizontal louver blind.

B. Product Test Reports: For each type of horizontal louver blind, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For horizontal louver blinds to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Horizontal Louver Blinds: Full-size units equal to 5 percent of quantity installed for each size, color, texture, pattern, and gloss indicated, but no fewer than two units.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver horizontal louver blinds in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install horizontal louver blinds until construction and wet and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where horizontal louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from

Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain horizontal louver blinds from single source from single manufacturer.

2.2 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS

A. Manufacturers: Subject to compliance with requirements.

B. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product by one of the following:

1. Hunter Douglas Contract.
2. Levolor Contract; a Newell Rubbermaid company.
3. Springs Window Fashions.

C. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.

1. Width: 1/2 to 5/8 inch (13 to 16 mm).
2. Thickness: Manufacturer's standard.
3. Spacing: Manufacturer's standard.
4. Finish: Reflective finish on outside-facing surface of slat to enhance reflection of solar energy.
5. Features:

a. Lift-Cord Rout Holes: Minimum size required for lift cord and located near back (outside) edge of slat to maximize slat overlap and minimize light gaps between slats.

D. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides.

1. Capacity: Two blinds per headrail unless otherwise indicated.
2. Ends: Manufacturer's standard.
3. Manual Lift Mechanism:

a. Lift-Cord Lock: Variable; stops lift cord at user-selected position within blind full operating range.

4. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders.

a. Tilt: Full.

5. Manual Lift-Operator and Tilt-Operator Lengths: Manufacturer's standard Full length of blind when blind is fully closed.
6. Manual Lift-Operator and Tilt-Operator Locations: Left side of headrail unless otherwise indicated.- Field verify all locations to ensure no conflicts occur
7. Integrated Headrail/Valance: Curved face.

E. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.

1. Type: Bottom contoured to minimize light gaps.

F. Lift Cords: Manufacturer's standard braided cord.

G. Ladders: Evenly spaced across headrail at spacing that prevents long-term slat sag.

1. Type: Braided cord.

H. Valance: Two slats.

I. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.

1. Type: Overhead.
2. Intermediate Support: Provide intermediate support brackets to produce support spacing recommended by blind manufacturer for weight and size of blind.

J. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard.

K. Side Channels and Perimeter Light Gap Seals: Manufacturer's standard.

L. Colors, Textures, Patterns, and Gloss:

1. Slats: As selected by Architect from manufacturer's full range.
2. Components: Provide rails, cords, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.

2.3 HORIZONTAL LOUVER BLIND FABRICATION

A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less 1/4 inch (6 mm) per side or 1/2 inch (13 mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill dimension of opening in which blind is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

2. Outside of Jamb Installation: Width and length as indicated, with terminations between blinds of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.

1. Lift-and-Tilt Mechanisms: With permanently lubricated moving parts.

D. Mounting and Intermediate Brackets: Designed for removal and reinstallation of blind without damaging blind and adjacent surfaces, for supporting blind components, and for bracket positions and blind placement indicated.

E. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to brackets and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

F. Color-Coated Finish:

1. Metal: For components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.

1. Locate so exterior slat edges are not closer than 1 inch (25 mm) from interior faces of glass and not closer than 1/2 inch (13 mm) 1-1/2 inches (38 mm) from interior faces of glazing frames through full operating ranges of blinds.
2. Install mounting and intermediate brackets to prevent deflection of headrails.
3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.

3.3 ADJUSTING

A. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.

3.4 CLEANING AND PROTECTION

A. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

B. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer and that ensures that horizontal louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged horizontal louver blinds that cannot be repaired in a manner approved by Architect before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain systems.

END OF SECTION 122113

SECTION 130650 - BULLET RESISTANT WOOD DOOR & FRAME ASSEMBLY

PART 1 - GENERAL

1.1 REFERENCE

A. Underwriters Laboratory UL 752-Standard for Bullet Resisting Equipment, ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass, NIJ Standard 0108.01 - (National Institute of Justice) Standard for Ballistic Resistant Protective Materials (September, 1985).

1.2 SUBMITTALS

A. The following shall be submitted by the manufacturer in accordance with Division 1 Sections and any Special Contract Requirements: Submit for approval prior to fabrication: samples, product data (including preparation, storage and installation methods), cuts & anchor spacing, reinforcement & location , product specifications, shop drawings, test reports (current UL Listing Verification & UL 752 Test Results as provided by Underwriters Laboratories), and printed data in sufficient detail to indicate compliance with the contract documents.

B. Provide manufacturer's instructions for installation and cleaning of Bullet Resistant Wood Door Assemblies. All required submittals shall be approved prior to installation.

1.3 DESIGN PERFORMANCE

A. Through the design, manufacturing techniques and material application the Bullet Resistant Wood Door shall be constructed of a wood core lined with a sheet of fiberglass with a UL Standard 752 Level 3 SPSA standards rating. Door frame to have no exposed fasteners, all joint connections to have concealed clips to provide rigid assembly when installed. Exterior laminated and finish painted to match customer specification. Frames are non-rated, with option for ballistic rated tube. Assembly to include, anti-jimmy plate, overhead surface closer, heavy duty continuous hinge, Schalge Lock set, and electric strike release system. Door system to be available in Right hand, left hand and reverse swings.

B. Door to defeat ballistic assaults from 9mm medium power through.44 magnum superpower small arms handgun as tested with UL Standard 752 at Underwriters Laboratories.

1.4 QUALITY ASSURANCE

A. Manufacturer shall be a Company that specializes in manufacturing products of the specified type with a minimum of five years experience. Installer shall be a Company that specializes in product type specified. Manufacturer shall provide a sample with color/finish to the Architect for approval prior to start of work.

1.5 DELIVERY, STORAGE & HANDLING

A. Delivery the materials to the project with the manufacturer's UL Listed Labels intact and legible. Handle the materials with care to prevent damage. Store materials inside and under

cover, stack flat and off floor. Project conditions (temperature, humidity, and ventilation) shall be within the maximum limit recommendations set by manufacturer. Do not install products that are under conditions outside these limits.

1.6 WARRANTY

A. All materials shall be warranted against defects for a period of 1 year for the date of receipt at the project site. Certificates of manufacturer's standard limited warranty shall be provided at project completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Basis of Design product is TSS Bullet Resistant Wood Door and Frame as manufactured by: Total Security Solutions, Inc, 170 National Park Drive, Fowlerville, MI 48836, 866-930-7807.

B. Requests for substitutions will be considered in accordance with provisions of Section 016000 - Product Requirements and Section 012500 – Substitution Requests

2.2 PRODUCT: BULLET RESISTANT WOOD DOORS

A. Product to be TSS WC Wood Door : Door Frame Construction: Frames shall a non-rated Aluminum 1 ¾" x 4" tube, or a **Welded** hollow metal wrapped frame to be prime painted. Door hardware includes: HD continuous hinge, overhead closer, Schlage ND80 lever lockset, anti-jimmy plate, 2-piece door stops, with optional stainless steel mid-band and kick-plate. Shipped fabricated and ready for field installation.

B. Continuous hinge is clear anodized. Field painted and finish in accordance with Section 9 of these specifications.

C. Door Size: 36" x 84" (finish opening 40" x 86"), Jamb Tube 1 3/" x 4"

D. Swing direction: Reverse RH

E. Factory Finish: Wood Veneer

PART 3 - EXECUTION

3.1 PREPARATION

A. Prior to installing the bullet resistive material, the contractor shall verify that all supports have been installed as required by the contract documents and architectural drawings, and approved shop/CAD drawings, if required. Installer shall notify architect of any unsatisfactory preparation that is responsibility of another installer.

B. Clean and prepare all surfaces per manufacturers recommendations for achieving the best results for the substrate under the project conditions.

3.2 INSTALLATION

A. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with Drawings. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb.

B. Bullet Resistant Wood Doors can be installed using industrial adhesive, mastic, screws and bolts. Method of application shall maintain bullet resistive rating at junctures with concrete floor, door and window frames and other penetrations. Installation tolerance shall not exceed 1/16th (1.6mm) for squareness, alignment, twist and plumb. Install hardware as specified.

3.3 POST APPLICATION

A. Bullet Resistant Wood Doors shall be installed in accordance with manufacturer's printed recommendations, including adhering to anchoring and finishing details. Method of application shall maintain the bullet resistive rating at junctures with concrete floor slabs, the concrete roof slabs, the bullet resistive door frames, the bullet resistive window frames and all required penetrations.

B. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements. Clean product and accessories, removing excess sealant, labels and protective covers.

C. Touch-up, repair or replace damaged products before Substantial Completion.

D. Product Warranty: Applicable warranty shall be issued to owner upon final release of completed project.

END OF SECTION

SECTION 283164 - FIRE DETECTION AND FIRE ALARM SYSTEM MODIFICATIONS

PART 1 - GENERAL

1.1 REFERENCES

A. The publications listed below form a part of this specification section to the extent referenced. The publications are referred to within the text by the basic designation only. Use the latest edition, unless noted otherwise.

B. ARCHITECTURAL BARRIERS ACT (ABA)

1. Architectural Barriers Act Accessibility Standard (ABAAS)

C. GENERAL SERVICES ADMINISTRATION

1. PBS Interim Core Building Standards, February 24, 2025,
2. PBS Standard for PBS Cad Deliverables.

D. INTERNATIONAL CODE COUNCIL (ICC)

1. International Building Code® (IBC) – 2024 Edition
2. International Fire Code® (IFC) – 2024 Edition

E. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

1. NFPA 4, Standard for Integrated Fire Protection and Life Safety System Testing – 2024 Edition
2. NFPA 70, National Electrical Code® - 2023 Edition
3. NFPA 72, National Fire Alarm and Signaling Code® - 2022 Edition
4. NFPA 170, Standard for Fire Safety and Emergency Symbols – 2021 Edition
5. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations

F. UNDERWRITERS LABORATORIES (UL)

1. UL 228, Door Closers and Holding Devices
2. UL 268, Smoke Detectors for Fire Protective Signaling Systems
3. UL 464, Audible Signal Appliances
4. UL 497B, Protectors for Data Communications and Fire-Alarm Circuits
5. UL 521, Heat Detectors for Fire Protective Signaling Systems
6. UL 1449, Surge Protective Devices
7. UL 1481, Power Supplies for Fire Protective Signaling Systems
8. UL 1711, Amplifiers for Fire Protective Signaling Systems
9. UL 1638, Safety Visible Signaling Devices for Fire Alarm and Signaling Systems, Including Accessories
10. UL 2017, General Purpose Signaling Devices and Systems
11. UL Fire Protection Equipment Directory

1.2 NOTICE TO BIDDERS

A. Before submittal of bid, examine all drawings, specification, addenda, alternatives, special conditions, and all other bidding documents of all sections of this project, verifying all governing conditions at the site, and become fully informed as to the extent and character of the work required, as well as its relation to other work in the building. Submittal of a bid is an agreement to all requirements of the contract documents and no consideration will be granted for any claimed misunderstanding thereof.

B. Submittal of a bid is deemed a representation by the bidder that the contractor is qualified in all respects to properly perform the work for which he is bidding and has experience with similar work. Bidders are deemed to be aware, based on their background and experience, of materials which may be required in the discharge of their responsibilities, even though unspecified.

C. Where any code or standard referenced in this specification section refers to the Building Official, Fire Code Official, or Authority Having Jurisdiction for any fire protection or life safety interpretation or enforcement requirement, this refers to the GSA Fire Protection Engineer.

D. References made in this specification section to the GSA Fire Protection Engineer must be coordinated through the Contracting Officer's Representative (COR). The GSA Fire Protection Engineer, or their designated representative, will review and approve all submittals noted in this specification section.

E. "Approved", as used in this specification section, means approved by the GSA Fire Protection Engineer or their designated representative.

1.3 SUMMARY

A. Modify the existing networked addressable fire alarm system as described herein and on the contract drawings. The system must include wiring, raceways pull boxes, terminal cabinets, outlet and mounting boxes, control equipment, alarm and supervisory signal devices, alarm notification appliances, and other accessories and miscellaneous items required for a complete operating system even though each item is not specifically mentioned or described. System must be complete and ready for operation after modifications are completed. All new fire alarm devices will be programmed to match the existing fire alarm system sequence of operations.

B. Provide equipment, materials, installation, workmanship, inspection, and testing in strict accordance with the provisions of NFPA 70 and NFPA 72 except as modified herein. The system layout on the Contract Drawings shows the intent of coverage and devices/equipment are shown in suggested locations. Final quantity, system layout and coordination are the responsibility of the Contractor.

C. Keys and locks for equipment must be identical to the existing FACU.

D. Fire Protection Quality Control (FPQC). Services of the FPQC must include:

1. Review all submittal packages for completeness and compliance with the provisions of this specification section. The FPQC must affix their review stamp with signature to the shop drawings, calculations, and material data sheets, indicating approval prior to submitting the shop drawings to the Government.

2. Provide a letter, signed by the FPQC, documenting that the submittal package has been reviewed and noting any outstanding comments.
3. Visit the project site once during the project to verify the fire alarm system modifications are being installed in accordance with approved shop drawings and this specification section.
4. Submit a written report for each site visit that includes a summary of current work activities and certification of compliance with project requirements.
5. The report must be submitted within 5 business days of the site visit to the GSA project manager for distribution and review.
6. Witness final functional performance testing and perform a final installation review.

E. All system components must be listed for their intended use and must be compatible with the existing system and its components. Where the term "listed" appears in this specification section, it means UL-listed (UL Fire Protection Equipment Directory), FM-approved (FM App Guide), or listed by a nationally recognized testing laboratory (NRTL). The omission of these terms under the description of any item of equipment described must not be construed as waiving the requirement for listing or approval. All listings or approvals must be based on an existing ANSI, FM or UL published standard.

1.4 SUBMITTALS

A. Modifications to the existing system are not permitted until qualifications, shop drawings, calculations and product data have been submitted and approved.

B. Qualifications: Submit one electronic copy in pdf format of the following, no later than 30 calendar days prior to shop drawing submittal, in accordance with the General Conditions of the Contract.

1. Certifications and qualifications for contractor and key personnel as noted in 1.5 QUALITY ASSURANCE.
2. Documentation must identify the location of three systems installed by the proposed installer which are comparable to the system specified. Contractor must certify, in writing, that each of the three installed systems has performed satisfactorily, in the manner intended, for a period of not less than 6 months.
3. Contractor qualifications must include key personnel contact information (i.e., project manager, designer, superintendent), previous similar project history, duration of experience, licenses, and any other relevant documentation.

C. Installation Documents: Submit two copies and an electronic copy in pdf format of the following, no later than 21 days prior to the start of system modifications, in accordance with the General Conditions of the Contract. Drawings, unless noted otherwise, must be no smaller than the Contract Drawings.

1. Shop Drawings (Working Plans): Detailed drawings must be in accordance with the requirements prescribed in NFPA 72 and NFPA 170 for Working Plans and comply with PBS Standard for PBS Cad Deliverables. Drawings must include plan and elevation views which establish that the equipment will fit the allotted spaces with clearance for installation and maintenance. Each set of drawings must include the following:

a. System Layout: Plan view drawing showing equipment/device locations, terminal cabinet locations, junction boxes, other related equipment, conduit routing, wire counts, circuit identification in each circuit, and circuit and conduit layouts. Note any locations of exposed or surface-mounted conduit or backboxes. All devices shown on plans and riser diagram must include device addresses. Drawings must comply with the requirements of NFPA 170.
b. Wiring Diagrams: Point-to-point wiring diagrams showing the points of connection and terminals used for electrical field connections in the system, including interconnections between equipment or systems that are supervised or controlled by the system. Diagrams must show connections from field devices to the existing Fire Alarm Control Unit (FACU) and remote fire control units, initiating circuits, switches, relays, and terminals. Provide complete riser diagrams for new or relocated devices indicating the wiring sequence of devices and their connection to the control equipment. Where new devices are added to existing circuits, the riser diagram must show all devices connected to the circuit.
c. Sequence of operation, in matrix format, that describes how the system responds during an alarm, supervisory, and trouble condition. The description must include fire alarm control unit LEDs, audible and visible indications, initiating devices, notification appliances, and auxiliary functions (such as elevator recall, HVAC fan unit shutdown, carbon monoxide detectors, and smoke control system operation), as applicable to the scope of work. The description must provide sufficient information so that the exact function of each new or relocated device and appliance is known.
d. System Operation: A complete list of new or relocated device addresses and corresponding messages for all new equipment.
e. Notification Appliances/Initiating Devices: Data on each new or modified circuit to indicate that there is at least 25 percent spare capacity for notification appliances and 25 percent spare capacity for initiating devices. Annotate data for each circuit on the drawings.

2. Product Data: Annotated catalog data showing manufacturer's name, model, and catalog number for all equipment and components to be considered for the project, as well as standby and alarm current for all initiation and notification appliances to verify calculations.

a. Terminal cabinets
b. Smoke detectors
c. Wiring and cable
d. Notification appliances
e. Firestopping

3. Calculations: Submit battery calculations as required in paragraph Battery Power Calculations. Submit a voltage drop calculation to indicate that sufficient voltage is available for proper operation of the system and all new components and modified circuits, at a minimum rated voltage of the system operating on batteries.

D. Schedule: Provide a schedule indicating the delivery dates of equipment to be supplied; installation sequence; time frame and the total amount of on-site technical assistance time (in man-hours per phase) that the supplier of the equipment has included in their bid to comply with the requirements of this specification section.

E. Equipment List: Provide an equipment list identifying the type, quantity, make and model number of each piece of equipment to be provided under this submittal. The equipment list must include the type, quantity, make, and model of spare equipment. Types and quantities of equipment submitted must coincide with the types and quantities of equipment used in the battery calculations and those shown on the shop drawings. A final equipment list must be submitted with the Operating and Maintenance (O&M) manual.

F. NFPA 241 – Construction Safety Plan: A construction / demolition fire safety plan must be developed in accordance with NFPA 241. The fire safety plan must, at a minimum, provide details on the methods for maintaining fire safety during the project and for addressing all time periods in which the existing fire alarm system is impaired as defined by NFPA 72.

G. Test Procedures: Submit detailed test procedures, prepared and signed by the qualified test personnel for the fire alarm system modifications, 30 days prior to performing system tests. Detailed test procedures must be developed in accordance with NFPA 4 and list all new and relocated components of the installed system such as new initiating devices and circuits, notification appliances and circuits, signaling line devices and circuits, control devices/equipment, batteries, transmitting and receiving equipment, power sources/supply, annunciators, interface equipment, and transient (surge) protective devices. Test procedures must include sequence of testing, time estimate for each test, and sample test data forms. The test data form must be in a check-off format (pass/fail with space to add applicable test data, like the form in NFPA 72) and must be used for the preliminary testing and the acceptance testing. The test data forms must record the test results and must:

1. Identify the NFPA class of all new or modified initiating device circuits (IDC), notification appliance circuits (NAC), and signaling line circuits (SLC).
2. Identify each test required by NFPA 72 in “Test Methods” section and describe how this test must be performed.
3. Identify each new component and new or modified circuit as to the type, location within the facility, and unique identity within the installed system.
4. Provide floor plan sheets showing each new component location, test location, and alphanumeric identity.
5. Identify all test equipment and personnel required to perform each test (including equipment necessary for testing smoke detectors).
6. Provide space to identify the date and time of each test. Provide space to identify the names and signatures of the individuals conducting and witnessing each test.

H. Test Reports: Submit one copy and one electronic copy in pdf format of the NFPA 72 Record of Completion and Inspection and Testing forms. Submit preliminary test reports as indicated in the paragraph “Preliminary Tests”. Submit final test reports with As-built drawings.

I. Redline As-Built Drawings: Maintain a separate set of approved submittal drawings of the modified system, redline marked-up to indicate as-built conditions of new or relocated devices, on-site in the document storage cabinet. These drawings must be always in a current condition and must be made available for review immediately upon request during normal working hours. Redline drawings must be scanned (in color) to .pdf format and submitted a minimum of 7 calendar days prior to the final acceptance test of the system.

J. As-Built Drawings: Submit three copies and one electronic copy in pdf format, in the latest version of AutoCAD and DXF format, and pdf of as-built drawings and schematics no later than 14 calendar days after the final acceptance test. Variations from approved shop drawings, for

whatever reason, including those occasioned by modifications, change orders, optional materials, or required for coordination between trades must be indicated in sufficient detail to accurately reflect the as-built conditions. The drawings must include the following, at a minimum:

1. Complete wiring diagrams showing connections between new or modified devices and equipment, both factory and field wired
2. Riser diagram and drawings showing the as-built locations of new or modified devices and equipment
3. The system as installed, including deviations from both the project drawings and the approved shop drawings. This only applies to new, relocated, or modified circuits.

K. Operation and Maintenance Data: Furnish three hard copies and one electronic copy in pdf format for the project specific operation and maintenance manual no later than 14 calendar days after the final acceptance test of the system. The operation and maintenance manual must be a single volume indexed in booklet form. Manuals must be submitted and approved prior to on-site training. The manuals must include the following documents and information at a minimum:

1. A general description of the design and operation of the system, as modified.
2. Comply with the "Records" section of the "Inspection, Testing and Maintenance" chapter in NFPA 72.
3. A copy of the project as-built drawings in 11 x 17-inch format, folded neatly within the binder.
4. All applicable product installation sheets annotated, as necessary.
5. The manufacturer's name, model number, service manual, parts list, and complete description of new equipment and their basic operating features.
6. Maintenance manual listing routine maintenance procedures, possible breakdowns, and repairs, troubleshooting guide, and system warranty information.
7. Complete procedures for system revision and expansion, detailing both equipment and software requirements.
8. Software delivered for this project must be original software from the manufacturer provided on electronic media, no copies.
9. Printouts of configuration settings for all new or modified devices.
10. Routine maintenance checklist. The routine maintenance checklist must be arranged in columnar format. The first column must list all installed devices, the second column must state the maintenance activity or state not maintenance required, the third column must state the frequency of the maintenance activity, and the fourth column for additional comments or reference.

1.5 QUALITY ASSURANCE

A. The recommended practices stated in the manufacturer's literature or documentation must be considered as mandatory requirements.

B. Qualifications - Contractor: The Contractor must be a licensed Contractor in possession of a valid fire alarm Contractor's license. The Contractor must have a minimum of 5 years of experience in the installation or modification of addressable fire alarm systems in similar facilities.

C. Qualifications - Design Services: Shop (working) drawings and calculations must be prepared under the direction of and signed by a qualified registered professional engineer or NICET Level

III n Fire Alarm Systems. For the purposes of this specification section, a qualified engineer is defined as an individual meeting one of the following conditions:

1. A registered professional engineer having passed the NCEES examination in fire protection engineering.
2. Registered professional engineer with verification of experience and at least 5 years of current experience in the design of fire alarm systems.

D. Qualifications - Fire Protection Quality Control (FPQC): A NICET Level III in fire alarm systems or a qualified engineer must supervise the installation, inspection, and any testing of the system.

E. Qualifications - Supervisor/Foreman: Fire alarm technician with a minimum of 6 years of appropriate (journeyman level) experience in fire alarm installation. A supervisor/foreman must be always on-site when work is being performed. The supervisor/foreman is permitted to perform installation tasks (i.e. working foreman). The supervisor/foreman must be factory-trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

F. Qualifications - Technician: Fire alarm technicians with a minimum of 4 years of experience can be utilized to assist in the installation and termination of fire alarm devices, cabinets, and control units. The fire alarm technicians installing the equipment must be factory-trained in the installation and adjustment of the equipment specified herein and on the drawings.

G. Qualifications - Installer: Fire alarm installer with a minimum of 2 years of experience is permitted to assist in the installation of fire alarm devices, cabinets, and control units. An electrician is permitted to install wire, cable, conduit, and backboxes for the fire alarm system.

H. Qualifications - Test Personnel: Fire alarm technicians with a minimum of 8 years of experience must be utilized to test and certify the installation of the fire alarm devices, cabinet, and control units. The fire alarm technicians testing the equipment must be factory-trained in the installation, adjustment, testing, and operation of the equipment specified herein and on the drawings.

1.6 VERIFYING ACTUAL FIELD CONDITIONS

A. Before commencing work, examine all adjoining work on which the Contractor's work is in any way dependent for perfect workmanship according to the intent of this specification section, and report to the Contracting Officer's Representative any condition which prevents performance of first-class work. No "waiver of responsibility" for incomplete, inadequate, or defective adjoining work will be considered unless notice has been filed before submittal of a proposal.

B. The Contractor must become familiar with all details of the work, verify all dimensions in the field including depth of all beams or similar ceiling obstructions throughout all floors or altered areas in existing buildings, and must advise the Contracting Officer's Representative of any discrepancy before performing the work.

C. Where core drilling is used, the wall or floor must be tested for potential obstructions prior to drilling.

1.7 COORDINATION

A. The contract documents are not intended to serve as coordinated construction drawings showing all minor adjustments in locations required for a fully coordinated installation.

B. Conduit offsets, fittings, and any other accessories required must be furnished as required to provide a complete installation and to eliminate interference with other construction. Fire alarm devices must be coordinated with lights, HVAC diffusers, and other items installed in the ceiling or walls.

C. Field drilling and cutting of holes in structural decks, roofs, walls, etc. required for work under this specification section must be coordinated through various trades in their respective materials. All such drilling, cutting, and reinforcing costs must be borne by the Contractor.

D. Due to the type of work, a fixed sequence of construction is required to properly install or modify the system. It is the responsibility of the Contractor to coordinate, protect, and schedule his work in accordance with the construction sequence.

1.8 EXISTING FIRE ALARM SYSTEM

A. The existing fire alarm control unit is an Edwards EST iO1000.

B. Impairments to the existing fire alarm system must be kept to a minimum or avoided. Fire protection systems outside of the construction project must be kept in service in a method approved.

1. If the fire alarm system must be impaired, procedures compliant with Division 01 Specifications must be incorporated into the design and installation to maintain equivalent levels of fire/life safety and provide formal notification to the facility. The GSA Fire Protection Engineer will make the determination of equivalent level of fire/life safety measures.

C. All work must be performed under the strict guidelines of a fire protection impairment plan to ensure that the fire alarm system is maintained 24 hours a day, 7 days a week, for 365 days a year. Work to replace fire alarm components does not excuse the contractor from maintaining full fire protection within the facility. The fire protection impairment plan must comply with the following:

1. All impairments must be submitted through the MOP process. The impairment methods must be reviewed and approved prior to impairment.
2. The plan must comply with the latest edition of the IBC section for Safeguarding Construction.
3. The plan must comply with Section 01 35 25, Fire Prevention and Protection in Construction, Alteration, and Demolition Projects.
4. Fire watches assigned as a part of any impairment plan must be trained and have documentation of hands-on fire extinguisher training within the previous twelve months. Likewise, they must be trained on how to sound the alarm within the building during any impairment and to independently notify the public fire department of a fire emergency within the building. All fire watch personnel must have a direct means of communication with the project superintendent.

5. Hot work or open flames must not be permitted within the building during the fire protection impairment.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Protect equipment delivered and placed in storage from the weather, excessive humidity, temperature variation, dirt and dust, and other contaminants in accordance with manufacturer's instructions.

B. Coordinate the proposed storage arrangement and location with the Contracting Officer's Representative.

C. Deliver and store products in shipping containers/boxes, with labeling in place.

1.10 WASTE REMOVAL

A. At the conclusion of each day's work, clean up and stockpile on site all waste, debris, and trash, which may have accumulated during the day as a result of work by the Contractor and of his presence on the job. Remove all waste, debris, and trash from the building at the end of each day's work.

1.11 EXTRA MATERIALS

A. Repair Service/Replacement Parts: During warranty period, the service technician must be on-site within 24 hours after notification. All repairs must be completed within 24 hours of arrival on-site.

B. Interchangeable Parts: Spare parts furnished must be directly interchangeable with the corresponding components of the installed system. Spare parts must be suitably packaged and identified by nameplate, tagging, or stamping. Spare parts must be delivered to the Contracting Officer's Representative at the time of final acceptance testing.

C. Spare Parts: Furnish the following spare parts and accessories:

1. 2 of each initiating device and notification appliance installed.

D. Special Tools: Software, connecting cables, and proprietary equipment necessary for the maintenance, testing, and reprogramming of equipment must be furnished to the Contracting Officer's Representative.

1.12 WARRANTY

A. Warranty and Guarantees: The contractor must comply with the requirements of FAR 52.246-21 Warranty of Construction. Final Acceptance includes, but is not limited to, successful final acceptance testing, the receipt of approved as-built drawings and the receipt of approved operation and maintenance manuals.

B. The contractor must provide a service organization, during the warranty period, that has an established office, which has been in existence for a minimum of 5 years and is so located where the response to the project site can occur within 24 hours or less. The service organization must be available 24 hours a day, 7 days a week for repairs during the construction and subsequent warranty period.

1.13 DOCUMENT SECURITY

A. All Unclassified Information , either in electronic or paper formats, must be appropriately marked as “For Official Use Only”.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Standard Products: Material and equipment must be the standard products of a manufacturer, where possible, and not a combination of manufacturers for any particular classification of materials. Materials and equipment must be the standard products of a manufacturer regularly engaged in the manufacture of the products for at least 2 years prior to bid opening. All materials and equipment supplied must be new, first quality and the manufacturer's latest model capable of complying with all requirements of this specification section and must have been in continuous production and in continuous service in commercial applications for at least one-year. Obsolete equipment must not be used.

B. Nameplates: Major components of equipment must have the manufacturer's name, model or serial number, and date of installation provided on a nameplate. Nameplates must be etched metal, permanently attached by screws to panels or adjacent walls.

C. Expansion/Spare Capacity: Spare capacity must pertain to quantities of devices, circuits, amplifiers, raceway, and conductor ampacity (size) and length. The modified system must have spare installed capacity enabling it to support a 25 percent increase in the number of initiating devices and monitor and control points (addressable points), notification appliance circuits, and power supplies. Spare circuit capacity to accommodate installation of the required device increases must be evenly distributed throughout all modified circuits.

2.2 EQUIVALENT TECHNOLOGIES

A. Nothing in this specification section is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed in this specification section. Technical documentation must be submitted to the Contracting Officer’s representative. The system, method, or device must be approved for the intended purpose prior to being utilized. Systems, methods, or devices that are submitted for review after construction of the fire alarm system begins, may be summarily rejected due to contractual considerations or technical considerations.

2.3 SYSTEM OPERATION

A. The fire alarm system must be a complete, supervised, non-coded, networked, addressable fire alarm system conforming to NFPA 72, UL 864, and UL 2017. The system must be activated into the alarm mode by actuation of any alarm initiating device. The system must remain in alarm mode until the initiating device is reset and the control unit is reset and restored to normal.

B. Functions and Operating Features: The system must provide the following functions and operating features:

1. The FACU must provide power, annunciation, supervision, and control for the system. Addressable systems must be microcomputer (microprocessor or microcontroller) based with a minimum word size of eight bits with sufficient memory to perform as specified.
2. Provide Class B initiating device circuits.
3. Provide Class **B** signaling line circuits. Level 3 shall have a minimum of 2 Class B SLCs.
4. Provide Class **B** notification appliance circuits (NACs). Level 3 shall have a minimum of 2 distinct audible NACs and 2 distinct notification NACs.
5. Alarm, supervisory, and/or trouble signals must be automatically transmitted to the remote supervising station.
6. Where the fire alarm system is responsible for initiating an action in another emergency control device or system, such as an HVAC system, an elevator system or door unlocking, the relay or control module must be located within 3 feet of the component controlling the emergency control function, where the control circuit is not configured as a Class D circuit. For door unlocking, the component controlling the emergency control function is the door lock, not the central security panel.
7. An alarm signal must automatically initiate the following functions:

    a. Visual indication of the device operated on the fire alarm control unit, and on the annunciator.
    b. Transmission of an alarm signal via point ID to the remote supervising station.
    c. Continuous actuation of alarm notification appliances.
    d. Recording of the event electronically in the history log of the FACU.
    e. Release of door locks**,** turnstiles**,** door hold open devices.

8. A supervisory signal must automatically initiate the following functions:

    a. Visual indication of the device operated on the fire alarm control unit, and on the annunciator and sound an audible signal at the respective control unit.
    b. Transmission of a supervisory signal via point ID to the remote supervising station.
    c. Recording of the event electronically in the history log of the FACU.

9. A trouble condition must automatically initiate the following functions:

    a. Visual indication of the system trouble on the fire alarm control unit, and on the annunciator and sound an audible signal at the respective control unit.
    b. Transmission of a trouble signal via point ID to the remote supervising station.
    c. Recording of the event electronically in the history log of the FACU.

2.4 SMOKE DETECTORS

A. Photoelectric Smoke Detectors: Provide addressable photoelectric smoke detectors as follows:

1. Provide addressable photoelectric smoke detectors utilizing the photoelectric light scattering principle for operation in accordance with UL 268. Smoke detectors must be listed for use with the fire alarm control unit.
2. Provide self-restoring type detectors that do not require any re-adjustment after actuation at the FACU to restore them to normal operations.
3. Components must be rust and corrosion resistant. Vibration must have no effect on the detector's operation. Protect the detection chamber with a fine mesh metallic screen that prevents the entrance of insects or airborne materials. The screen must not inhibit the movement of smoke particles into the chamber.
4. Provide twist lock bases for detectors. The detectors must maintain contact with their bases without the use of springs. Provide companion mounting base with screw terminals for each conductor. Terminate field wiring on screw terminals. The detector must have a visual indicator to show actuation.
5. The detector address must identify the particular unit, its location within the system, and its sensitivity setting. Detectors must be of the low voltage type rated for use on a 24 VDC system.
6. An operator at the control unit, having the proper access level, must have the capability to manually access the following information for each initiating device.

    a. Primary status.
    b. Device type.
    c. Present average value.
    d. Present sensitivity selected.
    e. Detector range (normal, dirty, etc.)

2.5 ADDRESSABLE CONTROL MODULE

A. The control module must be capable of operating as a relay (dry contact form C) for interfacing the control with other systems, and to control door holders, or initiate elevator fire service. The indicating device or the external load being controlled must be configured as a Class B notification appliance circuit. The system must be capable of supervising audible, visual, and dry contact circuits. The supervision must detect a short on the supervised circuit and must prevent power from being applied to the circuit. The control module must provide address setting means compatible with the control unit's SLC supervision and store an internal identifying code. The control module must contain an integral LED that flashes each time the control module is polled and is visible through the device cover plate. Control modules must be located in environmental areas that reflect the conditions to which they were listed and must include a mounting plate for installation in a junction box.

2.6 NOTIFICATION APPLIANCES

A. Fire Alarm Horns: Horns must conform to the applicable requirements of UL 464. Horns must be surface-mounted with matching mounting backbox. Horns must produce a sound rating of at least 85 dBA at 10 feet.

B. Visible Notification Appliances: Visual notification appliances must conform to the applicable requirements of UL 1638 and conform to ABAAS. Fire alarm notification appliances must have clear high intensity optic lens and be marked "Fire" in red letters. Where more than two appliances are located in the same room, or corridor, or field of view, provide synchronized operation. Devices must use screw terminals for all field wiring.

2.7 SECONDARY POWER SUPPLY

A. Provide for system operation in the event of primary power source failure. Transfer from normal to auxiliary (secondary) power or restoration from auxiliary to normal power must be automatic and must not cause transmission of a false alarm.

B. Batteries: Provide sealed, maintenance-free, lead-acid batteries as the source for emergency power to the FACU. Batteries must contain suspended electrolyte. The battery system must be maintained in a fully charged condition by means of a solid-state battery charger.

1. Capacity, Fire Alarm System: Battery size must have sufficient capacity to operate the fire alarm system under supervisory and trouble conditions, including audible trouble signal devices for 24 hours and audible and visual signal devices under alarm conditions for an additional 15 minutes.
2. Battery Power Calculations: Verify that battery capacity of the modified system exceeds supervisory and alarm power requirements. Substantiate the battery calculations for alarm, alert, and supervisory power requirements. Include ampere-hour requirements for each system component and each control unit component, and compliance with UL 864. Provide complete battery calculations for the alarm, alert, and supervisory power requirements. Include a 1.2 derating factor in all calculations.
3. For battery calculations use the following assumptions: Assume a starting voltage of 24 VDC for starting the calculations to size the batteries. Calculate the required amp-hours for the specified standby time, and then calculate the required amp-hours for the specified alarm time. Calculate the nominal battery voltage after operation on batteries for the specified time period.

C. Battery Chargers: Provide a solid-state, fully automatic, variable charging rate battery charger. The charger must be capable of providing 120 percent of the connected system load and must maintain the batteries at full charge. In the event the batteries are fully discharged (20.4 VDC), the charger must recharge the batteries back to 95 percent of full charge within 48 hours after a single discharge cycle as described in paragraph Capacity above.

2.8 WIRING

A. Alarm Wiring: New SLC and IDC wiring must be copper cable (solid or stranded) in accordance with the manufacturer's requirements. Copper signaling line circuits and initiating device circuit field wiring must be No. 18 AWG size twisted conductors at a minimum. Notification appliance circuits (NAC) must be copper twisted cable and sized based on voltage calculations and manufacturer's recommendations. NAC must be minimum No. 16 AWG. Shielded cable must be provided in accordance with manufacturers' recommendations. Wire size must be sufficient to prevent voltage drop below manufacture's recommendations. Power wiring, operating at 120 VAC minimum, must be a minimum of No. 12 AWG solid copper having similar insulation.

Acceptable power-limited cables are FPL, FPLR, or FPLP as appropriate with red colored covering. Non-power-limited cables must comply with NFPA 70.

B. Network Wiring: Wiring between FACUs and remote FACUs must be copper cable or fiber optic in accordance with the manufacturer's recommendations.

C. Use larger wire sizes when recommended by the manufacturer, based on actual system configurations. Wire size must be sufficient to prevent voltage drop problems. Circuits operating at any voltage must not have a voltage drop exceeding 10 percent of nominal voltage.

2.9 ENVIRONMENTAL ENCLOSURES OR GUARDS

A. Environmental enclosures must be provided to permit fire alarm components to be used in areas that exceed the environmental limits of the listing. The enclosure must be listed for the device or appliance as either a manufactured part number or as a listed compatible accessory for the UL category that the component is currently listed. Guards required to deter mechanical damage must be either a listed manufactured part or a listed accessory for the category of the initiating device or notification appliance.

PART 3 - EXECUTION

3.1 DEVICE/EQUIPMENT INSTALLATION

A. Notification Appliances: Locate notification appliances as required by NFPA 72 and IBC/IFC and as modified by this paragraph. Notification appliance circuits must not be installed in the same raceway with signaling line circuits.

1. Visible Notification Appliances

a. Unless the project includes a new fire alarm system or a complete replacement of an existing fire alarm system, visible notification appliances are not required to be installed in areas where visible notification appliances do not currently exist or where noncompliant existing visible notification appliances currently exist. This requirement does not preclude the addition of new visible notification appliances to existing fire alarm systems that contain existing compliant visible notification appliances.

b. Visible notification appliances must be installed only in public and common areas. For the purposes of this requirement, visible notification appliances are not required to be installed in individual offices. Public and common areas include, but are not limited to, public restrooms, reception areas, building core areas, conference rooms, and open office areas.

c. Visible notification appliances are not permitted to be installed in exit enclosures/stairways.

B. Smoke Detectors: Locate detectors as required by NFPA 72, IBC/IFC, and as modified by this paragraph. Smoke detectors are permitted to be on the wall no lower than 12 inches from the ceiling with no minimum distance from the ceiling. Install smoke detectors no closer than 5 feet from air-handling supply outlets.

1. Area smoke detectors must not be installed in any of the following rooms: mechanical equipment rooms, electrical rooms, and telephone closets.
2. Smoke detection appropriate for the application must be installed in each of the following: uninterruptible power service rooms, main electric rooms, transformer vaults, telephone exchanges, and information technology equipment rooms. When smoke detection is installed in rooms having high voltage equipment, the smoke detection must not be installed directly above the high voltage equipment.
3. Smoke detectors used solely to initiate elevator recall must initiate an alarm signal, unless specifically approved to initiate a supervisory signal.
4. Smoke detectors located at doors for the exclusive operation of automatic door release must initiate an alarm signal, unless specifically approved to initiate a supervisory signal.

C. End of Line Device: End of line (EOL) devices must be provided as required by the manufacturer's wiring installation manual. End of line devices must reside with the last device on each circuit and must not be extended to some other junction box. The last device on each circuit and the end of line device must not be installed in secure spaces or difficult to access spaces such as vaults, judge's chambers, court rooms, confined spaces, private offices, detention facilities, commercial kitchens, or secured office spaces. End of line devices must be in public spaces accessible to fire alarm technicians. Each fire alarm device housing an end of line device must be marked with approved labeling to show "EOL" and the circuit for the EOL.

3.2 SYSTEM MONITORING

A. Emergency Generators: Generators must be monitored by the fire alarm system for the following supervisory conditions: generator running, generator common trouble.

3.3 SYSTEM FIELD WIRING

A. Wiring within Cabinets, Enclosures, and Boxes: Provide new or modified wiring in a neat and workmanlike manner and installed parallel with or at right angles to the sides and back of any box, enclosure, or cabinet. New or modified conductors that are terminated, spliced, or otherwise interrupted in any enclosure, cabinet, mounting, or junction box must be connected to screw-type terminal blocks. Mark each new or modified terminal in accordance with the wiring diagrams of the system. The use of wire nuts or similar devices is prohibited. Wiring must conform to NFPA 70.

B. Terminal Cabinets: Provide steel terminal cabinets with locking, hinge mounted doors in which terminal strips are securely mounted. Terminal size must be appropriate for the size of the wiring to be connected. Minimum size is 8 inches by 8 inches. Only screw-type terminals are permitted.

C. Alarm Wiring: Voltages must not be mixed in any junction box, housing, or device, except those containing power supplies and control relays. For shielded wiring, ground the shield at only one point that is in or adjacent to the FACU. Pigtail or T-tap connections to signal line circuits, supervisory alarm circuits, and notification appliance circuits are prohibited. Color coding is required for circuits and must be maintained throughout the circuit. Conductors used for the same function must be similarly color coded.

D. Conduit: New or modified conductors must be installed in rigid metal conduit or electrical-metallic tubing with a minimum diameter of ¾-inch. Provide all new conduit unless specifically

noted otherwise on the drawings. Electrical metallic tubing must use steel compression type fittings and couplings. The use of flexible metal conduit not exceeding a 6-foot length is permitted for connection to initiating devices and notification appliances. Run conduit or tubing (rigid, IMC, EMT, FMC, etc., as permitted by NFPA 72 and NFPA 70) concealed unless specifically indicated otherwise on the drawings. Conduit may be exposed in unfinished mechanical/electrical rooms, basement, mezzanine, and penthouse levels.

E. Conductor Terminations: New or modified conductors must be labelled at terminal blocks in terminal cabinets and at the FACU. Each conductor or cable must have a heat shrink-wrap label to provide a unique and specific designation. Each terminal cabinet, FACU, NAC panel and remote FACU must contain a laminated drawing that indicates each conductor, its label, circuit, and terminal. The laminated drawing must be neat, using 12-point lettering minimum size, and mounted within each cabinet, panel, or unit so that it does not interfere with the wiring or terminals.

F. The conductors for the notification appliance circuits must not be installed in the same raceway as the conductors for the signaling line circuits unless permitted by NFPA 70.

G. All existing wiring must be tested for abnormal conditions (grounds, shorts, opens, etc.) prior to re-use. In general, existing initiating device circuits can be re-used as signaling line circuits if the circuit is not loaded to more than 75 percent of the available circuit loading and the distance limitations as set forth by the manufacturer's recommended specifications are not exceeded. Existing notification appliance circuits can be re-used, only if the existing circuit is not loaded to more than 75 percent of the available power for the circuit from the FACU. In the event that a signaling line circuit or a notification appliance circuit load exceeds 75 percent of the available circuit loading, new circuits must be installed.

H. New or modified exposed raceways must be run parallel and perpendicular to the walls and ceilings. Wherever practical, exposed raceways must be run on the ceiling as close as possible to a wall or as high as possible on a wall. Where exposed raceways must cross under a structural beam or rib, they must be run down on one side of the beam or rib, across its bottom, and up to the ceiling on the other side of the beam or rib. No spanning from beam to beam or rib to rib must be permitted. The use of a raceway body on one side of a beam or rib is permitted provided it is accessible. The method and location of all exposed raceways must be approved prior to start of any installation work.

3.4 PAINTING AND LABELING

A. Exposed conduit: In finished areas, paint new exposed electrical conduit (serving fire alarm equipment), fire alarm conduit, surface metal raceways, junction boxes, and electrical boxes to match adjacent finishes. The inside cover of the junction box must be identified as "Fire Alarm" and the conduit must have painted red bands ¾-inch wide at 10-foot centers and at each side of a floor, wall, or ceiling penetration.

B. Concealed conduit: All new concealed conduit, junction boxes and back boxes must be factory painted red.

C. Addressable device labeling: Each new addressable device must be labeled with permanent labels indicating the device's digital address.

D. Labeling adhere to the following requirements:

1. A font size of 22-point.
2. Red devices must have red letters on a white background.
3. Devices of other colors must have black letters on a white or clear background with enough contrast to easily legible.
4. Both sides of the base for ceiling-mounted devices.

E. Single ½-inch labeling must be placed on the following new or relocated devices:

1. Manual fire alarm boxes; state the digital address of the device. Mount the label at the top of the manual fire alarm box.
2. Detector bases; two sides with ½-inch (12 mm) labels. Labels must have the digital address on each.
3. Where a single detector is in a room, with 10 feet or less of depth from the door to the opposite wall and 100 square feet or less of floor area, only one label must be required on the detector in the most visible location from the floor.
4. End of line devices must additionally have the term "EOL" on their label if the digital address indicates the circuit the EOL is on. If the digital address does not indicate the circuit for the EOL, then a separate label with "EOL" and the circuit designator must be applied to the device exclusive of the device's digital address label.
5. Remote alarm indicators must have the location of the detector and the area protected by the detector prominently indicated at the remote alarm indicator by a permanently attached placard or other approved means. Remote supervisory indicators must be clearly labeled to indicate both their function and any device or equipment associated with each detector.

3.5 PRELIMINARY TESTS

A. The contractor must conduct preliminary tests to ensure that all new, relocated or modified devices and circuits are functioning properly. Test the system in accordance with the requirements of NFPA 4 and NFPA 72.

B. The contractor must be in attendance at preliminary testing to make necessary adjustments. After preliminary tests are complete, and any necessary corrections made and retested, submit a signed Verification of Compliant Installation letter that the installation is complete, compliant with the specification and fully operable. The letter must include the names and titles of the witnesses to the preliminary tests. Final acceptance testing will not be performed until after the connections to the building fire alarm system are complete. Submit request for test at least 15 calendar days prior to the requested test date. Provide, with the letter, all completion documentation in accordance with NFPA 72 and the test reports noted below.

a. Redline shop drawings provided in electronic format (.pdf).
b. Audibility test results with marked-up test floor plans.
c. Complete program printout including input/output addresses.

C. Minimum System Tests. The required tests are as follows:

1. Verify the absence of unwanted voltages between new or modified circuit conductors and ground. The tests must be accomplished at the preliminary test with results available at the final acceptance test.

2. Verify that the control unit is in the normal condition as detailed in the manufacturer's O&M manual.
3. Test each new or relocated initiating device and notification appliance and circuit for proper operation with response at the control unit.
4. Disconnect the verification feature for smoke detectors during tests to minimize the amount of smoke needed to activate the detector.
5. Smoke detectors must be tested in accordance with manufacturer's recommended test method. Use of magnets is prohibited.
6. Verify receipt of all point ID signals at the remote supervising station.
7. Test the system for specified functions in accordance with the contract drawings and specification and the manufacturer's O&M manual.
8. Verify, by test, the secondary power can operate the system for the time period and in the manner specified.
9. Visually inspect new and modified wiring for compliance with applicable circuit class.
10. Test battery charger and batteries.
11. Verify that software control and data files have been entered or programmed into the FACU. Hard copy records of the software must be provided to the Contracting Officer's Representative.
12. Verify that red-line drawings are accurate.
13. Measure the voltage drop at the most remote audible notification appliance (based on wire length) on each new or modified notification appliance circuit.
14. Open each new or modified SLC, IDC and NAC circuit to test the wiring supervisory feature.
15. Audibility Tests: Test all new or relocated notification appliances to ensure sound pressure levels from audible notification appliances are a minimum of 15 dBA over ambient (ambient is 55 dBA for office spaces) with a maximum of 110 dBA in any occupiable area. The provisions for audible notification (audibility and intelligibility) must be met with doors, fire shutters, movable partitions, and similar devices closed.

3.6 FINAL ACCEPTANCE TEST

A. An updated contact ID list must be submitted to the Central Station Monitoring Company prior to the start of final acceptance testing.

B. The contractor must ensure that representatives of all installation contractors, manufacturers, designers, GSA associates, and tenants necessary to perform all testing are present for the final acceptance testing. Any delays or additional costs in testing or repeated testing necessary to complete this requirement because representatives were not on site for testing is not the responsibility of the Government.

C. Final acceptance testing must be coordinated and performed by the contractor, in the presence of the Contracting Officer's Representative and the GSA Fire Protection Engineer, or their designated representative). The test must not be conducted until all parties agree on the scheduled test date. The contractor must provide all the necessary personnel and equipment to conduct the tests.

D. Any and all required tests noted in the paragraph "Preliminary Test" must be repeated at the discretion of the GSA Fire Protection Engineer.

E. If equipment is found to be defective or non-compliant with contract requirements, perform corrective actions and repeat the tests. Tests must be conducted and repeated, if necessary, until the system has been demonstrated to comply with all contract requirements.

1. Any such repeated tests as required by the Government must be done at no additional expense to the Government.
2. Repeated testing expenses must be borne by the contractor and include but not be limited to, contractor's direct and indirect expenses for repeating the testing, travel and professional expenses for GSA fire protection engineers, technicians, contracting officers, contracting officer's representatives, project managers and facility managers, or their designated representatives, and any other expense necessary to repeat final acceptance testing as required by this contract.

F. The contractor must perform all testing in occupied facilities at times of day that present the lowest impact and disruption to Government business and activities. Coordinate all testing in occupied buildings with the Facility Manager to ensure that fire alarm system testing does not interrupt Government operations. This may require extensive after hours work to perform such testing.

G. Damage done to the facility from improper testing is the responsibility of the contractor and is not an acceptable reason for schedule delays or additional costs to the Government.

H. Upon satisfactory completion of the tests, the contractor must leave the system in proper working order.

I. Warranty: Except as otherwise expressly provided in the contract documents, the contractor must guarantee all work to be free of all defects of workmanship and materials for the warranty period after final acceptance of the work by the Contracting Officer's Representative. Include service directory with telephone numbers for 24-hour emergency service.

3.7 TRAINING

A. Instructor: Training must be performed by an instructor, manufacturer trained regarding the inspection, testing and maintenance of the system installed. The instructor must train the Government employees designated by the Project Manager, in the care, adjustment, maintenance, and operation of the fire detection and alarm system.

B. Required Instruction Time: Provide 4 hours of instruction after final acceptance of the system. The instruction must be given during regular working hours on such dates and times as selected by the Contracting Officer's Representative. The instruction may be divided into two or more periods at the discretion of the Contracting Officer's Representative.

END OF SECTION 28 3164

APPENDIX XA

Limited Asbestos and Lead-Based Paint Survey

Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203

February 9, 2018

Terracon Project No. M1177147

Prepared for:
Design Edge, PC
Colorado Springs, Colorado

Prepared by:
Terracon Consultants, Inc.
West Fargo, North Dakota

February 9, 2018

Design Edge, PC
711 North Cascade Avenue, Suite 100
Colorado Springs, Colorado 80903

Attn: Ms. Swagata Guha
E: swagata@de-arch.com

Re: Limited (Renovation-Specific) Asbestos and Lead-Based Paint Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203
Terracon Project No. M1177147

Dear Ms. Guha:

Terracon Consultants, Inc. (Terracon) is pleased to submit the attached report for the above-referenced site to Design Edge, PC. The purpose of this report is to present the results of a limited (renovation-specific) asbestos and lead-based paint survey performed on January 19, 2018 and January 22, 2018, respectively. The surveys were conducted in general accordance with Terracon Proposal No. PM1177147 dated November 14, 2017. We understand that these surveys were requested to identify and locate asbestos-containing materials (ACM) and lead-based paint (LBP) in the client defined survey area, which is scheduled for renovation. We further understand that the client defined survey area did not include building corridors, the building exterior, attic spaces above the offices, or the building roof.

Terracon appreciates the opportunity to provide this service to Design Edge, PC. If you have any questions regarding this report please contact the undersigned at 701-282-9633.

Sincerely,
Terracon Consultants, Inc.

Rhonda L. Olson
Staff Geologist

Kevin M. Troyer
Senior Industrial Hygienist

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LIMITED ASBESTOS AND LEAD-BASED PAINT SURVEY
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203

Terracon Project No. M1177147
February 9, 2018

1.0 INTRODUCTION

Terracon conducted a limited (renovation-specific) asbestos and lead-based paint survey for Design Edge, PC of the Ronald N. Davies Federal Building and U.S. Courthouse at 102 North 4th Street, Grand Forks, North Dakota.

The limited asbestos survey was conducted on January 19, 2018, by AHERA[1] accredited and State of North Dakota certified asbestos and lead-based paint inspectors in general accordance with Terracon Proposal No. PM1177147 dated November 14, 2017.

Interior building components were surveyed and homogeneous areas[2] (HA) of suspect asbestos-containing materials (ACM) were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but unsampled materials could be located in walls, in voids, or in other concealed areas. Suspect ACM samples were collected in general accordance with the sampling protocols outlined in United States Environmental Protection Agency (USEPA) 40 Code of Federal Regulations (CFR) 763.86, Sampling. Samples were delivered to an accredited laboratory for analysis by polarized light microscopy (PLM).

Paint samples were collected from accessible painted surfaces. The paint samples were submitted to an accredited laboratory for analysis of lead by USEPA method 6010C.

1.1 Project Objective

We understand that the project services were requested due to planned renovation of the building. USEPA regulation 40 CFR 61-National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart M-National Emission Standard for Asbestos, prohibits the release of asbestos fibers to the atmosphere during demolition or renovation activities. The asbestos NESHAP requires that potentially regulated asbestos-containing building materials be identified, classified, and quantified prior to planned disturbances.

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[1] AHERA = Asbestos Hazard Emergency Response Act
[2] A homogeneous area (HA) consists of building materials that appear similar throughout in terms of color and texture with consideration given to the date of application.

Paint sampling was completed to identify lead containing paints on painted components so that proper worker protection, environmental protection, and disposal can be completed.

1.2 Reliance

This report is for the exclusive use of Design Edge, PC for the project being discussed. Reliance by any other party on this report is prohibited without written authorization of Terracon and Design Edge, PC. Reliance on this report by Design Edge, PC and all authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, this report, and Terracon's Agreement for Services. The limitations of liability defined in Terracon's Agreement for Services is the aggregate limit of Terracon's liability to Design Edge, PC.

2.0 BUILDING DESCRIPTION

Terracon understands the subject building consists of a three-story structure originally completed in 1906, with a large renovation in 1964. The building is currently utilized as offices and courthouses.

The client-defined survey area is approximately 9,000 square-feet (sf) located on the third floor. Interior walls are primarily plaster and gypsum wallboard (GWB). Flooring consists of carpet tiles and floor tile. Ceilings consist of plaster and drop-in ceilings with interlocking, steel, and/or acoustical ceiling tiles. Ducting connected to air handling units in the plenum space above the drop ceiling are covered in insulation.

3.0 FIELD ACTIVITIES

3.1 Asbestos Survey

The survey was conducted by Mr. Leif Schonteich and Ms. Rhonda Olson, AHERA accredited North Dakota Department of Health (NDDH) licensed asbestos inspectors. Copies of Mr. Schonteich's and Ms. Olson's asbestos inspector certifications are attached as Appendix D. The survey was conducted in general accordance with the sample collection protocols established in USEPA 40 CFR 763.86, Sampling. A summary of survey activities is provided in the following subsections.

3.1.1 Visual Assessment

Survey activities were initiated with visual observation of the interior and exterior of the building to identify homogeneous areas of suspect ACM. A homogeneous area (HA) consists of building materials that appear similar throughout in terms of color and texture with consideration given to the date of application. Interior assessment was conducted in visually accessible areas of the

building proposed for demolition. It should be noted that additional suspect but unsampled materials could be located inside walls, voids, or other concealed areas.

Terracon typically investigated for flooring beneath carpeting by lifting small corner sections of carpet. If tiles were seen, they have been identified in the report. If tiles were not seen at corners under the carpet, it does not imply that there are no tiles beneath the carpets. Terracon sampled accessible flooring materials but did not conduct destructive investigation on floors to identify multi-layered tile/underlayment systems, concealed paper, vapor barriers, or floor tiles/mastics under wood floor systems due to the historical nature of the building.

3.1.2 Physical Assessment

A physical assessment of each HA of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the USEPA as a material which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

3.1.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in general accordance with USEPA sampling protocols. Samples of suspect materials were collected from randomly selected locations in each homogeneous area. Bulk samples were collected using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

The selection of sample locations and frequency of sampling were based on Terracon's observations and the assumption that like materials in the same area are homogeneous in content. Terracon collected 39 bulk samples from 11 HAs. A summary of suspect ACM samples collected during the survey is included as Appendix B. A sample location drawing is included as Appendix E.

Terracon did not identify HAs assumed as ACM materials. Wood flooring was identified beneath layers of carpet, tile, and mastic. Terracon did not identify additional layers beneath the wood flooring in the areas accessible for inspection.

3.2 Painted Surface Coating Assessment

Terracon collected paint chip samples from painted components utilizing a chisel and sample bags. Terracon collected paint chip samples from the walls, chair rails, plaster ceiling, heat registers, door frames, and window frames and sills. A summary of paint types/colors sampled and locations where samples were collected during the survey are included as Appendix C and D, respectively.

3.3 Sample Analysis

Bulk samples were submitted under chain of custody to International Asbestos Testing Laboratories (IATL) of Mt. Laurel, New Jersey for analysis by PLM with dispersion staining techniques per USEPA's *Method for the Determination of Asbestos in Bulk Building Materials* (600/R-93/116). The percentage of asbestos, if present, was determined by microscopic visual estimation. IATL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) Accreditation No. 101165-0.

The paint chip samples were submitted under chain of custody to International Asbestos Testing Laboratories (IATL) of Mt. Laurel, New Jersey for analysis of lead by USEPA method 6010C on a 5-day turnaround time (TAT). IATL is accredited under the American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (AIHA-LAP) (ID No. 100188) which is recognized by the National Lead Laboratory Accreditation Program.

4.0 REGULATORY OVERVIEW

4.1 Asbestos

The North Dakota Division of Air Quality under the NDDH enforces the asbestos NESHAP as adopted by reference in North Dakota Administrative Code Chapter 33-15-13. The owner or operator must provide NDDH with written notification at least 10 working days prior to the commencement of asbestos abatement activities that will disturb regulated ACM (RACM) in amounts greater than or equal to 160 square feet, 260 linear feet, or 35 cubic feet.

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. The asbestos NESHAP regulation also requires the identification and classification of existing ACM according to friability prior to demolition or renovation activity. Friable ACM is a material containing more than 1% asbestos that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. All friable ACM is considered RACM.

The asbestos NESHAP regulation classifies ACM as RACM, Category I nonfriable ACM, or Category II nonfriable ACM. RACM includes all friable ACM, along with Category I and Category II nonfriable ACMs that have become friable; will be or have been subjected to sanding, grinding, cutting or abrading; or that have a high probability of becoming or have become crumbled, pulverized, or reduced to powder in the course of renovation or demolition activity. Category I nonfriable ACMs are exclusively asbestos-containing packings, gaskets, resilient floor coverings, resilient floor covering mastics, and asphalt roofing products that contain more than 1% asbestos. Category II nonfriable ACMs are all other nonfriable materials other than Category I nonfriable

ACMs that contain more than 1% asbestos. Category II nonfriable ACMs generally include but are not limited to cementitious material such as cement pipes, cement siding, cement panels, glazing, mortar, and grouts.

The Occupational Safety and Health Administration (OSHA) asbestos standard for construction (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below the permissible exposure limits (PELs) of 0.1 asbestos fiber per cubic centimeter of air (0.1 f/cc) as an 8-hour time-weighted average (TWA) or 1.0 f/cc as a 30-minute excursion limit. The OSHA standard classifies construction and maintenance activities that could disturb ACM and specifies work practices and precautions that employers must follow when engaging in each class of regulated work.

4.2 Lead-Based Paint (LBP)

Lead is regulated by the USEPA and OSHA. USEPA regulates lead use, removal, and disposal, and OSHA regulates worker exposure to lead. USEPA defines LBP as paint, varnish, stain or other applied coating that contains lead equal to or greater than 1.0 milligram per square centimeter (mg/cm^2), 5,000 milligrams per kilogram (mg/kg), or 0.5% by dry weight as determined by laboratory analysis. For the purpose of the OSHA lead standard, lead includes metallic lead, all inorganic lead compounds, and organic lead soaps. The OSHA standard does not define the amount of lead in paint that constitutes lead-containing paint.

USEPA regulates disposal of hazardous materials. The USEPA has stated that components removed with intact LBP that is not delaminating from the substrate may be disposed as general demolition debris. If the LBP is stripped from components, or if it is delaminating from the substrate, the waste may be subject to hazardous waste rules [i.e., Toxicity Characteristics Leaching Procedure (TCLP)].

USEPA issued the Renovation, Repair, and Painting (RRP) rule (40 CFR Part 745) requiring the use of lead-safe practices and other actions aimed at preventing lead poisoning. Under the rule, beginning in April 2010, contractors performing renovation, repair, and painting projects that disturb LBP in homes, childcare facilities, and schools built before 1978 must be certified and must follow specific work practices to prevent lead contamination. The NDDH has adopted similar regulations.

The OSHA Lead Standard for Construction (29 CFR 1926.62) applies to all construction work where an employee may be occupationally exposed to lead. All work related to construction, alteration or repair (including painting and decorating) is included. The lead-in-construction standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. Under this standard, construction includes, but is not limited to, the following:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures, substrates, or portions containing lead, or materials containing lead
- Installation of products containing lead
- Lead contamination/emergency clean-up
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed
- Maintenance operations associated with construction activities described above

Employers must assure that no employee will be exposed to lead at concentrations greater than the PEL of 50 micrograms per cubic meter ($\mu g/m^3$) averaged over an eight-hour period without adequate protection. The OSHA standard also establishes an action level of 30 $\mu g/m^3$, which if exceeded, triggers certain requirements, including periodic exposure monitoring and medical monitoring.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 Asbestos Survey

The following ACMs were identified as a result of laboratory analysis or assumed asbestos-containing:

Material Description	Material Location	NESHAP Classification	Estimated Quantity[3]
9" x 9" white floor tile	318, 320, 322, 322A, 322B, 324, 324B	Category I	1,750 SF
White joint compound	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	RACM	260 Joints
Gypsum with joint compound composite	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	RACM	1900 SF

The above listed RACM must be removed by a state of North Dakota licensed abatement contractor prior to any demolition activities that may disturb these materials in accordance with applicable federal, state, and local regulations.

The above listed Category I and Category II nonfriable ACMs that are damaged or could be damaged to the extent that they could be crumbled, pulverized or reduced to powder when dry,

[3] Estimated quantities are based on a cursory field evaluation, and actual quantities may vary significantly, especially if ACMs are present in hidden and/or inaccessible areas not evaluated as part of this survey. SF = square feet, LF = linear feet

making it friable, must be removed in accordance with applicable federal, state, and local regulations prior to any activities (renovation and/or demolition) that may disturb these materials.

Intentionally running over Category I and Category II nonfriable ACMs with tracked vehicles as a means of segregation or compaction, is considered grinding the material, making then friable RACM and subject to the asbestos NESHAP.

USEPA states that waste consolidation efforts that involve the use of jack hammers or other mechanical devices such as grinders to break up asbestos-containing concrete or other materials covered or coated with Category I nonfriable ACM, are subject to the regulation. If such materials adhering to the concrete are removed before waste consolidation, the waste consolidation is not subject to NESHAP. USEPA's interpretation is that when manual methods such as axes, hatchets, knives, spud bars, pry bars, and shovels, but not saws or methods that slice, shear, or punch such as a power slicer or power plow to remove roofing materials, are used, assuming the roof material is not friable, that the removal operation is not subject to the asbestos NEHSAP regulation.

Summaries of the classification, condition, and approximate quantity of identified and assumed ACMs are presented in Appendix A. The summary of sample locations is presented in Appendix B. Laboratory analytical reports are included in Appendix C.

Terracon can provide Design Edge, PC with a proposal for developing asbestos abatement specifications (project design) and for performing abatement oversight and air monitoring upon request.

5.2 Limited Lead-Based Paint Screening

The painting history of any given location often will vary from point to point due to many factors including variability in paints used, paint film thickness, variable retention of older paint layers before repainting, demolition/installation of walls during renovations, and unknown historic non-homogenous painting schemes. As such, a given color and building component combination that is currently apparent often will not provide consistent testing results for lead.

Terracon attempted to perform lead paint testing in sufficient quantity to establish trends in lead content based on distinguishable characteristics such as color or building component, subject to time and budget constraints. Based on the testing results presented in Appendix E, in Terracon's opinion the following components are known to contain lead:

- Tan/Green/White on gypsum wallboard above the chair rail.
- Tan/White/Green on plaster above drop ceiling.
- White/White/Grey on plaster below the chair rail.

The above list is not intended to be an all-inclusive list of all locations where LBP is present throughout the building. Terracon recommends that the contractor(s) involved in the stripping operation be notified of the presence of lead on painted components. OSHA's lead standards for construction (29 CFR 1926.62) apply regardless of the concentrations and contractor(s) will need to provide appropriate personal protective equipment and conduct personal exposure monitoring, at a minimum. Terracon recommends the contractor(s) review the specified work tasks and methods involved in the demolition process and prepare a detailed lead management plan. The management plan should identify the work procedures and health and safety measures to be used in the lead material removal. It should also be noted that any wastes derived during renovation/demolition activities that contain paints known to contain lead must be characterized for proper waste disposal.

6.0 LIMITATIONS/GENERAL COMMENTS

Terracon did not perform sampling which required demolition or destructive activities such as knocking holes in walls, dismantling of equipment or removal of protective coverings. Reasonable efforts to access suspect materials within known areas of restricted access (e.g., crawl spaces) were made; however, confined spaces or areas which may pose a health or safety risk to Terracon personnel were not sampled. Sampling did not include suspect materials which could not be safely reached with available ladders/man-lifts.

This asbestos survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our survey of the building. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by Design Edge, PC for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories, or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

It should be understood that our services may not have identified all ACMs present in inaccessible areas of the buildings. Additional assessment of hidden areas may be necessary during demolition/renovation activities in the event that suspect materials are uncovered.

APPENDIX A

Limited Asbestos Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

IDENTIFIED ASBESTOS-CONTAINING MATERIALS BY HOMOGENEOUS AREA (HA)

The materials listed in this table have been sampled and determined to contain asbestos in concentrations greater than 1%. When disturbed, various federal, state, and local regulations may apply. Removal may be necessary before renovations and in most cases before a demolition. See Appendix B for a summary of samples collected. See Appendix C for detailed analytical results.

HA No.	Material Description	Material Location	% and Type Asbestos[1]	NESHAP Classification	Condition	Estimated Quantity[2]
3	9" x 9" white floor tile	318, 320, 322, 322A, 322B, 324, 324B	PC[3] 2.1% Chrysotile	Category I	Good	1732 SF
15	White joint compound	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	PC 9.2% Chrysotile	RACM	Good	260 Joints
15	Gypsum with joint compound composite	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	PC 2.0% Chrysotile	RACM	Good	1900 SF

[1] % & Type Asbestos - this column contains both the analytical result of the sample with the highest concentration of asbestos detected in the samples that make up the HA and the types of asbestos identified.
[2] Estimated quantities are based on a cursory field evaluation, and actual quantities may vary significantly, especially if ACMs are present in hidden and/or inaccessible areas not evaluated as part of this survey. SF = square feet, LF = linear feet
[3] Point count

APPENDIX B

Limited Asbestos Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

ASBESTOS SURVEY SAMPLE LOCATION SUMMARY

HA No.	Material Description	Sample Number	Sample Location	Lab Results
1	Grey floor tile	1-FT2-01	Doorway of Room 324C	None detected
1	Yellow mastic	1-FT2-01	Doorway of Room 324C	None detected
1	Brown mastic	1-FT2-01	Doorway of Room 324C	None detected
1	Grey floor tile	1-FT2-02	Doorway of Room 324C	None detected
1	Yellow mastic	1-FT2-02	Doorway of Room 324C	None detected
1	Brown mastic	1-FT2-02	Doorway of Room 324C	None detected
1	Grey floor tile	1-FT2-03	Doorway of Room 324A	None detected
1	Yellow mastic	1-FT2-03	Doorway of Room 324A	None detected
1	Brown mastic	1-FT2-03	Doorway of Room 324A	None detected
2	Green mastic	2-MG6-04	East Wall of Room 328	None detected
2	Grey mastic	2-MG6-04	East Wall of Room 328	None detected
2	Green mastic	2-MG6-05	SW corner of Room 328	None detected
2	Grey mastic	2-MG6-05	SW corner of Room 328	None detected
2	Green mastic	2-MG6-06	N doorway of Room 328	None detected
3	**White floor tile**	**3-FT3-07**	**SE corner of Room 322**	**PC 2.1% Chrysotile**
3	Yellow mastic	3-FT3-07	SE corner of Room 322	None detected
3	White mastic	3-FT3-07	SE corner of Room 322	None detected
3	Black mastic	3-FT3-07	SE corner of Room 322	None detected
3	Light brown floor tile	3-FT3-08	SE corner of Room 322B	None detected
3	White mastic	3-FT3-08	SE corner of Room 322B	None detected
3	Yellow mastic	3-FT3-08	SE corner of Room 322B	None detected
3	Black mastic	3-FT3-08	SE corner of Room 322B	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
3	**Grey floor tile**	**3-FT3-09**	**SE corner of Room 320**	**PC 0.25% Chrysotile**
3	Yellow mastic	3-FT3-09	SE corner of Room 320	None detected
3	Black mastic	3-FT3-09	SE corner of Room 320	None detected
4	Light brown mastic	4-MG5-10	SE corner of Room 330A	None detected
4	Red carpet	4-MG5-10	SE corner of Room 330A	None detected
4	Light brown mastic	4-MG5-11	NE corner of Room 330B	None detected
4	Light brown mastic	4-MG5-12	SW corner of Room 330	None detected
4	Dark yellow mastic	4-MG5-12	SW corner of Room 330	None detected
4	Brown mastic	4-MG5-12	SW corner of Room 330	None detected
5	Red cove base	5-FC3-13	N wall of Room 330A	None detected
5	White joint compound	5-FC3-13	N wall of Room 330A	None detected
5	Brown mastic	5-FC3-13	N wall of Room 330A	None detected
5	Dark yellow mastic	5-FC3-13	N wall of Room 330A	None detected
5	Red cove base	5-FC3-14	SE corner of Room 330B	None detected
5	White joint compound	5-FC3-14	SE corner of Room 330B	None detected
5	Brown mastic	5-FC3-14	SE corner of Room 330B	None detected
5	Red cove base	5-FC3-15	N wall of Room 330B	None detected
5	Yellow mastic	5-FC3-15	N wall of Room 330B	None detected
6	Grey cove base	6-FC3-16	NW corner of Room 324A	None detected
6	Yellow mastic	6-FC3-16	NW corner of Room 324A	None detected
6	Grey cove base	6-FC3-17	NW corner of Room 324C	None detected
6	Yellow mastic	6-FC3-17	NW corner of Room 324C	None detected
6	Grey cove base	6-FC3-18	SW corner of Room 324A	None detected
6	Yellow mastic	6-FC3-18	SW corner of Room 324A	None detected
6	Brown mastic	6-FC3-18	SW corner of Room 324A	None detected
6	White leveling compound	6-FC3-18	SW corner of Room 324A	None detected
7	Red cove base	7-FC3-19	Room 324	None detected
7	Light yellow mastic	7-FC3-19	Room 324	None detected
7	Dark yellow mastic	7-FC3-19	Room 324	None detected
7	Red cove base	7-FC3-20	Room 324	None detected
7	Light yellow/dark yellow mastic	7-FC3-20	Room 324	None detected
7	Red cove base	7-FC3-21	Room 324	None detected
7	Light yellow/dark yellow mastic	7-FC3-21	Room 324	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
7	Brown mastic	7-FC3-21	Room 324	None detected
8	Light brown cove base	8-FC3-22	Room 324B	None detected
8	Brown mastic	8-FC3-22	Room 324B	None detected
8	Yellow mastic	8-FC3-22	Room 324B	None detected
8	Light brown cove base	8-FC3-23	Room 324B	None detected
8	Brown mastic	8-FC3-23	Room 324B	None detected
8	Yellow mastic	8-FC3-23	Room 324B	None detected
8	Light brown cove base	8-FC3-24	Room 324B	None detected
8	Brown mastic	8-FC3-24	Room 324B	None detected
8	Yellow mastic	8-FC3-24	Room 324B	None detected
8	White mastic	8-FC3-24	Room 324B	None detected
9	Beige ceiling tile	9-CT4-25	Room 324	None detected
9	Beige ceiling tile	9-CT4-26	Room 328	None detected
9	Beige ceiling tile	9-CT4-27	Room 330	None detected
10	Off-white drywall	10-WB1-28	Room 330	None detected
10	White joint compound	10-WB1-28	Room 330	None detected
10	Composite	10-WB1-28	Room 330	None detected
10	White woven material	10-WB1-28	Room 330	None detected
10	Off-white drywall	10-WB1-29	Room 330	None detected
10	White joint compound	10-WB1-29	Room 330	None detected
10	Composite	10-WB1-29	Room 330	None detected
10	White woven material	10-WB1-29	Room 330	None detected
10	Off-white drywall	10-WB1-30	Room 328	None detected
10	White joint compound	10-WB1-30	Room 328	None detected
10	Composite	10-WB1-30	Room 328	None detected
10	Off-white drywall	10-WB1-31	Room 324	None detected
10	Off-white drywall	10-WB1-32	Room 324A	None detected
10	**White joint compound**	**10-WB1-32**	**Room 324A**	**PC 9.2% Chrysotile**
10	**Composite**	**10-WB1-32**	**Room 324A**	**PC 2.0% Chrysotile**
11	Beige plaster	11-HP2-33	Room 330 ceiling	None detected
11	White plaster	11-HP2-33	Room 330 ceiling	None detected
11	Beige plaster	11-HP2-34	Room 330 wall	None detected
11	White plaster	11-HP2-34	Room 330 wall	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
11	Beige plaster	11-HP2-35	Room 328 wall	None detected
11	White plaster	11-HP2-35	Room 328 wall	None detected
11	Beige plaster	11-HP2-36	Room 324 wall	None detected
11	White plaster	11-HP2-36	Room 324 wall	None detected
11	Beige plaster	11-HP2-37	Room 324 ceiling	None detected
11	White plaster	11-HP2-37	Room 324 ceiling	None detected
11	Beige plaster	11-HP2-38	Room 320 wall	None detected
11	White plaster	11-HP2-38	Room 320 wall	None detected
11	Beige plaster	11-HP2-39	Room 320 ceiling	None detected
11	White plaster	11-HP2-39	Room 320 ceiling	None detected

APPENDIX C

Limited Lead-Based Paint Screening
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

IDENTIFIED LEAD-BASED PAINT LOCATIONS

Paint Color	Location	Substrate	Analytical Result (% by weight)
Tan/green/ white	Upper wall (above chair rail)	GWB	8.0
Tan/white	Upper wall/ceiling above drop ceiling	Cement board	4.9
White/white /grey	Lower wall (below chair rail)	Cement board	12

GWB = gypsum wall board

APPENDIX D

Limited Lead-Based Paint Screening
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

LEAD-BASED PAINT SCREENING SAMPLE LOCATION SUMMARY

Room	Color	Substrate	Condition	Lead Content[1]	Notes
1	**Tan/green/white**	**GWB**	**Intact**	**8.0**	**Upper wall (above chair rail)**
2	Tan/white/green	Wood	Intact	0.10	Chair rail
3	**Tan/white**	**Cement board**	**Intact**	**4.9**	**Upper wall/ceiling above drop ceiling**
4	White/white	Metal	Intact	0.0059	Heat registers
5	**White/white/grey**	**Cement board**	**Poor**	**12**	**Lower wall (below chair rail)**
6	Brown/tan/green	Wood	Intact	0.33	Door frames
7	Tan/green	Wood	Intact	0.18	Window frames/sills

GWB = gypsum wall board
1 = Percent by weight

APPENDIX E

ANALYTICAL LABORATORY DATA

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429597
Client No.: 1-FT2-01
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429597(L2)
Client No.: 1-FT2-01
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429597(L3)
Client No.: 1-FT2-01
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
8 Cellulose
3 Synthetic

Percent Non-Fibrous Material:
89

Lab No.: 6429598
Client No.: 1-FT2-02
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429598(L2)
Client No.: 1-FT2-02
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
5 Cellulose

Percent Non-Fibrous Material:
95

Lab No.: 6429598(L3)
Client No.: 1-FT2-02
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
5 Cellulose

Percent Non-Fibrous Material:
95

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429599
Client No.: 1-FT2-03
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429599(L2)
Client No.: 1-FT2-03
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 5 Cellulose
Percent Non-Fibrous Material: 95

Lab No.: 6429599(L3)
Client No.: 1-FT2-03
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429600
Client No.: 2-MG6-04
Analyst Observation: Green Mastic
Client Description: Green Carpet Glue
Location: East Wall Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429600(L2)
Client No.: 2-MG6-04
Analyst Observation: Grey Mastic
Client Description: Green Carpet Glue
Location: East Wall Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429601
Client No.: 2-MG6-05
Analyst Observation: Green Mastic
Client Description: Green Carpet Glue
Location: SW Corner Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429601(L2) **Analyst Observation:** Grey Mastic **Location:** SW Corner Of Room 328
Client No.: 2-MG6-05 **Client Description:** Green Carpet Glue **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429602 **Analyst Observation:** Green Mastic **Location:** N Doorway Of Room 328
Client No.: 2-MG6-06 **Client Description:** Green Carpet Glue **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 5 Cellulose Percent Non-Fibrous Material: 95

Lab No.: 6429603 **Analyst Observation:** White Floor Tile **Location:** SE Corner Of Room 322
Client No.: 3-FT3-07 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**
Percent Asbestos: ***PC 2.1*** *Chrysotile* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 97.9

Lab No.: 6429603(L2) **Analyst Observation:** Yellow Mastic **Location:** SE Corner Of Room 322
Client No.: 3-FT3-07 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429603(L3) **Analyst Observation:** White Mastic **Location:** SE Corner Of Room 322
Client No.: 3-FT3-07 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429603(L4) **Analyst Observation:** Black Mastic **Location:** SE Corner Of Room 322
Client No.: 3-FT3-07 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429604
Client No.: 3-FT3-08
Analyst Observation: Lt Brown Floor Tile
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L2)
Client No.: 3-FT3-08
Analyst Observation: White Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L3)
Client No.: 3-FT3-08
Analyst Observation: Yellow Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L4)
Client No.: 3-FT3-08
Analyst Observation: Black Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 8 Cellulose
Percent Non-Fibrous Material: 92

Lab No.: 6429605
Client No.: 3-FT3-09
Analyst Observation: Grey Floor Tile
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 320
Facility:

Percent Asbestos: ***PC 0.25*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 99.75

Note: Analyzed by R.Hargrove 1-30-18

Lab No.: 6429605(L2)
Client No.: 3-FT3-09
Analyst Observation: Yellow Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 320
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429605(L3) **Analyst Observation:** Black Mastic **Location:** SE Corner Of Room 320
Client No.: 3-FT3-09 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429606 **Analyst Observation:** Lt Brown Mastic **Location:** SE Corner Of Room 330A
Client No.: 4-MG5-10 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 4 Cellulose Percent Non-Fibrous Material: 96

Lab No.: 6429606(L2) **Analyst Observation:** Red Carpet **Location:** SE Corner Of Room 330A
Client No.: 4-MG5-10 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 98 Synthetic Percent Non-Fibrous Material: 2

Lab No.: 6429607 **Analyst Observation:** Lt Brown Mastic **Location:** NE Corner Of Room 330B
Client No.: 4-MG5-11 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429608 **Analyst Observation:** Lt Brown Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 2 Cellulose Percent Non-Fibrous Material: 98

Lab No.: 6429608(L2) **Analyst Observation:** Dk Yellow Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 4 Cellulose Percent Non-Fibrous Material: 96

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429608(L3) **Analyst Observation:** Brown Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609 **Analyst Observation:** Red Cove Base **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L2) **Analyst Observation:** White Joint Compound **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L3) **Analyst Observation:** Brown Mastic **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L4) **Analyst Observation:** Dk Yellow Mastic **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429610 **Analyst Observation:** Red Cove Base **Location:** SE Corner Of Room 330B
Client No.: 5-FC3-14 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

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Date Received: 1/23/2018
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429610(L2)
Client No.: 5-FC3-14
Analyst Observation: White Joint Compound
Client Description: Red 4" Base Cove And Mastic
Location: SE Corner Of Room 330B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429610(L3)
Client No.: 5-FC3-14
Analyst Observation: Brown Mastic
Client Description: Red 4" Base Cove And Mastic
Location: SE Corner Of Room 330B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429611
Client No.: 5-FC3-15
Analyst Observation: Red Cove Base
Client Description: Red 4" Base Cove And Mastic
Location: N Wall Of Room 330B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429611(L2)
Client No.: 5-FC3-15
Analyst Observation: Yellow Mastic
Client Description: Red 4" Base Cove And Mastic
Location: N Wall Of Room 330B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429612
Client No.: 6-FC3-16
Analyst Observation: Grey Cove Base
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429612(L2)
Client No.: 6-FC3-16
Analyst Observation: Yellow Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429613
Client No.: 6-FC3-17
Analyst Observation: Grey Cove Base
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324C
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429613(L2)
Client No.: 6-FC3-17
Analyst Observation: Yellow Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324C
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614
Client No.: 6-FC3-18
Analyst Observation: Grey Cove Base
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L2)
Client No.: 6-FC3-18
Analyst Observation: Yellow Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L3)
Client No.: 6-FC3-18
Analyst Observation: Brown Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L4)
Client No.: 6-FC3-18
Analyst Observation: White Leveling Compound
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429615 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429615(L2) **Analyst Observation:** Lt Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429615(L3) **Analyst Observation:** Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429616 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-20 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429616(L2) **Analyst Observation:** Lt Yellow/Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-20 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429617 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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Date Received: 1/23/2018
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429617(L2) **Analyst Observation:** Lt Yellow/Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429617(L3) **Analyst Observation:** Brown Mastic **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429618 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429618(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429618(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429619 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429619(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429619(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L4) **Analyst Observation:** White Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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Date Received: 1/23/2018
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Signature:
Analyst: Brittney Crisera

Approved By:
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429621
Client No.: 9-CT4-25
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 324
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
50 Cellulose
40 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429622
Client No.: 9-CT4-26
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 328
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
50 Cellulose
40 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429623
Client No.: 9-CT4-27
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
40 Cellulose
50 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429624
Client No.: 10-WB1-28
Analyst Observation: Off-White Drywall
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
3 Cellulose
3 Fibrous Glass

Percent Non-Fibrous Material:
94

Lab No.: 6429624(L2)
Client No.: 10-WB1-28
Analyst Observation: White Joint Compound
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429624(L3)
Client No.: 10-WB1-28
Analyst Observation: Composite
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
3 Cellulose
3 Fibrous Glass

Percent Non-Fibrous Material:
94

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429624(L4) **Analyst Observation:** White Woven Material **Location:** Room 330
Client No.: 10-WB1-28 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 99 Fibrous Glass Percent Non-Fibrous Material: 1

Lab No.: 6429625 **Analyst Observation:** Off-White Drywall **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 3 Fibrous Glass Percent Non-Fibrous Material: 97

Lab No.: 6429625(L2) **Analyst Observation:** White Joint Compound **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429625(L3) **Analyst Observation:** Composite **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 3 Fibrous Glass Percent Non-Fibrous Material: 97

Lab No.: 6429625(L4) **Analyst Observation:** White Woven Material **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 98 Fibrous Glass Percent Non-Fibrous Material: 2

Lab No.: 6429626 **Analyst Observation:** Off-White Drywall **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 2 Fibrous Glass Percent Non-Fibrous Material: 98

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429626(L2) **Analyst Observation:** White Joint Compound **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429626(L3) **Analyst Observation:** Composite **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Fibrous Glass
Percent Non-Fibrous Material: 98

Lab No.: 6429627 **Analyst Observation:** Off-White Drywall **Location:** Room 324
Client No.: 10-WB1-31 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 6 Cellulose
Percent Non-Fibrous Material: 94

Lab No.: 6429628 **Analyst Observation:** Off-White Drywall **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 3 Cellulose
Percent Non-Fibrous Material: 97

Lab No.: 6429628(L2) **Analyst Observation:** White Joint Compound **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: ***PC 9.2*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 90.8

Lab No.: 6429628(L3) **Analyst Observation:** Composite **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: ***PC 2.0*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: 3 Cellulose
Percent Non-Fibrous Material: 95

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429629
Client No.: 11-HP2-33
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 330 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429629(L2)
Client No.: 11-HP2-33
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 330 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429630
Client No.: 11-HP2-34
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 330 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429630(L2)
Client No.: 11-HP2-34
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 330 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429631
Client No.: 11-HP2-35
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 328 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429631(L2)
Client No.: 11-HP2-35
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 328 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429632
Client No.: 11-HP2-36
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 324 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429632(L2)
Client No.: 11-HP2-36
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 324 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429633
Client No.: 11-HP2-37
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 324 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429633(L2)
Client No.: 11-HP2-37
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 324 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429634
Client No.: 11-HP2-38
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 320 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429634(L2)
Client No.: 11-HP2-38
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 320 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429635
Client No.: 11-HP2-39
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 320 Ceiling
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
2 Cellulose

Percent Non-Fibrous Material:
98

Lab No.: 6429635(L2)
Client No.: 11-HP2-39
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 320 Ceiling
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Appendix to Analytical Report

Customer Contact:
Analysis: US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Cassie Doherty
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: Terracon
860 9th Street NE, Unit K
West Fargo ND 58078

Client: TER932

Report Date: 1/30/2018
Report No.: 555851 - Lead Paint
Project: Ronald Davies Federal Building
Project No.: M1177147

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6429175 **Description:** Tan/Green/White Paint On GWB **Result (% by Weight):** 8.0
Client No.: 01 **Location:** Upper Wall (Above Chair Rail) **Result (ppm):** 80000
Comments:

Lab No.: 6429176 **Description:** Tan/White/Green Paint On Wood **Result (% by Weight):** 0.10
Client No.: 02 **Location:** Chair Rail **Result (ppm):** 1000
Comments:

Lab No.: 6429177 **Description:** Tan/White Paint On Cement Board **Result (% by Weight):** 4.9
Client No.: 03 **Location:** Upper Wall/Ceiling Above Drop Ceiling **Result (ppm):** 49000
Comments:

Lab No.: 6429178 **Description:** White/White Paint On Metal **Result (% by Weight):** 0.0059
Client No.: 04 **Location:** Heat Registers **Result (ppm):** 59
Comments:

Lab No.: 6429179 **Description:** White/White/Grey Paint On Cement Board **Result (% by Weight):** 12
Client No.: 05 **Location:** Lower Wall (Below Chair Rail) **Result (ppm):** 120000
Comments:

Lab No.: 6429180 **Description:** Brown/Tan/Green Paint On Wood **Result (% by Weight):** 0.33
Client No.: 06 **Location:** Door Frames **Result (ppm):** 3300
Comments:

Lab No.: 6429181 **Description:** Tan/Green Paint On Wood **Result (% by Weight):** 0.18
Client No.: 07 **Location:** Window Frames/Sills **Result (ppm):** 1800
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature: Chad Shaffer
Analyst: Chad Shaffer

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555851 - Lead Paint
	West Fargo ND 58078	Project:	Ronald Davies Federal Building
		Project No.:	M1177147
Client:	TER932		

Appendix to Analytical Report:

Customer Contact:
Analysis: ASTM D3335-85a

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Cassie Doherty
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:
- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.
All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.
Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.
Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.
LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com.**

* Insufficient sample provided to perform QC reanalysis (<200 mg)
** Not enough sample provided to analyze (<50 mg)
*** Matrix / substrate interference possible.

APPENDIX F

LICENSES AND CERTIFICATIONS

North Dakota Department of Health

Certificate

of No. 3789

Asbestos Abatement

This is to certify that Leif Hans Schonteich has met the requirements of Chapter 33-15-13 of the North Dakota Air Pollution Control Rules for certification in the following asbestos abatement discipline(s):

	Supervisor		
	Worker		
x	Inspector	Exp: 6/19/2018	
	Management Planner		
x	Project Designer	Exp: 11/2/2018	Asbestos Control Program
	Project Monitor		

North Dakota Department of Health

Certificate

of No. 5986

Asbestos Abatement

This is to certify that Rhonda Lyn Olson has met the requirements of Chapter 33-15-13 of the North Dakota Air Pollution Control Rules for certification in the following asbestos abatement discipline(s):

Supervisor

Worker

x Inspector Exp: 11/3/2018

Management Planner

Project Designer

Project Monitor

Asbestos Control Program

February 17, 2015

Terracon
6701 Fourth St SW
Minot, ND 58701

Ladies and Gentlemen:

Enclosed you will find a lead-based paint certification card issued by the North Dakota Department of Health for Stephen Maliszeski.

This card identifies the discipline for which the individual is certified. The State of North Dakota grants certification following proof of successful completion of an EPA or Department approved course. Individuals are allowed to perform only those duties in which they are certified and proof of certification must be available at the work site. Certification is for a period of three years from the date of completion of the last training course. Individuals who intend to continue performing lead-based paint work must be recertified prior to that time. To be recertified, an individual must have attended an EPA or State approved refresher course in the specific discipline for which they are applying for recertification within the previous three year period.

If you have any questions concerning the certification, please feel free to contact me at 701-328-5188.

Sincerely,

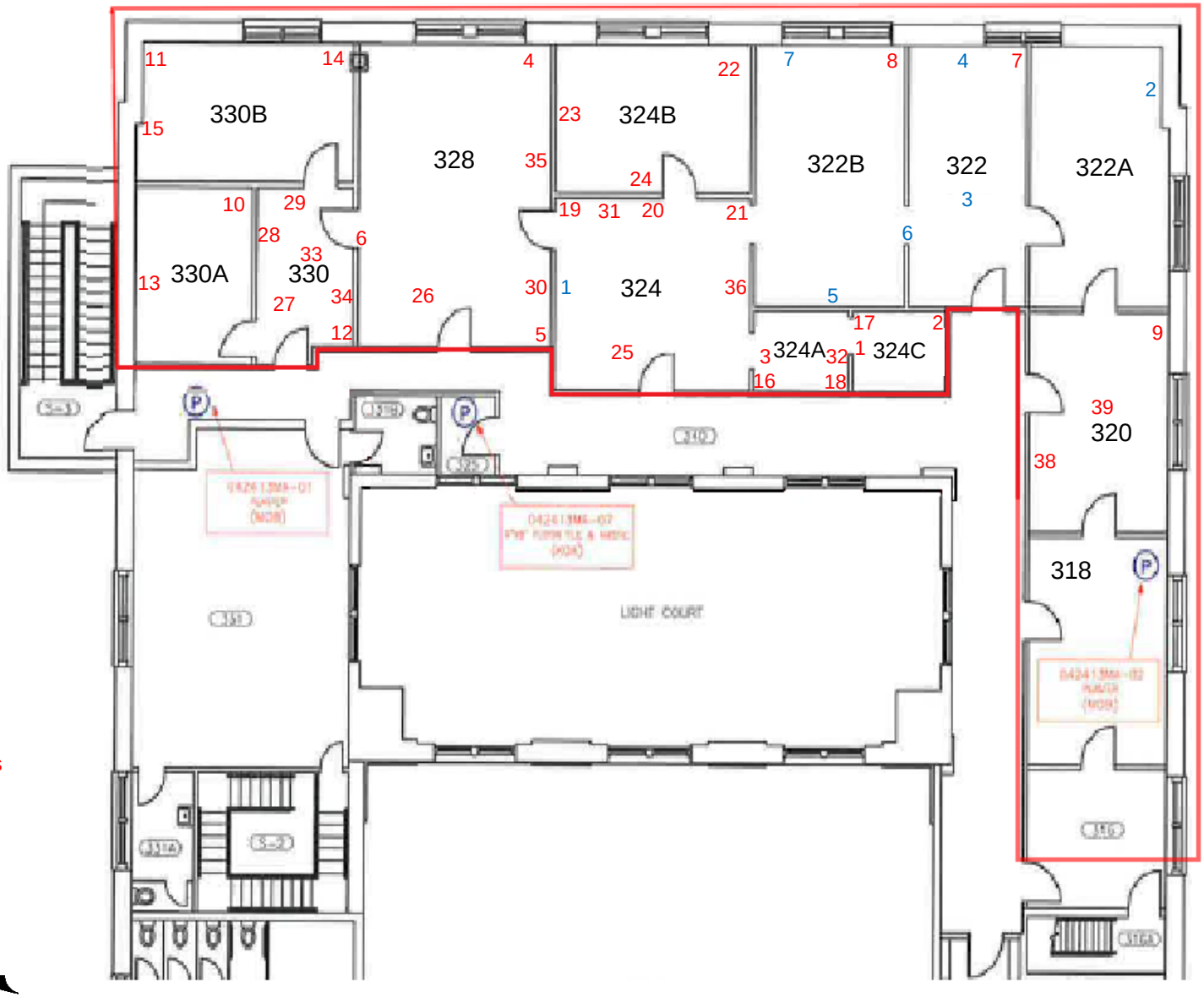
Sandi Washek
Environmental Scientist
Lead-Based Paint Program

SW:csc
Enc:

North Dakota Department of Health
Certificate
of
Lead-Based Paint Abatement
No. 315
This is to certify that Stephen T. Maliszeski has met the requirements of Chapter 33-15-24 of the North Dakota Air Pollution Control Rules for certification in the following lead-based paint abatement discipline(s):
Supervisor
Worker
Inspector
x Risk Assessor
Project Designer
Exp: 1/23/2018
LBP Control Program

APPENDIX G

SAMPLE LOCATION DRAWING



1 Asbestos Samples

1 Paint Samples

Project Manager: RLO	Project No. M1177147	Terracon 860 9th Street NE, Unit K West Fargo, North Dakota 58078	Sample Location Drawing Ronald N. Davies Federal Building and U.S. Courthouse 102 North 4th Street Grand Forks, North Dakota 58203
Drawn by: RLO	Scale: AS SHOWN		
Checked by: LHS	File Name:		
Approved by: KMT	Date: 02/02/2018		

Exhibit 1

860 9th Street NE, Unit K
West Fargo, ND 58078
P (701) 282-9633
F (701) 282-9635
Terracon.com

July 31, 2025

Design Edge, PC
711 North Cascade Avenue, Suite 100
Colorado Springs, Colorado 80903

Attn: Ms. Swagata Guha
E: swagata@de-arch.com

RE: Limited Asbestos Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203
Terracon Project No. M1257057

Dear Ms. Guha:

Terracon Consultants, Inc. (Terracon) is pleased to submit this report to Design Edge, PC (Client). This report presents the results of a limited asbestos survey (survey) performed at the above-referenced site. The survey was conducted on July 10, 2025 and was completed in accordance with Terracon Proposal No. PM1257057 as a supplement to our Limited Asbestos and Lead-Based Paint Survey Report dated February 9, 2018 (Terracon Project No. M1177147, or the 2018 Survey).

Asbestos was not identified in the samples collected as part of this survey; however, the analytical laboratory identified greater than 1% asbestos in 9”x9” white floor tile, white joint compound, and gypsum with joint compound composite in the 2018 Survey.

Terracon appreciates the opportunity to provide this service to Design Edge, PC. Please contact the undersigned at (701) 282-9633 if you have questions regarding this report.

Sincerely,
Terracon

Tiffany K. Schindler
Assistant Project Manager

Leif H. Schonteich, CSP, CHMM
Authorized Project Reviewer

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1.0 Project Overview

Terracon Consultants, Inc. (Terracon) conducted a limited asbestos survey of the proposed renovation area of the Ronald N. Davies Federal Building and U.S. Courthouse located at 102 North 4th Street in Grand Forks, North Dakota. This survey serves as a supplement to the previously performed survey detailed in our Limited Asbestos and Lead-Based Paint Survey dated February 9, 2018.

The asbestos inspection was conducted on July 10, 2025 by a State of North Dakota certified inspector in accordance with Terracon Proposal No. PM1257047 dated July 1, 2025.

1.1 Project Objectives

We understand the limited asbestos survey was requested in support of Design Edge's consideration for future planning and to satisfy requirements of the United States Environmental Protection Agency (USEPA) 40 Code of Federal Regulations (CFR) Part 61, Subpart M, the National Emission Standards for Hazardous Air Pollutants (NESHAP). The asbestos NESHAP requires potentially regulated asbestos-containing building materials be identified, classified, and quantified prior to planned disturbances.

Terracon also understands the intent of the assessment is to assist the client with communicating the presence, location, and quantity of asbestos-containing material (ACM) to employees, vendors, and contractors working in the building to meet the requirements of the Occupational Safety and Health Administration (OSHA) communication of hazard requirements found at 29 CFR 1926.1101. The purpose of this survey was to sample and identify suspect ACM and provide information regarding the identity, location, condition, and approximate quantities of ACM in the areas surveyed.

2.0 Survey Area Description

The survey area consisted of a portion of the third floor that is scheduled for renovation. Floors consisted of carpet or vinyl floor tile over wood flooring. Walls throughout the survey area consisted of gypsum wallboard finished with paint. Ceilings consisted of 2'x2' ceiling tiles under plaster ceilings.

3.0 Field Activities

The survey was conducted on July 10, 2025, by Ms. Tiffany K. Schindler, a State of North Dakota certified asbestos inspector. A copy of their inspector accreditation is attached in Appendix E. The survey was conducted in accordance with the sample collection protocols established in 40 CFR 736.86 – Sampling.

A summary of the inspection results is included in Section 4.0 and in Tables 1 and 2presented in Appendix A.

3.1 Visual Assessment

Survey activities were initiated with visual observations of the survey area to identify homogenous areas (HAs) of suspect ACM. The survey was limited to the interior of the building scheduled for renovation, as described in Section 2.0, above. An HA consists of building materials that appear similar throughout in terms of color, texture and, if known, date of application. Building materials identified as glass, wood, or metal were not considered suspect ACM.

Although reasonable effort was made to survey accessible suspect materials, additional suspect but unsampled materials could be located in concealed areas or areas where investigation was not feasible without significant damage. At the time of the survey, the project area was being utilized for regular operations. As a result, our services were limited.

3.2 Physical Assessment

A physical assessment of the HAs of suspect ACM was conducted to assess the friability and condition of the material. A friable material is defined by the USEPA as a material that can be crumbled, pulverized, or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

Terracon also assessed the condition of each material and placed suspect ACMs into one of three categories based upon the inspection: “significantly damaged”, “damaged”, or “good”.

3.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in accordance with the sampling protocols outlined in 40 CFR 763.86 – Sampling. Samples of suspect materials were collected from randomly selected locations in each HA. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

The selection of sample locations and frequency of sampling were based on Terracon's observations and the assumption that like materials in the same area are homogeneous in content. Terracon collected 6 bulk samples from 2 HAs from the survey area. A summary of suspect ACM sampled is included as Table 2 in Appendix A and is included as part of the chain of custody (COC) presented in Appendix D. Exhibits showing the suspect ACM sampling locations are included in Appendix B.

3.4 Sample Analysis

Bulk samples were submitted under chain of custody to EMSL Analytical, Inc. (EMSL) in Cinnaminson, New Jersey for analysis by polarized light microscopy (PLM) with dispersion staining techniques per USEPA's *Method for the Determination of Asbestos in Bulk Building Materials* (600/R-93/116).

4.0 Findings and Recommendations

Asbestos in concentrations of greater than (>) 1% were reported by the analytical laboratory. Table 1 included in Appendix A identifies the confirmed ACMs, condition, and approximate quantities, along with additional information. Table 2 in Appendix A provides a description of the samples collected as part of this project. An exhibit showing the approximate locations of sample locations is provided in Exhibit 1 in Appendix B. EMSL's laboratory analytical report and the COC are included in Appendix D.

This supplemental survey did not identify asbestos in the samples collected, however the analytical laboratory identified asbestos (>1%) in samples collected from the following materials in the 2018 Survey:

- **9"x9" White floor tile**
- **White joint compound**
- **Gypsum with joint compound composite**

In general, the ACM identified appeared to be in good condition. Please refer to Table 1 in Appendix A for additional information. Locations of ACM is presented in Exhibit 2 in Appendix B.

As NESHAP and OSHA regulations govern the removal of ACMs, Terracon recommends that a qualified and North Dakota licensed asbestos contractor be retained to properly abate and dispose of ACMs identified within this report (if to be disturbed) in accordance with an asbestos abatement specification and local, state, and federal regulations.

The owner and/or operator are responsible for NESHAP regulatory compliance regarding the proper removal, handling, and disposal of ACMs containing greater than 1% asbestos prior

to renovation or demolition. Also, per state regulations, please be aware that the owner and/or operator must notify North Dakota Department of Environmental Quality (NDDEQ) 10 business days prior to asbestos abatement at certain quantity thresholds and prior to renovation activities.

Terracon recommends that contractors, renovation, and/or demolition contractors be notified of the presence of the confirmed ACM materials and assumed suspect ACM materials to make appropriate decisions concerning compliance issues with applicable OSHA regulations.

A North Dakota-accredited asbestos Project Designer should be retained to prepare a project specific specification for the management and/or abatement of ACM identified in this Report, in accordance with applicable regulatory requirements.

The reader of this report should understand the limitations of this survey. If additional but unsampled suspect ACMs are revealed during renovation or demolition activities, the material(s) must be assumed to contain asbestos and treated as such unless sampled by an accredited inspector and laboratory analysis determines otherwise.

This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary.

5.0 Limitations/General Comments

This limited asbestos survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our survey of the buildings. The information contained in this report is relevant to the date on which this survey was performed and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by Design Edge, PC for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories, or other third parties supplying information that may have been used in the preparation of this report. No warranty, express or implied, is made.

Appendix A

Table 1 – Identified Asbestos-Containing Materials

Table 2 – Asbestos Inspection Sample Summary

Table 1 – Identified Asbestos-Containing Materials by Homogeneous Area (HA)

See Appendix C for detailed analytical results and the sample sheets. Please refer to the attached Exhibit in Appendix B for the general locations of the samples and for additional notes.

HA	Material description	Material Location	% and Type Asbestos	NESHAP category[1]	Condition	Quantity[2]
3	9”x9” white floor tile	Rooms 318, 320, 33, 322B, 324, and 324B	0.25-2.1% Chrysotile	Category I Non-friable	Good	1,750 SF
10	White joint compound	Rooms 322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, and 330B	9.2% Chrysotile	RACM	Good	260 joints
	Gypsum with joint compound composite	Rooms 322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, and 330B	2% Chrysotile	RACM	Good	1,900 SF

[1] Friable/Regulated Asbestos Containing Material (RACM; Category I nonfriable ACM: includes asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing >1% asbestos; Category II nonfriable ACM: includes any material other than Category I nonfriable materials that contain more than 1% asbestos
[2] SF = Square feet, LF = Linear Feet

Table 2 – Asbestos Inspection Sample Summary

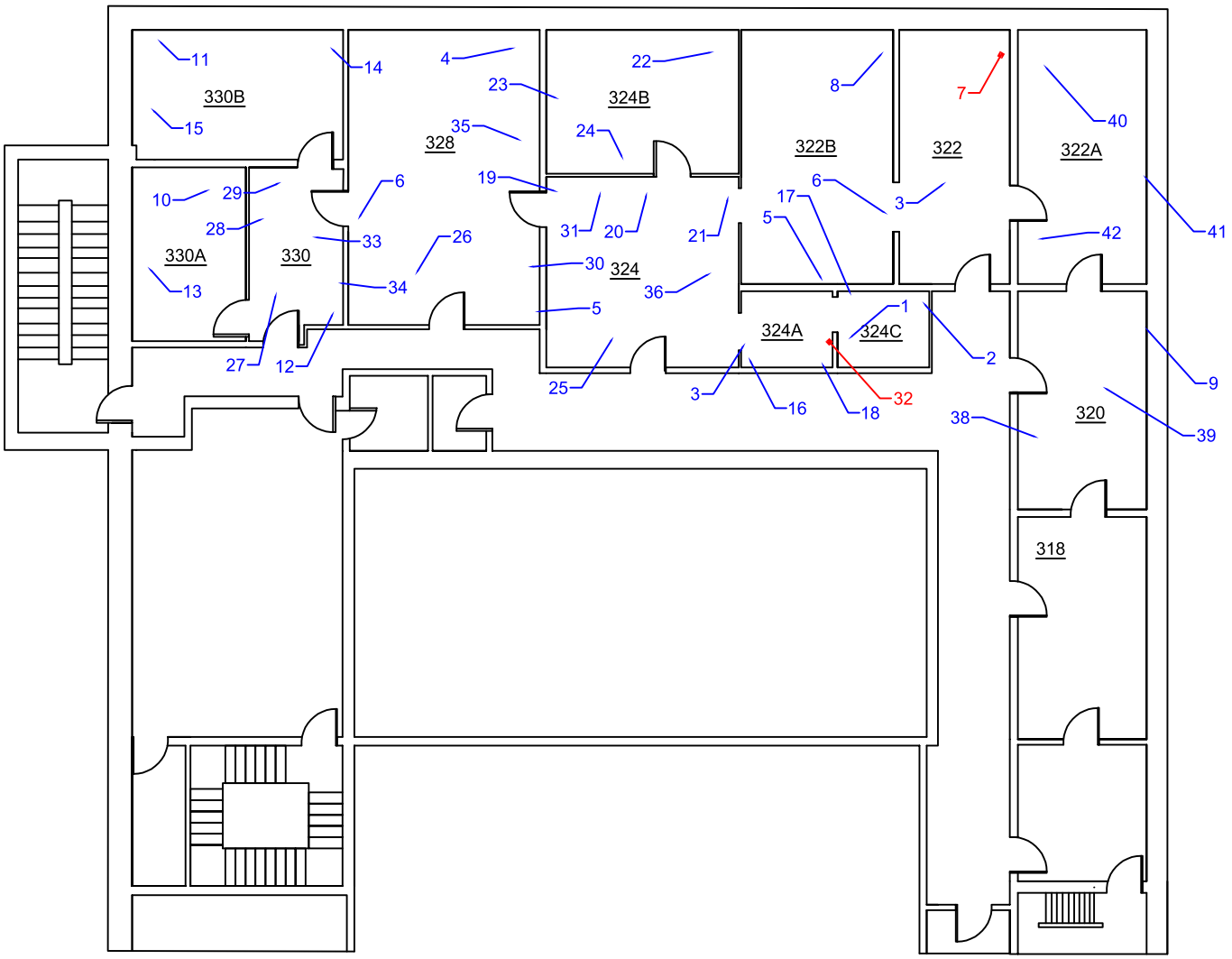
See Appendix C for detailed analytical results and the sample sheets. Please refer to the attached Exhibit in Appendix B for the general locations of the samples and for additional notes.

SAMPLE NUMBER	Material description	Sample Location	Laboratory Results
12-MG5-40	Brown/black mastic on purple carpet squares	Northeast corner of Room 322A	None detected
12-MG5-41	Brown/black mastic on purple carpet squares	South side of Room 322A	None detected
12-MG5-42	Brown/black/clear mastic on purple carpet squares	Northwest corner of Room 322A	None detected
13-PI5-43	Yellow pipe wrap	South end of attic	None detected
	Brown/white/black insulation		None detected
	Black tar paper		None detected
13-PI5-44	Yellow pipe wrap	South end of attic	None detected
	Brown/white insulation		None detected
	Black tar paper		
13-PI5-45	Yellow/white pipe wrap	South end of attic	None detected
	Brown insulation		None detected
	Black tar paper		None detected

Appendix B

Exhibit 1 - Sample Location Diagram

Exhibit 2 – Asbestos Containing Material Location Diagram



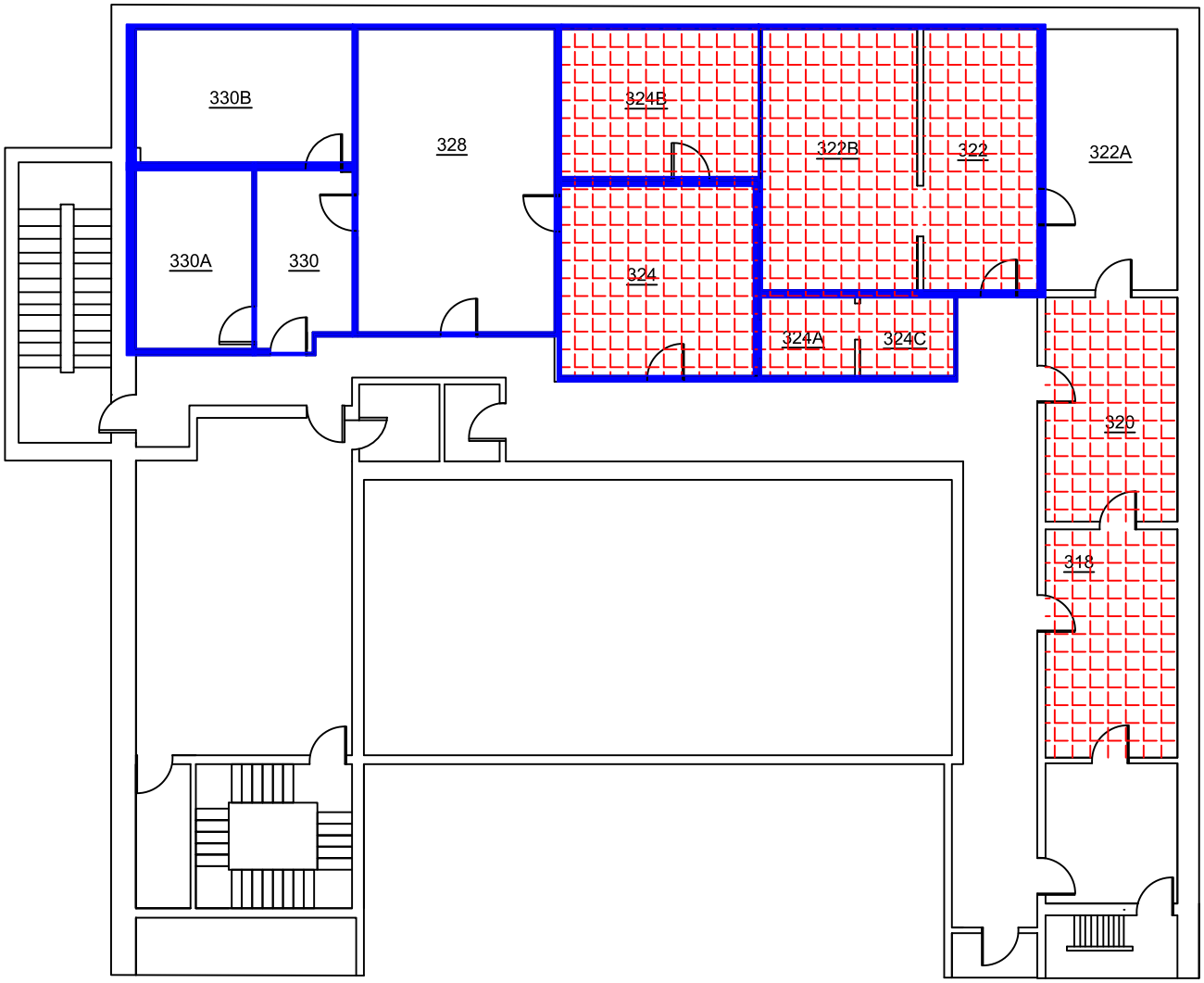
LEGEND	
#	NEGATIVE SAMPLE LOCATION
#	POSITIVE SAMPLE LOCATION

GENERAL NOTES

1. ASBESTOS SAMPLES 1-39 WERE SAMPLED BY TERRACON ON JANUARY 19, 2018. DETAILS OF THE SAMPLING ARE FOUND IN TERRACON'S LIMITED (RENOVATION-SPECIFIC) ASBESTOS AND LEAD-BASED PAINT SURVEY REPORT DATED FEBRUARY 9, 2018

Project No.: M1257057	Terracon 860 9th Street NE, Unit K West Fargo, ND 58078 PH: 701-282-9633 terracon.com	Sample Location Diagram	Exhibit
Date: July 2025		Ronald N. Daies Federal Building and US Courthouse 102 North 4th Street Grand Forks, North Dakota 58203	1
Drawn By: SMG			
Reviewed By: LHS			

Asbestos Containing Materials						
HA	Material Description	General Material Location	Total Asbestos Percentage and Type	NESHAP Category	Condition	Approximate Quantity/Notes
3	9"x9" White floor tile	318, 320, 322, 322A, 322B, 324, 324B	PC 2.1% Chrysotile	Category I Non-friable	Good	1732 SF
15	White joint compound / Gypsum with joint compound composite	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	Joint Compound Only - PC 9.2% Chrsyotile Composite - PC 2.0% Chrsyotile	RACM	Good	1900 SF



LEGEND	
	ASBESTOS CONTAINING JOINT COMPOUND AND GYPSUM WALLBOARD COMPOSITE
	ASBESTOS CONTAINING FLOOR TILE

GENERAL NOTES

1. THE IDENTIFIED ASBESTOS CONTAINING MATERIAL WERE IDENTIFIED IN TERRACON'S LIMITED (RENOVATION-SPECIFIC) ASBESTOS AND LEAD-BASED PAINT SURVEY REPORT DATED FEBRUARY 9, 2018, AND LOCATIONS AND MATERIALS RECONFIRMED DURING THE 2025 SAMPLING EVENT.

Project No.: M1257057 Date: July 2025 Drawn By: SMG Reviewed By: LHS	terracon 860 9th Street NE, Unit K West Fargo, ND 58078 PH: 701-282-9633 terracon.com	Asbestos Containing Material Location Diagram Ronald N. Daies Federal Building and US Courthouse 102 North 4th Street Grand Forks, North Dakota 58203	Exhibit 2

Appendix C

Laboratory Analytical Report and Chain of Custody

EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order: 042513933
Customer ID: TCFN34
Customer PO: M1257057
Project ID:

Attention: Tiffany Schindler
Terracon Consultants, Inc.
860 9th St. NE
Unit K
West Fargo, ND 58078

Phone: (701) 282-9633
Fax:
Received Date: 07/11/2025 9:25 AM
Analysis Date: 07/18/2025
Collected Date:

Project: M1257057 / Ronald N. Davies / Ronald N. Davies Federal Courthouse / 102 4th St N, Grand Forks, ND

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos % Fibrous	Non-Asbestos % Non-Fibrous	Asbestos % Type
12-MG5-40 *042513933-0001*	NE Corner of 322A - Brown/Black Mastic a/w Purple Carpet Squares	Brown/Black Fibrous Heterogeneous	10% Cellulose 3% Synthetic HA: 12	87% Non-fibrous (Other)	None Detected
12-MG5-41 *042513933-0002*	South Side of 322A - Brown/Black Mastic a/w Purple Carpet Squares	Brown/Black Fibrous Heterogeneous	10% Cellulose 3% Synthetic HA: 12	87% Non-fibrous (Other)	None Detected
12-MG5-42 *042513933-0003*	NW Corner of 322A - Brown/Black Mastic a/w Purple Carpet Squares *Result includes a small amount of inseparable attached material*	Brown/Black/Clear Fibrous Heterogeneous	7% Cellulose HA: 12	93% Non-fibrous (Other)	None Detected
13-PI5-43-Pipe Wrap *042513933-0004*	South End of Attic - Yellow Pipe Wrap	Yellow Fibrous Homogeneous	90% Cellulose HA: 13	10% Non-fibrous (Other)	None Detected
13-PI5-43-Insulation *042513933-0004A*	South End of Attic - Insulation	Brown/White/Black Fibrous Homogeneous	40% Cellulose 30% Synthetic 10% Hair HA: 13	20% Non-fibrous (Other)	None Detected
13-PI5-43-Tar Paper *042513933-0004B*	South End of Attic - Tar Paper	Black Fibrous Homogeneous	65% Cellulose HA: 13	35% Non-fibrous (Other)	None Detected
13-PI5-44-Pipe Wrap *042513933-0005*	South End of Attic - Yellow Pipe Wrap	Yellow Fibrous Homogeneous	90% Cellulose HA: 13	10% Non-fibrous (Other)	None Detected
13-PI5-44-Insulation *042513933-0005A*	South End of Attic - Insulation	Brown/White Fibrous Homogeneous	40% Cellulose 20% Synthetic 20% Hair HA: 13	20% Non-fibrous (Other)	None Detected
13-PI5-44-Tar Paper *042513933-0005B*	South End of Attic - Tar Paper	Black Fibrous Homogeneous	65% Cellulose HA: 13	35% Non-fibrous (Other)	None Detected
13-PI5-45-Pipe Wrap *042513933-0006*	South End of Attic - Yellow Pipe Wrap	White/Yellow Fibrous Homogeneous	70% Cellulose HA: 13	30% Non-fibrous (Other)	None Detected
13-PI5-45-Insulation *042513933-0006A*	South End of Attic - Insulation	Brown Fibrous Homogeneous	50% Cellulose 45% Hair HA: 13	5% Non-fibrous (Other)	None Detected

Initial report from: 07/18/2025 16:54:06

EMSL Analytical, Inc.
200 Route 130 North Cinnaminson, NJ 08077
Tel/Fax: (800) 220-3675 / (856) 786-5974
http://www.EMSL.com / cinnasblab@EMSL.com

EMSL Order:	042513933
Customer ID:	TCFN34
Customer PO:	M1257057
Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
13-PI5-45-Tar Paper *042513933-0006B*	South End of Attic - Tar Paper	Black Fibrous Homogeneous	50% Cellulose HA: 13	50% Non-fibrous (Other)	None Detected

Analyst(s)

Adam Einwechter (4)
Brian Napper II (8)

Samantha Sweeney, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 “Interim Method”) but augmented with procedures outlined in the 1993 (”final”) version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Initial report from: 07/18/2025 16:54:06

Terracon 042513933

Asbestos Bulk Sample and Chain of Custody Form

Lab Order ID:

Select a Laboratory:

Lab Location: HQ - Cinnaminson, NJ 101048-0

Page 1 of 1

Project Name:	Ronald N Davies	**Project Number:**	M12557057	**Project Manager:**	Tiffany Schindler
Project Address:	102 4th St N	**City/State / Zip:**	Grand Forks, ND	**Email Results To:**	Tiffany.Schindler@terracon.com

Site/Building: Ronald N. Davies Federal Courthouse

Sample Identification HA – Code – #	Sample Location Description	HA General Location	Material Description	Quantity (SF, LF, Cubic Ft, Units)	NESHAP Classification[1]	Notes/Physical Condition[2]
12 -MGS-40	NE corner of 322A	Room 322A	Brown/black mastic and purple carpet squares		F C1 C2	G D SD
12 -MGS-41	South side of 322A					
12 -MGS-42	NW corner of 322A					
13 -PIS-43	South end of attic	Attic, pipe on south wall near stairs	Yellow pipe wrap and insulation		F C1 C2	G D SD
13 -PIS-44	South end of attic					
13 -PIS-45	South end of attic					
– –					F C1 C2	G D SD
– –						
– –						
– –					F C1 C2	G D SD
– –						
– –						
– –					F C1 C2	G D SD
– –						
– –						

RECEIVED EMSL CINNAMINSON, NJ 2025 JUL 11 P 12:53

Sampling Date: 7/10/25	**Collected by (print):** Tiffany Schindler	**Inspector's Signature:**	
Relinquished by:	**Date/Time:** 7/10/25 5 p.m.	**Received by:** FT	**Date/Time:** 7/11/25 9:00
Analysis: PLM EPA 600/R-93/116 ☒ PLM 400 Point Count ☐ TEM ☐ Other		**Instructions:**	
Turnaround Time (circle): 6 Hrs 24 Hrs 2 Days 3 Days 5 Days Other		**Terracon ARMS:** ☒ **Stop Positive:** ☐	**Number of samples:** 6

[1] F = Friable; C1 = Category I: packings, gaskets, asphaltic roofing products, resilient flooring; C2 = Category II Non-Friable: any materials other than Cat. I containing >1% asbestos

[2] G = Good (<1%); D = Damaged (<10% distributed or >25% localized); or SD = Significantly Damaged (>10% distributed or >25% localized)

6 JAD

OrderID: 042513933

Appendix D

Licenses and Certifications

North Dakota Department of Environmental Quality

Tiffany Kay Schindler

Certificate No: 6914

This is to certify that the above individual has met the requirements for certification in the following asbestos abatement discipline(s):

	Supervisor		
	Worker		
X	Inspector	Exp: 5/12/2026	
	Management Planner		
X	Project Designer	Exp: 10/3/2025	Asbestos Control Program
	Project Monitor		

North Dakota
Department of Environmental Quality

Asbestos Abatement Contractor License

This is to certify that TERRACON CONSULTANTS, INC. is licensed in accordance with Chapter 33.1-15-13 of the North Dakota Air Pollution Control Rules to perform Asbestos Abatement Work in the State of North Dakota.

Expires on December 31, 2025

Certificate No. ND 311

David W. Stradinger, Manager
Asbestos Control Program

© GOES 747

LITHO IN U.S.A.

United States Department of Commerce
National Institute of Standards and Technology

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 101048-0

EMSL Analytical, Inc.

Cinnaminson, NJ

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 on ISO/IEC 17025).

2025-07-01 through 2026-06-30

Effective Dates

For the National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
Ms. Samantha Rundstrom
Phone: 856-303-2577
Email: srundstrom@emsl.com
http://www.emsl.com

ASBESTOS FIBER ANALYSIS — NVLAP LAB CODE 101048-0

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

Appendix F

2018 Survey Report

Limited Asbestos and Lead-Based Paint Survey

Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203

February 9, 2018

Terracon Project No. M1177147

Prepared for:
Design Edge, PC
Colorado Springs, Colorado

Prepared by:
Terracon Consultants, Inc.
West Fargo, North Dakota

February 9, 2018

Design Edge, PC
711 North Cascade Avenue, Suite 100
Colorado Springs, Colorado 80903

Attn: Ms. Swagata Guha
E: swagata@de-arch.com

Re: Limited (Renovation-Specific) Asbestos and Lead-Based Paint Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203
Terracon Project No. M1177147

Dear Ms. Guha:

Terracon Consultants, Inc. (Terracon) is pleased to submit the attached report for the above-referenced site to Design Edge, PC. The purpose of this report is to present the results of a limited (renovation-specific) asbestos and lead-based paint survey performed on January 19, 2018 and January 22, 2018, respectively. The surveys were conducted in general accordance with Terracon Proposal No. PM1177147 dated November 14, 2017. We understand that these surveys were requested to identify and locate asbestos-containing materials (ACM) and lead-based paint (LBP) in the client defined survey area, which is scheduled for renovation. We further understand that the client defined survey area did not include building corridors, the building exterior, attic spaces above the offices, or the building roof.

Terracon appreciates the opportunity to provide this service to Design Edge, PC. If you have any questions regarding this report please contact the undersigned at 701-282-9633.

Sincerely,
Terracon Consultants, Inc.

Rhonda L. Olson
Staff Geologist

Kevin M. Troyer
Senior Industrial Hygienist

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APPENDIX A IDENTIFIED ASBESTOS-CONTAINING MATERIALS BY HOMOGENEOUS AREA (HA)

APPENDIX B ASBESTOS SURVEY SAMPLE LOCATION SUMMARY

APPENDIX C IDENTIFIED LEAD-BASED PAINT LOCATIONS

APPENDIX D INDENTIFIED LEAD-BASED PAINT SCREENING SAMPLE LOCATION SUMMARY

APPENDIX E ANALYTICAL LABORATORY DATA

APPENDIX F LICENSES AND CERTIFICATIONS

APPENDIX G SAMPLE LOCATION DRAWING

LIMITED ASBESTOS AND LEAD-BASED PAINT SURVEY
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota 58203

Terracon Project No. M1177147
February 9, 2018

1.0 INTRODUCTION

Terracon conducted a limited (renovation-specific) asbestos and lead-based paint survey for Design Edge, PC of the Ronald N. Davies Federal Building and U.S. Courthouse at 102 North 4th Street, Grand Forks, North Dakota.

The limited asbestos survey was conducted on January 19, 2018, by AHERA[1] accredited and State of North Dakota certified asbestos and lead-based paint inspectors in general accordance with Terracon Proposal No. PM1177147 dated November 14, 2017.

Interior building components were surveyed and homogeneous areas[2] (HA) of suspect asbestos-containing materials (ACM) were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but unsampled materials could be located in walls, in voids, or in other concealed areas. Suspect ACM samples were collected in general accordance with the sampling protocols outlined in United States Environmental Protection Agency (USEPA) 40 Code of Federal Regulations (CFR) 763.86, Sampling. Samples were delivered to an accredited laboratory for analysis by polarized light microscopy (PLM).

Paint samples were collected from accessible painted surfaces. The paint samples were submitted to an accredited laboratory for analysis of lead by USEPA method 6010C.

1.1 Project Objective

We understand that the project services were requested due to planned renovation of the building. USEPA regulation 40 CFR 61-National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart M-National Emission Standard for Asbestos, prohibits the release of asbestos fibers to the atmosphere during demolition or renovation activities. The asbestos NESHAP requires that potentially regulated asbestos-containing building materials be identified, classified, and quantified prior to planned disturbances.

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[1] AHERA = Asbestos Hazard Emergency Response Act
[2] A homogeneous area (HA) consists of building materials that appear similar throughout in terms of color and texture with consideration given to the date of application.

Paint sampling was completed to identify lead containing paints on painted components so that proper worker protection, environmental protection, and disposal can be completed.

1.2 Reliance

This report is for the exclusive use of Design Edge, PC for the project being discussed. Reliance by any other party on this report is prohibited without written authorization of Terracon and Design Edge, PC. Reliance on this report by Design Edge, PC and all authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, this report, and Terracon's Agreement for Services. The limitations of liability defined in Terracon's Agreement for Services is the aggregate limit of Terracon's liability to Design Edge, PC.

2.0 BUILDING DESCRIPTION

Terracon understands the subject building consists of a three-story structure originally completed in 1906, with a large renovation in 1964. The building is currently utilized as offices and courthouses.

The client-defined survey area is approximately 9,000 square-feet (sf) located on the third floor. Interior walls are primarily plaster and gypsum wallboard (GWB). Flooring consists of carpet tiles and floor tile. Ceilings consist of plaster and drop-in ceilings with interlocking, steel, and/or acoustical ceiling tiles. Ducting connected to air handling units in the plenum space above the drop ceiling are covered in insulation.

3.0 FIELD ACTIVITIES

3.1 Asbestos Survey

The survey was conducted by Mr. Leif Schonteich and Ms. Rhonda Olson, AHERA accredited North Dakota Department of Health (NDDH) licensed asbestos inspectors. Copies of Mr. Schonteich's and Ms. Olson's asbestos inspector certifications are attached as Appendix D. The survey was conducted in general accordance with the sample collection protocols established in USEPA 40 CFR 763.86, Sampling. A summary of survey activities is provided in the following subsections.

3.1.1 Visual Assessment

Survey activities were initiated with visual observation of the interior and exterior of the building to identify homogeneous areas of suspect ACM. A homogeneous area (HA) consists of building materials that appear similar throughout in terms of color and texture with consideration given to the date of application. Interior assessment was conducted in visually accessible areas of the

building proposed for demolition. It should be noted that additional suspect but unsampled materials could be located inside walls, voids, or other concealed areas.

Terracon typically investigated for flooring beneath carpeting by lifting small corner sections of carpet. If tiles were seen, they have been identified in the report. If tiles were not seen at corners under the carpet, it does not imply that there are no tiles beneath the carpets. Terracon sampled accessible flooring materials but did not conduct destructive investigation on floors to identify multi-layered tile/underlayment systems, concealed paper, vapor barriers, or floor tiles/mastics under wood floor systems due to the historical nature of the building.

3.1.2 Physical Assessment

A physical assessment of each HA of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the USEPA as a material which can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

3.1.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in general accordance with USEPA sampling protocols. Samples of suspect materials were collected from randomly selected locations in each homogeneous area. Bulk samples were collected using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

The selection of sample locations and frequency of sampling were based on Terracon's observations and the assumption that like materials in the same area are homogeneous in content. Terracon collected 39 bulk samples from 11 HAs. A summary of suspect ACM samples collected during the survey is included as Appendix B. A sample location drawing is included as Appendix E.

Terracon did not identify HAs assumed as ACM materials. Wood flooring was identified beneath layers of carpet, tile, and mastic. Terracon did not identify additional layers beneath the wood flooring in the areas accessible for inspection.

3.2 Painted Surface Coating Assessment

Terracon collected paint chip samples from painted components utilizing a chisel and sample bags. Terracon collected paint chip samples from the walls, chair rails, plaster ceiling, heat registers, door frames, and window frames and sills. A summary of paint types/colors sampled and locations where samples were collected during the survey are included as Appendix C and D, respectively.

3.3 Sample Analysis

Bulk samples were submitted under chain of custody to International Asbestos Testing Laboratories (IATL) of Mt. Laurel, New Jersey for analysis by PLM with dispersion staining techniques per USEPA's *Method for the Determination of Asbestos in Bulk Building Materials* (600/R-93/116). The percentage of asbestos, if present, was determined by microscopic visual estimation. IATL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) Accreditation No. 101165-0.

The paint chip samples were submitted under chain of custody to International Asbestos Testing Laboratories (IATL) of Mt. Laurel, New Jersey for analysis of lead by USEPA method 6010C on a 5-day turnaround time (TAT). IATL is accredited under the American Industrial Hygiene Association (AIHA) Laboratory Accreditation Program (AIHA-LAP) (ID No. 100188) which is recognized by the National Lead Laboratory Accreditation Program.

4.0 REGULATORY OVERVIEW

4.1 Asbestos

The North Dakota Division of Air Quality under the NDDH enforces the asbestos NESHAP as adopted by reference in North Dakota Administrative Code Chapter 33-15-13. The owner or operator must provide NDDH with written notification at least 10 working days prior to the commencement of asbestos abatement activities that will disturb regulated ACM (RACM) in amounts greater than or equal to 160 square feet, 260 linear feet, or 35 cubic feet.

The asbestos NESHAP (40 CFR Part 61, Subpart M) regulates asbestos fiber emissions and asbestos waste disposal practices. The asbestos NESHAP regulation also requires the identification and classification of existing ACM according to friability prior to demolition or renovation activity. Friable ACM is a material containing more than 1% asbestos that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. All friable ACM is considered RACM.

The asbestos NESHAP regulation classifies ACM as RACM, Category I nonfriable ACM, or Category II nonfriable ACM. RACM includes all friable ACM, along with Category I and Category II nonfriable ACMs that have become friable; will be or have been subjected to sanding, grinding, cutting or abrading; or that have a high probability of becoming or have become crumbled, pulverized, or reduced to powder in the course of renovation or demolition activity. Category I nonfriable ACMs are exclusively asbestos-containing packings, gaskets, resilient floor coverings, resilient floor covering mastics, and asphalt roofing products that contain more than 1% asbestos. Category II nonfriable ACMs are all other nonfriable materials other than Category I nonfriable

ACMs that contain more than 1% asbestos. Category II nonfriable ACMs generally include but are not limited to cementitious material such as cement pipes, cement siding, cement panels, glazing, mortar, and grouts.

The Occupational Safety and Health Administration (OSHA) asbestos standard for construction (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below the permissible exposure limits (PELs) of 0.1 asbestos fiber per cubic centimeter of air (0.1 f/cc) as an 8-hour time-weighted average (TWA) or 1.0 f/cc as a 30-minute excursion limit. The OSHA standard classifies construction and maintenance activities that could disturb ACM and specifies work practices and precautions that employers must follow when engaging in each class of regulated work.

4.2 Lead-Based Paint (LBP)

Lead is regulated by the USEPA and OSHA. USEPA regulates lead use, removal, and disposal, and OSHA regulates worker exposure to lead. USEPA defines LBP as paint, varnish, stain or other applied coating that contains lead equal to or greater than 1.0 milligram per square centimeter (mg/cm^2), 5,000 milligrams per kilogram (mg/kg), or 0.5% by dry weight as determined by laboratory analysis. For the purpose of the OSHA lead standard, lead includes metallic lead, all inorganic lead compounds, and organic lead soaps. The OSHA standard does not define the amount of lead in paint that constitutes lead-containing paint.

USEPA regulates disposal of hazardous materials. The USEPA has stated that components removed with intact LBP that is not delaminating from the substrate may be disposed as general demolition debris. If the LBP is stripped from components, or if it is delaminating from the substrate, the waste may be subject to hazardous waste rules [i.e., Toxicity Characteristics Leaching Procedure (TCLP)].

USEPA issued the Renovation, Repair, and Painting (RRP) rule (40 CFR Part 745) requiring the use of lead-safe practices and other actions aimed at preventing lead poisoning. Under the rule, beginning in April 2010, contractors performing renovation, repair, and painting projects that disturb LBP in homes, childcare facilities, and schools built before 1978 must be certified and must follow specific work practices to prevent lead contamination. The NDDH has adopted similar regulations.

The OSHA Lead Standard for Construction (29 CFR 1926.62) applies to all construction work where an employee may be occupationally exposed to lead. All work related to construction, alteration or repair (including painting and decorating) is included. The lead-in-construction standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon on the method of removal and other workplace conditions. Under this standard, construction includes, but is not limited to, the following:

- Demolition or salvage of structures where lead or materials containing lead are present
- Removal or encapsulation of materials containing lead
- New construction, alteration, repair, or renovation of structures, substrates, or portions containing lead, or materials containing lead
- Installation of products containing lead
- Lead contamination/emergency clean-up
- Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed
- Maintenance operations associated with construction activities described above

Employers must assure that no employee will be exposed to lead at concentrations greater than the PEL of 50 micrograms per cubic meter ($\mu g/m^3$) averaged over an eight-hour period without adequate protection. The OSHA standard also establishes an action level of 30 $\mu g/m^3$, which if exceeded, triggers certain requirements, including periodic exposure monitoring and medical monitoring.

5.0 FINDINGS AND RECOMMENDATIONS

5.1 Asbestos Survey

The following ACMs were identified as a result of laboratory analysis or assumed asbestos-containing:

Material Description	Material Location	NESHAP Classification	Estimated Quantity[3]
9" x 9" white floor tile	318, 320, 322, 322A, 322B, 324, 324B	Category I	1,750 SF
White joint compound	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	RACM	260 Joints
Gypsum with joint compound composite	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	RACM	1900 SF

The above listed RACM must be removed by a state of North Dakota licensed abatement contractor prior to any demolition activities that may disturb these materials in accordance with applicable federal, state, and local regulations.

The above listed Category I and Category II nonfriable ACMs that are damaged or could be damaged to the extent that they could be crumbled, pulverized or reduced to powder when dry,

[3] Estimated quantities are based on a cursory field evaluation, and actual quantities may vary significantly, especially if ACMs are present in hidden and/or inaccessible areas not evaluated as part of this survey. SF = square feet, LF = linear feet

making it friable, must be removed in accordance with applicable federal, state, and local regulations prior to any activities (renovation and/or demolition) that may disturb these materials.

Intentionally running over Category I and Category II nonfriable ACMs with tracked vehicles as a means of segregation or compaction, is considered grinding the material, making then friable RACM and subject to the asbestos NESHAP.

USEPA states that waste consolidation efforts that involve the use of jack hammers or other mechanical devices such as grinders to break up asbestos-containing concrete or other materials covered or coated with Category I nonfriable ACM, are subject to the regulation. If such materials adhering to the concrete are removed before waste consolidation, the waste consolidation is not subject to NESHAP. USEPA's interpretation is that when manual methods such as axes, hatchets, knives, spud bars, pry bars, and shovels, but not saws or methods that slice, shear, or punch such as a power slicer or power plow to remove roofing materials, are used, assuming the roof material is not friable, that the removal operation is not subject to the asbestos NEHSAP regulation.

Summaries of the classification, condition, and approximate quantity of identified and assumed ACMs are presented in Appendix A. The summary of sample locations is presented in Appendix B. Laboratory analytical reports are included in Appendix C.

Terracon can provide Design Edge, PC with a proposal for developing asbestos abatement specifications (project design) and for performing abatement oversight and air monitoring upon request.

5.2 Limited Lead-Based Paint Screening

The painting history of any given location often will vary from point to point due to many factors including variability in paints used, paint film thickness, variable retention of older paint layers before repainting, demolition/installation of walls during renovations, and unknown historic non-homogenous painting schemes. As such, a given color and building component combination that is currently apparent often will not provide consistent testing results for lead.

Terracon attempted to perform lead paint testing in sufficient quantity to establish trends in lead content based on distinguishable characteristics such as color or building component, subject to time and budget constraints. Based on the testing results presented in Appendix E, in Terracon's opinion the following components are known to contain lead:

- Tan/Green/White on gypsum wallboard above the chair rail.
- Tan/White/Green on plaster above drop ceiling.
- White/White/Grey on plaster below the chair rail.

The above list is not intended to be an all-inclusive list of all locations where LBP is present throughout the building. Terracon recommends that the contractor(s) involved in the stripping operation be notified of the presence of lead on painted components. OSHA's lead standards for construction (29 CFR 1926.62) apply regardless of the concentrations and contractor(s) will need to provide appropriate personal protective equipment and conduct personal exposure monitoring, at a minimum. Terracon recommends the contractor(s) review the specified work tasks and methods involved in the demolition process and prepare a detailed lead management plan. The management plan should identify the work procedures and health and safety measures to be used in the lead material removal. It should also be noted that any wastes derived during renovation/demolition activities that contain paints known to contain lead must be characterized for proper waste disposal.

6.0 LIMITATIONS/GENERAL COMMENTS

Terracon did not perform sampling which required demolition or destructive activities such as knocking holes in walls, dismantling of equipment or removal of protective coverings. Reasonable efforts to access suspect materials within known areas of restricted access (e.g., crawl spaces) were made; however, confined spaces or areas which may pose a health or safety risk to Terracon personnel were not sampled. Sampling did not include suspect materials which could not be safely reached with available ladders/man-lifts.

This asbestos survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions, and recommendations expressed in this report are based on conditions observed during our survey of the building. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date. This report has been prepared on behalf of and exclusively for use by Design Edge, PC for specific application to their project as discussed. This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories, or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.

It should be understood that our services may not have identified all ACMs present in inaccessible areas of the buildings. Additional assessment of hidden areas may be necessary during demolition/renovation activities in the event that suspect materials are uncovered.

APPENDIX A

Limited Asbestos Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

IDENTIFIED ASBESTOS-CONTAINING MATERIALS BY HOMOGENEOUS AREA (HA)

The materials listed in this table have been sampled and determined to contain asbestos in concentrations greater than 1%. When disturbed, various federal, state, and local regulations may apply. Removal may be necessary before renovations and in most cases before a demolition. See Appendix B for a summary of samples collected. See Appendix C for detailed analytical results.

HA No.	Material Description	Material Location	% and Type Asbestos[1]	NESHAP Classification	Condition	Estimated Quantity[2]
3	9" x 9" white floor tile	318, 320, 322, 322A, 322B, 324, 324B	PC[3] 2.1% Chrysotile	Category I	Good	1732 SF
15	White joint compound	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	PC 9.2% Chrysotile	RACM	Good	260 Joints
15	Gypsum with joint compound composite	322, 322B, 324, 324A, 324B, 324C, 328, 330, 330A, 330B	PC 2.0% Chrysotile	RACM	Good	1900 SF

[1] % & Type Asbestos - this column contains both the analytical result of the sample with the highest concentration of asbestos detected in the samples that make up the HA and the types of asbestos identified.
[2] Estimated quantities are based on a cursory field evaluation, and actual quantities may vary significantly, especially if ACMs are present in hidden and/or inaccessible areas not evaluated as part of this survey. SF = square feet, LF = linear feet
[3] Point count

APPENDIX B

Limited Asbestos Survey
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

ASBESTOS SURVEY SAMPLE LOCATION SUMMARY

HA No.	Material Description	Sample Number	Sample Location	Lab Results
1	Grey floor tile	1-FT2-01	Doorway of Room 324C	None detected
1	Yellow mastic	1-FT2-01	Doorway of Room 324C	None detected
1	Brown mastic	1-FT2-01	Doorway of Room 324C	None detected
1	Grey floor tile	1-FT2-02	Doorway of Room 324C	None detected
1	Yellow mastic	1-FT2-02	Doorway of Room 324C	None detected
1	Brown mastic	1-FT2-02	Doorway of Room 324C	None detected
1	Grey floor tile	1-FT2-03	Doorway of Room 324A	None detected
1	Yellow mastic	1-FT2-03	Doorway of Room 324A	None detected
1	Brown mastic	1-FT2-03	Doorway of Room 324A	None detected
2	Green mastic	2-MG6-04	East Wall of Room 328	None detected
2	Grey mastic	2-MG6-04	East Wall of Room 328	None detected
2	Green mastic	2-MG6-05	SW corner of Room 328	None detected
2	Grey mastic	2-MG6-05	SW corner of Room 328	None detected
2	Green mastic	2-MG6-06	N doorway of Room 328	None detected
3	**White floor tile**	**3-FT3-07**	**SE corner of Room 322**	**PC 2.1% Chrysotile**
3	Yellow mastic	3-FT3-07	SE corner of Room 322	None detected
3	White mastic	3-FT3-07	SE corner of Room 322	None detected
3	Black mastic	3-FT3-07	SE corner of Room 322	None detected
3	Light brown floor tile	3-FT3-08	SE corner of Room 322B	None detected
3	White mastic	3-FT3-08	SE corner of Room 322B	None detected
3	Yellow mastic	3-FT3-08	SE corner of Room 322B	None detected
3	Black mastic	3-FT3-08	SE corner of Room 322B	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
3	**Grey floor tile**	**3-FT3-09**	**SE corner of Room 320**	**PC 0.25% Chrysotile**
3	Yellow mastic	3-FT3-09	SE corner of Room 320	None detected
3	Black mastic	3-FT3-09	SE corner of Room 320	None detected
4	Light brown mastic	4-MG5-10	SE corner of Room 330A	None detected
4	Red carpet	4-MG5-10	SE corner of Room 330A	None detected
4	Light brown mastic	4-MG5-11	NE corner of Room 330B	None detected
4	Light brown mastic	4-MG5-12	SW corner of Room 330	None detected
4	Dark yellow mastic	4-MG5-12	SW corner of Room 330	None detected
4	Brown mastic	4-MG5-12	SW corner of Room 330	None detected
5	Red cove base	5-FC3-13	N wall of Room 330A	None detected
5	White joint compound	5-FC3-13	N wall of Room 330A	None detected
5	Brown mastic	5-FC3-13	N wall of Room 330A	None detected
5	Dark yellow mastic	5-FC3-13	N wall of Room 330A	None detected
5	Red cove base	5-FC3-14	SE corner of Room 330B	None detected
5	White joint compound	5-FC3-14	SE corner of Room 330B	None detected
5	Brown mastic	5-FC3-14	SE corner of Room 330B	None detected
5	Red cove base	5-FC3-15	N wall of Room 330B	None detected
5	Yellow mastic	5-FC3-15	N wall of Room 330B	None detected
6	Grey cove base	6-FC3-16	NW corner of Room 324A	None detected
6	Yellow mastic	6-FC3-16	NW corner of Room 324A	None detected
6	Grey cove base	6-FC3-17	NW corner of Room 324C	None detected
6	Yellow mastic	6-FC3-17	NW corner of Room 324C	None detected
6	Grey cove base	6-FC3-18	SW corner of Room 324A	None detected
6	Yellow mastic	6-FC3-18	SW corner of Room 324A	None detected
6	Brown mastic	6-FC3-18	SW corner of Room 324A	None detected
6	White leveling compound	6-FC3-18	SW corner of Room 324A	None detected
7	Red cove base	7-FC3-19	Room 324	None detected
7	Light yellow mastic	7-FC3-19	Room 324	None detected
7	Dark yellow mastic	7-FC3-19	Room 324	None detected
7	Red cove base	7-FC3-20	Room 324	None detected
7	Light yellow/dark yellow mastic	7-FC3-20	Room 324	None detected
7	Red cove base	7-FC3-21	Room 324	None detected
7	Light yellow/dark yellow mastic	7-FC3-21	Room 324	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
7	Brown mastic	7-FC3-21	Room 324	None detected
8	Light brown cove base	8-FC3-22	Room 324B	None detected
8	Brown mastic	8-FC3-22	Room 324B	None detected
8	Yellow mastic	8-FC3-22	Room 324B	None detected
8	Light brown cove base	8-FC3-23	Room 324B	None detected
8	Brown mastic	8-FC3-23	Room 324B	None detected
8	Yellow mastic	8-FC3-23	Room 324B	None detected
8	Light brown cove base	8-FC3-24	Room 324B	None detected
8	Brown mastic	8-FC3-24	Room 324B	None detected
8	Yellow mastic	8-FC3-24	Room 324B	None detected
8	White mastic	8-FC3-24	Room 324B	None detected
9	Beige ceiling tile	9-CT4-25	Room 324	None detected
9	Beige ceiling tile	9-CT4-26	Room 328	None detected
9	Beige ceiling tile	9-CT4-27	Room 330	None detected
10	Off-white drywall	10-WB1-28	Room 330	None detected
10	White joint compound	10-WB1-28	Room 330	None detected
10	Composite	10-WB1-28	Room 330	None detected
10	White woven material	10-WB1-28	Room 330	None detected
10	Off-white drywall	10-WB1-29	Room 330	None detected
10	White joint compound	10-WB1-29	Room 330	None detected
10	Composite	10-WB1-29	Room 330	None detected
10	White woven material	10-WB1-29	Room 330	None detected
10	Off-white drywall	10-WB1-30	Room 328	None detected
10	White joint compound	10-WB1-30	Room 328	None detected
10	Composite	10-WB1-30	Room 328	None detected
10	Off-white drywall	10-WB1-31	Room 324	None detected
10	Off-white drywall	10-WB1-32	Room 324A	None detected
10	**White joint compound**	**10-WB1-32**	**Room 324A**	**PC 9.2% Chrysotile**
10	**Composite**	**10-WB1-32**	**Room 324A**	**PC 2.0% Chrysotile**
11	Beige plaster	11-HP2-33	Room 330 ceiling	None detected
11	White plaster	11-HP2-33	Room 330 ceiling	None detected
11	Beige plaster	11-HP2-34	Room 330 wall	None detected
11	White plaster	11-HP2-34	Room 330 wall	None detected

HA No.	Material Description	Sample Number	Sample Location	Lab Results
11	Beige plaster	11-HP2-35	Room 328 wall	None detected
11	White plaster	11-HP2-35	Room 328 wall	None detected
11	Beige plaster	11-HP2-36	Room 324 wall	None detected
11	White plaster	11-HP2-36	Room 324 wall	None detected
11	Beige plaster	11-HP2-37	Room 324 ceiling	None detected
11	White plaster	11-HP2-37	Room 324 ceiling	None detected
11	Beige plaster	11-HP2-38	Room 320 wall	None detected
11	White plaster	11-HP2-38	Room 320 wall	None detected
11	Beige plaster	11-HP2-39	Room 320 ceiling	None detected
11	White plaster	11-HP2-39	Room 320 ceiling	None detected

APPENDIX C

Limited Lead-Based Paint Screening
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

IDENTIFIED LEAD-BASED PAINT LOCATIONS

Paint Color	Location	Substrate	Analytical Result (% by weight)
Tan/green/ white	Upper wall (above chair rail)	GWB	8.0
Tan/white	Upper wall/ceiling above drop ceiling	Cement board	4.9
White/white /grey	Lower wall (below chair rail)	Cement board	12

GWB = gypsum wall board

APPENDIX D

Limited Lead-Based Paint Screening
Ronald N. Davies Federal Building and U.S. Courthouse
102 North 4th Street
Grand Forks, North Dakota

LEAD-BASED PAINT SCREENING SAMPLE LOCATION SUMMARY

Room	Color	Substrate	Condition	Lead Content[1]	Notes
1	**Tan/green/white**	**GWB**	**Intact**	**8.0**	**Upper wall (above chair rail)**
2	Tan/white/green	Wood	Intact	0.10	Chair rail
3	**Tan/white**	**Cement board**	**Intact**	**4.9**	**Upper wall/ceiling above drop ceiling**
4	White/white	Metal	Intact	0.0059	Heat registers
5	**White/white/grey**	**Cement board**	**Poor**	**12**	**Lower wall (below chair rail)**
6	Brown/tan/green	Wood	Intact	0.33	Door frames
7	Tan/green	Wood	Intact	0.18	Window frames/sills

GWB = gypsum wall board
1 = Percent by weight

APPENDIX E

ANALYTICAL LABORATORY DATA

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429597
Client No.: 1-FT2-01
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429597(L2)
Client No.: 1-FT2-01
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429597(L3)
Client No.: 1-FT2-01
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
8 Cellulose
3 Synthetic

Percent Non-Fibrous Material:
89

Lab No.: 6429598
Client No.: 1-FT2-02
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429598(L2)
Client No.: 1-FT2-02
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
5 Cellulose

Percent Non-Fibrous Material:
95

Lab No.: 6429598(L3)
Client No.: 1-FT2-02
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324C
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
5 Cellulose

Percent Non-Fibrous Material:
95

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

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CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429599
Client No.: 1-FT2-03
Analyst Observation: Grey Floor Tile
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429599(L2)
Client No.: 1-FT2-03
Analyst Observation: Yellow Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 5 Cellulose
Percent Non-Fibrous Material: 95

Lab No.: 6429599(L3)
Client No.: 1-FT2-03
Analyst Observation: Brown Mastic
Client Description: 12x12 Grey Floor Tile
Location: Doorway Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429600
Client No.: 2-MG6-04
Analyst Observation: Green Mastic
Client Description: Green Carpet Glue
Location: East Wall Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429600(L2)
Client No.: 2-MG6-04
Analyst Observation: Grey Mastic
Client Description: Green Carpet Glue
Location: East Wall Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429601
Client No.: 2-MG6-05
Analyst Observation: Green Mastic
Client Description: Green Carpet Glue
Location: SW Corner Of Room 328
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429601(L2)
Client No.: 2-MG6-05
Analyst Observation: Grey Mastic
Client Description: Green Carpet Glue
Location: SW Corner Of Room 328
Facility:
Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429602
Client No.: 2-MG6-06
Analyst Observation: Green Mastic
Client Description: Green Carpet Glue
Location: N Doorway Of Room 328
Facility:
Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 5 Cellulose
Percent Non-Fibrous Material: 95

Lab No.: 6429603
Client No.: 3-FT3-07
Analyst Observation: White Floor Tile
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322
Facility:
Percent Asbestos: ***PC 2.1*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 97.9

Lab No.: 6429603(L2)
Client No.: 3-FT3-07
Analyst Observation: Yellow Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322
Facility:
Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429603(L3)
Client No.: 3-FT3-07
Analyst Observation: White Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322
Facility:
Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429603(L4)
Client No.: 3-FT3-07
Analyst Observation: Black Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322
Facility:
Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429604
Client No.: 3-FT3-08
Analyst Observation: Lt Brown Floor Tile
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L2)
Client No.: 3-FT3-08
Analyst Observation: White Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L3)
Client No.: 3-FT3-08
Analyst Observation: Yellow Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429604(L4)
Client No.: 3-FT3-08
Analyst Observation: Black Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 322B
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 8 Cellulose
Percent Non-Fibrous Material: 92

Lab No.: 6429605
Client No.: 3-FT3-09
Analyst Observation: Grey Floor Tile
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 320
Facility:

Percent Asbestos: ***PC 0.25*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 99.75

Note: Analyzed by R.Hargrove 1-30-18

Lab No.: 6429605(L2)
Client No.: 3-FT3-09
Analyst Observation: Yellow Mastic
Client Description: Carpet Glue & Mastic On Floor Tile
Location: SE Corner Of Room 320
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429605(L3) **Analyst Observation:** Black Mastic **Location:** SE Corner Of Room 320
Client No.: 3-FT3-09 **Client Description:** Carpet Glue & Mastic On Floor Tile **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429606 **Analyst Observation:** Lt Brown Mastic **Location:** SE Corner Of Room 330A
Client No.: 4-MG5-10 **Client Description:** Green/Grey Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 4 Cellulose
Percent Non-Fibrous Material: 96

Lab No.: 6429606(L2) **Analyst Observation:** Red Carpet **Location:** SE Corner Of Room 330A
Client No.: 4-MG5-10 **Client Description:** Green/Grey Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 98 Synthetic
Percent Non-Fibrous Material: 2

Lab No.: 6429607 **Analyst Observation:** Lt Brown Mastic **Location:** NE Corner Of Room 330B
Client No.: 4-MG5-11 **Client Description:** Green/Grey Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429608 **Analyst Observation:** Lt Brown Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429608(L2) **Analyst Observation:** Dk Yellow Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 4 Cellulose
Percent Non-Fibrous Material: 96

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429608(L3) **Analyst Observation:** Brown Mastic **Location:** SW Corner Of Room 330
Client No.: 4-MG5-12 **Client Description:** Green/Grey Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609 **Analyst Observation:** Red Cove Base **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L2) **Analyst Observation:** White Joint Compound **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L3) **Analyst Observation:** Brown Mastic **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429609(L4) **Analyst Observation:** Dk Yellow Mastic **Location:** N Wall Of Room 330A
Client No.: 5-FC3-13 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429610 **Analyst Observation:** Red Cove Base **Location:** SE Corner Of Room 330B
Client No.: 5-FC3-14 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

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		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429610(L2) **Analyst Observation:** White Joint Compound **Location:** SE Corner Of Room 330B
Client No.: 5-FC3-14 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429610(L3) **Analyst Observation:** Brown Mastic **Location:** SE Corner Of Room 330B
Client No.: 5-FC3-14 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429611 **Analyst Observation:** Red Cove Base **Location:** N Wall Of Room 330B
Client No.: 5-FC3-15 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429611(L2) **Analyst Observation:** Yellow Mastic **Location:** N Wall Of Room 330B
Client No.: 5-FC3-15 **Client Description:** Red 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429612 **Analyst Observation:** Grey Cove Base **Location:** NW Corner Of Room 324A
Client No.: 6-FC3-16 **Client Description:** Brown 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429612(L2) **Analyst Observation:** Yellow Mastic **Location:** NW Corner Of Room 324A
Client No.: 6-FC3-16 **Client Description:** Brown 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429613
Client No.: 6-FC3-17
Analyst Observation: Grey Cove Base
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324C
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429613(L2)
Client No.: 6-FC3-17
Analyst Observation: Yellow Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: NW Corner Of Room 324C
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614
Client No.: 6-FC3-18
Analyst Observation: Grey Cove Base
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L2)
Client No.: 6-FC3-18
Analyst Observation: Yellow Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L3)
Client No.: 6-FC3-18
Analyst Observation: Brown Mastic
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429614(L4)
Client No.: 6-FC3-18
Analyst Observation: White Leveling Compound
Client Description: Brown 4" Base Cove And Mastic
Location: SW Corner Of Room 324A
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429615 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429615(L2) **Analyst Observation:** Lt Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429615(L3) **Analyst Observation:** Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-19 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429616 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-20 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429616(L2) **Analyst Observation:** Lt Yellow/Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-20 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429617 **Analyst Observation:** Red Cove Base **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429617(L2) **Analyst Observation:** Lt Yellow/Dk Yellow Mastic **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429617(L3) **Analyst Observation:** Brown Mastic **Location:** Room 324
Client No.: 7-FC3-21 **Client Description:** Maroon 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429618 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429618(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429618(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-22 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429619 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429619(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429619(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-23 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620 **Analyst Observation:** Lt Brown Cove Base **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L2) **Analyst Observation:** Brown Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L3) **Analyst Observation:** Yellow Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429620(L4) **Analyst Observation:** White Mastic **Location:** Room 324B
Client No.: 8-FC3-24 **Client Description:** Tan 4" Base Cove And Mastic **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

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Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429621
Client No.: 9-CT4-25
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 324
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
50 Cellulose
40 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429622
Client No.: 9-CT4-26
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 328
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
50 Cellulose
40 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429623
Client No.: 9-CT4-27
Analyst Observation: Beige Ceiling Tile
Client Description: 2x4 Ceiling Tile
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
40 Cellulose
50 Mineral Wool

Percent Non-Fibrous Material:
10

Lab No.: 6429624
Client No.: 10-WB1-28
Analyst Observation: Off-White Drywall
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
3 Cellulose
3 Fibrous Glass

Percent Non-Fibrous Material:
94

Lab No.: 6429624(L2)
Client No.: 10-WB1-28
Analyst Observation: White Joint Compound
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Lab No.: 6429624(L3)
Client No.: 10-WB1-28
Analyst Observation: Composite
Client Description: Gypsum With Joint Compound
Location: Room 330
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
3 Cellulose
3 Fibrous Glass

Percent Non-Fibrous Material:
94

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429624(L4) **Analyst Observation:** White Woven Material **Location:** Room 330
Client No.: 10-WB1-28 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 99 Fibrous Glass Percent Non-Fibrous Material: 1

Lab No.: 6429625 **Analyst Observation:** Off-White Drywall **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 3 Fibrous Glass Percent Non-Fibrous Material: 97

Lab No.: 6429625(L2) **Analyst Observation:** White Joint Compound **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: None Detected Percent Non-Fibrous Material: 100

Lab No.: 6429625(L3) **Analyst Observation:** Composite **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 3 Fibrous Glass Percent Non-Fibrous Material: 97

Lab No.: 6429625(L4) **Analyst Observation:** White Woven Material **Location:** Room 330
Client No.: 10-WB1-29 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 98 Fibrous Glass Percent Non-Fibrous Material: 2

Lab No.: 6429626 **Analyst Observation:** Off-White Drywall **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**
Percent Asbestos: *None Detected* Percent Non-Asbestos Fibrous Material: 2 Fibrous Glass Percent Non-Fibrous Material: 98

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429626(L2) **Analyst Observation:** White Joint Compound **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429626(L3) **Analyst Observation:** Composite **Location:** Room 328
Client No.: 10-WB1-30 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Fibrous Glass
Percent Non-Fibrous Material: 98

Lab No.: 6429627 **Analyst Observation:** Off-White Drywall **Location:** Room 324
Client No.: 10-WB1-31 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 6 Cellulose
Percent Non-Fibrous Material: 94

Lab No.: 6429628 **Analyst Observation:** Off-White Drywall **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 3 Cellulose
Percent Non-Fibrous Material: 97

Lab No.: 6429628(L2) **Analyst Observation:** White Joint Compound **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: ***PC 9.2*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 90.8

Lab No.: 6429628(L3) **Analyst Observation:** Composite **Location:** Room 324A
Client No.: 10-WB1-32 **Client Description:** Gypsum With Joint Compound **Facility:**

Percent Asbestos: ***PC 2.0*** *Chrysotile*
Percent Non-Asbestos Fibrous Material: 3 Cellulose
Percent Non-Fibrous Material: 95

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429629
Client No.: 11-HP2-33
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 330 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429629(L2)
Client No.: 11-HP2-33
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 330 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429630
Client No.: 11-HP2-34
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 330 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429630(L2)
Client No.: 11-HP2-34
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 330 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429631
Client No.: 11-HP2-35
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 328 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429631(L2)
Client No.: 11-HP2-35
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 328 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429632
Client No.: 11-HP2-36
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 324 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429632(L2)
Client No.: 11-HP2-36
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 324 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429633
Client No.: 11-HP2-37
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 324 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429633(L2)
Client No.: 11-HP2-37
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 324 Ceiling
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Lab No.: 6429634
Client No.: 11-HP2-38
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 320 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: 2 Cellulose
Percent Non-Fibrous Material: 98

Lab No.: 6429634(L2)
Client No.: 11-HP2-38
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 320 Wall
Facility:

Percent Asbestos: *None Detected*
Percent Non-Asbestos Fibrous Material: None Detected
Percent Non-Fibrous Material: 100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018	
	860 9th Street NE, Unit K	Report No.:	555894 - PLM	Rev #2, 1/30/2018
	West Fargo ND 58078	Project:	Ronald Davies	
		Project No.:	M1177147	
Client:	TER932			

PLM BULK SAMPLE ANALYSIS SUMMARY

Lab No.: 6429635
Client No.: 11-HP2-39
Analyst Observation: Beige Plaster
Client Description: Original Plaster Surface
Location: Room 320 Ceiling
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
2 Cellulose

Percent Non-Fibrous Material:
98

Lab No.: 6429635(L2)
Client No.: 11-HP2-39
Analyst Observation: White Plaster
Client Description: Original Plaster Surface
Location: Room 320 Ceiling
Facility:

Percent Asbestos:
None Detected

Percent Non-Asbestos Fibrous Material:
None Detected

Percent Non-Fibrous Material:
100

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature:
Analyst: Brittney Crisera

Approved By:
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Appendix to Analytical Report

Customer Contact:
Analysis: US EPA 600, R93-116

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Cassie Doherty
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Bulk Building Materials
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

This report shall not be reproduced except in full, without written approval of the laboratory.

Information Pertinent to this Report:

Analysis by US EPA 600 93-116: Determination of Asbestos in Bulk Building Materials by Polarized Light Microscopy (PLM).

Certifications:

- NIST-NVLAP No. 101165-0
- NYSDOH-ELAP No. 11021
- AIHA-LAP, LLC No. 100188

Quantification at <0.25% by volume is possible with this method. (PC) Indicates Stratified Point Count Method performed. (PC-Trace) means that asbestos was detected but is not quantifiable under the Point Counting regimen. Analysis includes all distinct separable layers in accordance with EPA 600 Method. If not reported or otherwise noted, layer is either not present or the client has specifically requested that it not be analyzed (ex. analyze until positive instructions). Small asbestos fibers may be missed by PLM due to resolution limitations of the optical microscope. Therefore, PLM is not consistently reliable in detecting asbestos in non-friable organically bound (NOB) materials. Quantitative transmission electron microscopy (TEM) is currently the only method that can pronounce materials as non-asbestos containing.

Analytical Methodology Alternatives: Your initial request for analysis may not have accounted for recent advances in regulatory requirements or advances in technology that are routinely used in similar situations for other qualified projects. You may have the option to explore additional analysis for further information. Below are a few options, listed as the matrix followed by the appropriate methodology. Also included are links to more information on our website.

Bulk Building Materials that are Non-Friable Organically Bound (NOB) by Gravimetric Reduction techniques employing PLM and TEM: ELAP 198.6 (PLM-NOB), ELAP 198.4 (TEM-NOB)

Loose Fill Vermiculite Insulation, Attic Insulation, Zonolite (copyright), etc.: US EPA 600 R-4/004 (multi-tiered analytical process)
Sprayed On Insulation/Fireproofing with Vermiculite (SOF-V): ELAP 198.8 (PLM-SOF-V)

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Soil, sludge, sediment, aggregate, and like materials analyzed for asbestos or other elongated mineral particles (ex. erionite, etc.): ASTM D7521, CARB 435, and other options available

Asbestos in Surface Dust according to one of ASTM's Methods (very dependent on sampling collection technique – by TEM): ASTM D 5755, D5756, or D6480

Various other asbestos matrices (air, water, etc.) and analytical methods are available.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a list with highlighted disclaimers that may be pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com**.

1) Note: No mastic provided for analysis.
2) Note: Insufficient mastic provided for analysis.
3) Note: Insufficient material provided for analysis.
4) Note: Insufficient sample provided for QC reanalysis.
5) Note: Different material than indicated on Sample Log / Description.
6) Note: Sample not submitted.
7) Note: Attached to asbestos containing material.
8) Note: Received wet.
9) Note: Possible surface contamination.
10) Note: Not building material. 1% threshold may not apply.
11) Note: Recommend TEM-NOB analysis as per EPA recommendations.
12) Note: Asbestos detected but not quantifiable.
13) Note: Multiple identical samples submitted, only one analyzed.
14) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.080%.
15) Note: Analyzed by EPA 600/R-93/116. Point Counting detection limit at 0.125%.

Recommendations for Vermiculite Analysis:

Several analytical protocols exist for the analysis of asbestos in vermiculite. These analytical approaches vary depending upon the nature of the vermiculite mineral being tested (e.g. un-processed gange, homogeneous exfoliated books of mica, or mixed mineral composites).Please contact your client representative for pricing and turnaround time options available.

iATL recommends initial testing using the EPA 600/R-93/116 method. This method is specifically designed for the analysis of asbestos in bulk building materials. It provides an acceptable starting point for primary screening of vermiculite for possible asbestos.

Results from this testing may be inconclusive. EPA suggests proceeding to a multi-tiered analysis involving wet separation techniques in conjunction with PLM and TEM gravimetric analysis (EPA 600/R-04/004).

Further information on this method and other vermiculite and asbestos issues can be found at the following: Agency for Toxic Substances and Disease Registry (ATSDR) www.atsdr.cdc.gov, United States Geological Survey (USGS) www.minerals.usgs.gov/minerals/, US EPA www.epa.gov/asbestos. The USEPA also has an informative brochure "Current Best Practices for Vermiculite Attic Insulation" EPA 747F03001 May 2003, that may assist the health and remediation professional.

The following is a summary of the analytical process outlines in the EPA 600/R-04/004 Method:

1)**Analytical Step/Method:** Initial Screening by PLM, EPA 600R-93/116
Requirements/Comments: Minimum of 0.1 g of sample. ~0.25% LOQ for most samples.

2)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

3)**Analytical Step/Method:** Wet Separation by PLM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Floats" only.

4)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004
Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Sinks" only.

5)**Analytical Step/Method:** Wet Separation by TEM Gravimetric Technique, EPA R-04/004

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555894 - PLM
	West Fargo ND 58078	Project:	Ronald Davies
		Project No.:	M1177147
Client:	TER932		

Requirements/Comments: Minimum 50g** of dry sample. Analysis of "Suspension" only.

LOQ, Limit of Quantitation estimates for mass and volume analyses.
*With advance notice and confirmation by the laboratory.
**Approximately 1 Liter of sample in double-bagged container (~9x6 inch bag of sample).

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Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: Terracon
860 9th Street NE, Unit K
West Fargo ND 58078

Client: TER932

Report Date: 1/30/2018
Report No.: 555851 - Lead Paint
Project: Ronald Davies Federal Building
Project No.: M1177147

LEAD PAINT SAMPLE ANALYSIS SUMMARY

Lab No.: 6429175 **Description:** Tan/Green/White Paint On GWB **Result (% by Weight):** 8.0
Client No.: 01 **Location:** Upper Wall (Above Chair Rail) **Result (ppm):** 80000
Comments:

Lab No.: 6429176 **Description:** Tan/White/Green Paint On Wood **Result (% by Weight):** 0.10
Client No.: 02 **Location:** Chair Rail **Result (ppm):** 1000
Comments:

Lab No.: 6429177 **Description:** Tan/White Paint On Cement Board **Result (% by Weight):** 4.9
Client No.: 03 **Location:** Upper Wall/Ceiling Above Drop Ceiling **Result (ppm):** 49000
Comments:

Lab No.: 6429178 **Description:** White/White Paint On Metal **Result (% by Weight):** 0.0059
Client No.: 04 **Location:** Heat Registers **Result (ppm):** 59
Comments:

Lab No.: 6429179 **Description:** White/White/Grey Paint On Cement Board **Result (% by Weight):** 12
Client No.: 05 **Location:** Lower Wall (Below Chair Rail) **Result (ppm):** 120000
Comments:

Lab No.: 6429180 **Description:** Brown/Tan/Green Paint On Wood **Result (% by Weight):** 0.33
Client No.: 06 **Location:** Door Frames **Result (ppm):** 3300
Comments:

Lab No.: 6429181 **Description:** Tan/Green Paint On Wood **Result (% by Weight):** 0.18
Client No.: 07 **Location:** Window Frames/Sills **Result (ppm):** 1800
Comments:

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 1/23/2018
Date Analyzed: 01/30/2018
Signature: Chad Shaffer
Analyst: Chad Shaffer

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	Terracon	Report Date:	1/30/2018
	860 9th Street NE, Unit K	Report No.:	555851 - Lead Paint
	West Fargo ND 58078	Project:	Ronald Davies Federal Building
		Project No.:	M1177147
Client:	TER932		

Appendix to Analytical Report:

Customer Contact:
Analysis: ASTM D3335-85a

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: cdavis@iatl.com
iATL Account Representative: Cassie Doherty
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Paint
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and ir our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

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Information Pertinent to this Report:

Analysis by ASTM D3335-85a by AAS

Certification:
- National Lead Laboratory Program (NLLAP): AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation.
All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.
Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Apendix B.
Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.
LSD=0.2 ppm MDL=0.005% by weight. RL= 0.010% by weight (based upon 100 mg sampled).

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at **customerservice@iatl.com.**

* Insufficient sample provided to perform QC reanalysis (<200 mg)
** Not enough sample provided to analyze (<50 mg)
*** Matrix / substrate interference possible.

APPENDIX F

LICENSES AND CERTIFICATIONS

North Dakota Department of Health

Certificate

of No. 3789

Asbestos Abatement

This is to certify that Leif Hans Schonteich has met the requirements of Chapter 33-15-13 of the North Dakota Air Pollution Control Rules for certification in the following asbestos abatement discipline(s):

	Supervisor		
	Worker		
x	Inspector	Exp: 6/19/2018	
	Management Planner		
x	Project Designer	Exp: 11/2/2018	Asbestos Control Program
	Project Monitor		

North Dakota Department of Health
Certificate

of No. 5986

Asbestos Abatement

This is to certify that Rhonda Lyn Olson has met the requirements of Chapter 33-15-13 of the North Dakota Air Pollution Control Rules for certification in the following asbestos abatement discipline(s):

Supervisor
Worker
x Inspector Exp: 11/3/2018
Management Planner
Project Designer
Project Monitor

Asbestos Control Program

February 17, 2015

Terracon
6701 Fourth St SW
Minot, ND 58701

Ladies and Gentlemen:

Enclosed you will find a lead-based paint certification card issued by the North Dakota Department of Health for Stephen Maliszeski.

This card identifies the discipline for which the individual is certified. The State of North Dakota grants certification following proof of successful completion of an EPA or Department approved course. Individuals are allowed to perform only those duties in which they are certified and proof of certification must be available at the work site. Certification is for a period of three years from the date of completion of the last training course. Individuals who intend to continue performing lead-based paint work must be recertified prior to that time. To be recertified, an individual must have attended an EPA or State approved refresher course in the specific discipline for which they are applying for recertification within the previous three year period.

If you have any questions concerning the certification, please feel free to contact me at 701-328-5188.

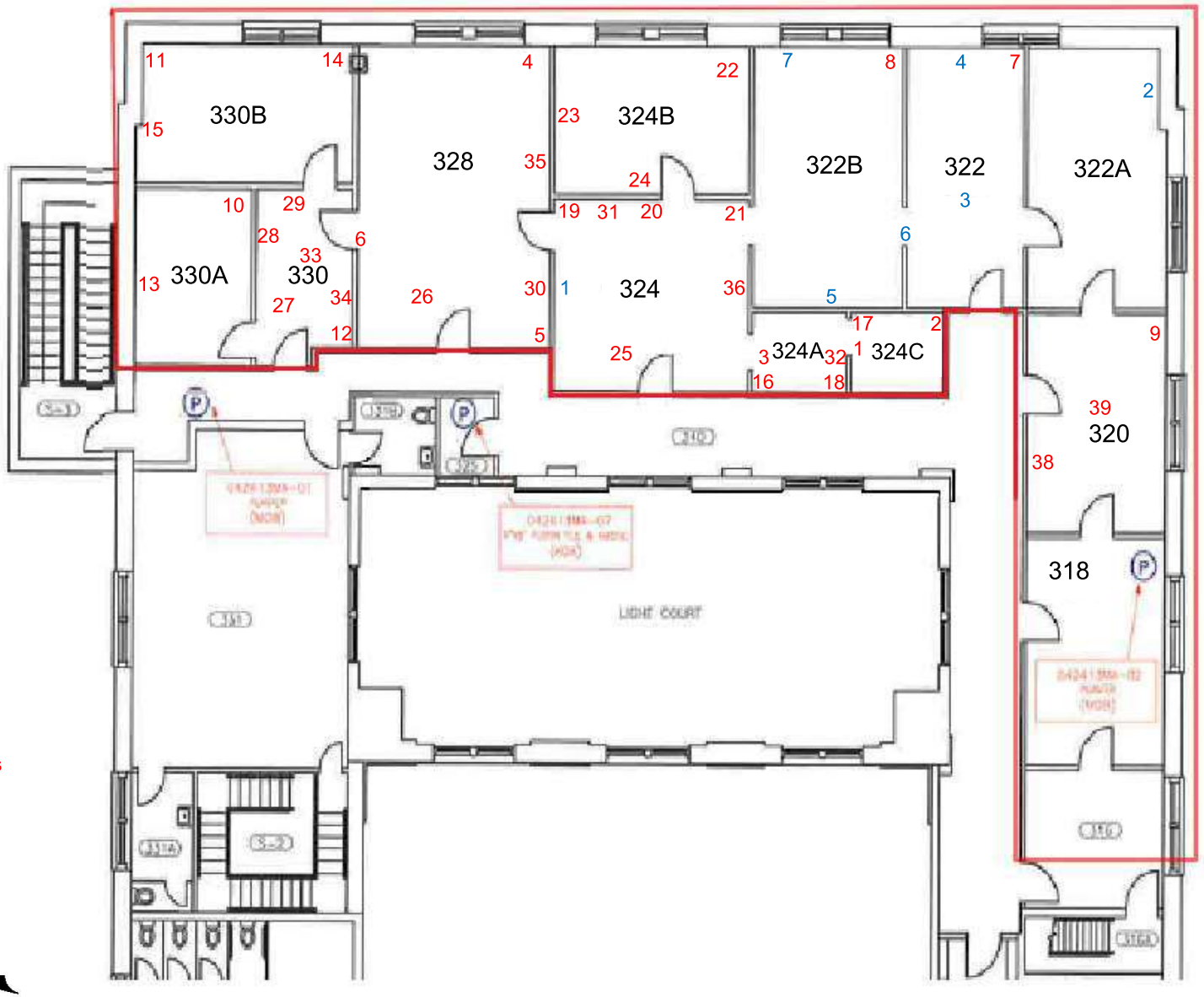
Sincerely,

Sandi Washek
Environmental Scientist
Lead-Based Paint Program

SW:csc
Enc:

APPENDIX G

SAMPLE LOCATION DRAWING



1 Asbestos Samples

1 Paint Samples

Project Manager: RLO	Project No. M1177147	Terracon 860 9th Street NE, Unit K West Fargo, North Dakota 58078	Sample Location Drawing Ronald N. Davies Federal Building and U.S. Courthouse 102 North 4th Street Grand Forks, North Dakota 58203
Drawn by: RLO	Scale: AS SHOWN		
Checked by: LHS	File Name:		
Approved by: KMT	Date: 02/02/2018		

Exhibit 1

APPENDIX XB

GSA BASE ASBESTOS ABATEMENT REQUIREMENTS
STATE OF NORTH DAKOTA

GSA BASE ASBESTOS ABATEMENT REQUIREMENTS
STATE OF NORTH DAKOTA

NOTE: This document provides the minimum (base) GSA requirements for all asbestos abatement activities in the State of North Dakota. Specific requirements for the disturbance or removal of asbestos containing materials may vary due to field conditions, types or quantities of involved asbestos materials, proposed abatement methodologies, etc. For project-specific requirements please consult with the GSA OFM Industrial Hygiene Group for guidance.

1. PROJECT OBJECTIVES

1.1. The contractor shall provide all labor, materials, equipment and supervision necessary to perform abatement of the asbestos-containing materials (ACM).

2. PERMITTING/REGULATIONS/CODES

2.1. Contractor shall be responsible for obtaining all necessary local, state, and federal permits and licenses and payment of related fees.

2.2. Contractor shall comply with all applicable federal, state, and local regulations including but not limited to:

2.2.1. Occupational Safety & Health Administration (OSHA) Asbestos in Construction Standard - 29 CFR 1926.1101

2.2.2. OSHA Asbestos in General Industry Standard – 29 CFR 1910.1001

2.2.3. OSHA Respiratory Protection Standard - 29 CFR 1910.134

2.2.4. U.S. Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) - 40 CFR 61 Subpart M

2.2.5. EPA Asbestos Hazard Emergency Response Act (AHERA) - 40 CFR 763

2.2.6. Federal Management Regulation, Real Property, Safety and Environmental Management, Asbestos - 41 CFR 102-80.15

2.2.7. U.S. Department of Transportation Hazardous Material Transportation Regulations – 49 CFR 171 and 172

2.2.8. North Dakota Administrative Code Chapter 33-15-13 Emission Standards for Hazardous Air Pollutants

2.2.9. North Dakota Century Code Chapter 23-25 Air Pollution Control

2.3. All work shall comply with codes and standards applicable to each type of work through the course of this project. The contractor shall also comply with the requirements of GSA BuildGreen standards, and PBS P-100.

3. ASBESTOS ABATEMENT REQUIREMENTS

3.1. General

3.1.1. All regulated asbestos abatement activities shall be conducted by a North Dakota licensed asbestos abatement contractor in good standing with North Dakota Department of Environmental Quality (NDDEQ) & North Dakota Department of Health (NDDH) and utilizing properly trained and certified asbestos abatement supervisors and workers.

3.1.2. Contractor shall field verify all conditions, requirements, and quantity of asbestos containing material (ACM) to be abated at time of pre-bid walk through.

3.1.3. Contractor to coordinate schedule of work with the GSA Building and Project Manager. Asbestos abatement shall be performed during regular working hours.

3.2. Abatement Work Practices and Control Requirements

3.2.1. All asbestos abatement work shall follow applicable State of North Dakota requirements of North Dakota Administrative Code 33-15-13-02 and OSHA Asbestos in Construction Standard requirements of 29 CFR 1926.1101.

3.2.2. Contractor shall not seek or apply for any variance or alternative work procedures from any authority having jurisdiction (AHJ) unless previously approved in writing by GSA. Once approved by GSA, Contractor may request a variance or alternative work procedures in writing from any AHJ and must receive written approval from the AHJ prior to the commencement of abatement activities. Written AHJ approval of any variance or alternative work procedures shall be provided to GSA.

3.2.3. Negative air machine (NAM) exhaust shall be exhausted to the exterior of the building. If it is not practicable for the NAM to be exhausted to the exterior of the building, additional air sampling at the point of exhaust may be required.

3.2.4. Contractor shall take care to control the generation of odors in occupied buildings. If mastic remover is utilized, product shall be low odor and meet California Air Resources Board (CARB) volatile organic compound (VOC) content requirements.

3.2.5. Final visual clearance and air sampling will be conducted by a third-party qualified industrial hygienist independent of the asbestos abatement contractor. Final air clearance sampling shall be done in accordance with the clearance criteria of 40 CFR 763.90(i)(5). GSA reserves the right to prescribe specific sampling protocols type based on abated material and building occupancy.

3.2.6. If the area does not pass final visual inspection or final air clearance sampling, the abatement Contractor shall re-clean the area at no additional cost, and the process will be repeated until clearance is achieved.

3.3. Asbestos-Containing Waste Material Disposal Requirements

3.3.1. Transportation and disposal of friable and non-friable asbestos-containing waste material shall be conducted in accordance with all applicable requirements including but not limited to North Dakota Administrative Code 33-15-13-02; 40 CFR 61.150; and 49 CFR Parts 171 & 172.

3.3.2. Asbestos-containing waste material shall be properly packaged, labeled, manifested, and transported.

4. SUBMITTAL AND DELIVERABLE REQUIREMENTS

4.1. Asbestos Abatement Specific Pre-Abatement Submittals

4.1.1. Prior to the commencement of asbestos abatement actions, the Contractor shall provide the following documentation to GSA for review and approval:

4.1.2. Contractor shall provide a written method of procedure (MOP) describing the following at a minimum:

4.1.2.1. Statement of contractor's qualifications and copies of the firm's relevant licenses or certifications, as applicable

4.1.2.2. Types, quantities, and locations of asbestos materials to be removed

4.1.2.3. Engineering controls and work methods to be employed

4.1.2.4. Number and types of regulated areas (e.g., glove bag, full containment, mini-enclosure, etc.)

4.1.2.5. Project phasing and tentative schedule

4.1.2.6. Name and address of disposal facility

4.1.2.7. Copies of safety data sheets (SDSs) for all chemical products to be used etc.

4.1.3. Copy of 10-day notification and/or permit to the appropriate authorities (e.g., EPA, NDDEQ, local fire department, etc.). If notification and/or permit are not required, the Contractor shall state why.

4.2. Asbestos Abatement Specific Close-Out Deliverables

4.2.1. Upon completion of abatement activities, the Contractor shall provide the following documentation in a closure report:

4.2.1.1. A written statement by the asbestos abatement contractor on their company letterhead describing the abatement activities, types, quantities and location of asbestos containing material abated, controls and work methods that were used, waste bagging and handling, and name and address of disposal facility.

4.2.1.2. Copy of 10-day notification and/or permit to the appropriate authorities (e.g., EPA, NDDEQ, local fire department, etc.). If notification and/or permit are not required, the abatement contractor shall state why.

4.2.1.3. Copies of current certification and/or licenses for all asbestos supervisors and workers working onsite.

4.2.1.4. OSHA-required respirator fit testing and medical clearance documentation for each person entering the regulated area.

4.2.1.5. Copies of personal air monitoring data or supporting Negative Exposure Assessment (NEA).

4.2.1.6. Legible copies of all daily logs.

4.2.1.7. Legible copies of the final signed waste manifests or other shipping documentation.

END OF SECTION

APPENDIX XC

GSA ASBESTOS ABATEMENT THIRD PARTY CLEARANCE TESTING REQUIREMENTS
STATE OF NORTH DAKOTA

GSA ASBESTOS ABATEMENT THIRD PARTY CLEARANCE TESTING REQUIREMENTS STATE OF NORTH DAKOTA

1. PROJECT OBJECTIVES

   1.1. The Contractor shall provide labor, materials, and equipment necessary to perform the onsite clearance testing of the asbestos abatement activities, to include visual inspection and air sampling.

   1.2. All work shall be conducted by a qualified industrial hygienist from an asbestos consulting firm that is independent of the asbestos abatement contractor.

2. PERMITTING/REGULATIONS/CODES

   2.1. Contractor shall be responsible for obtaining all necessary local, state, and federal permits and licenses and payment of related fees.

   2.2. Contractor shall comply with all applicable federal, state, and local regulations, guidance documents and standards including but not limited to:

      2.2.1. Occupational Safety & Health Administration (OSHA) Asbestos in Construction Standard - 29 CFR 1926.1101

      2.2.2. OSHA Asbestos in General Industry Standard – 29 CFR 1910.1001

      2.2.3. OSHA Respiratory Protection Standard - 29 CFR 1910.134

      2.2.4. U.S. Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) - 40 CFR 61 Subpart M

      2.2.5. EPA Asbestos Hazard Emergency Response Act (AHERA) - 40 CFR 763

      2.2.6. Federal Management Regulation, Real Property, Safety and Environmental Management, Asbestos - 41 CFR 102-80.15

      2.2.7. U.S. Department of Transportation Hazardous Material Transportation Regulations – 49 CFR 171 and 172

      2.2.8. North Dakota Administrative Code Chapter 33-15-13 Emission Standards for Hazardous Air Pollutants

      2.2.9. North Dakota Century Code Chapter 23-25 Air Pollution Control

      2.2.10. ASTM Standard E1368-14 – *Standard Practice for Visual Inspection of Asbestos Abatement Projects*

      2.2.11. EPA Guidance Document – *Guidance for Controlling Asbestos-Containing Materials* (EPA 560/5-85-024)

      2.2.12. National Institute for Occupational Safety and Health (NIOSH) Method 7400 – *Asbestos and Other Fibers by Phase Contrast Microscopy (PCM)*, Current Issue.

   2.3. All work shall comply with codes and standards applicable to each type of work through the course of this project. The contractor shall also comply with the requirements of GSA BuildGreen standards, and PBS P-100.

3. VISUAL CLEARANCE INSPECTION REQUIREMENTS

3.1. Visual inspections of the work area(s) shall be conducted in accordance with Section 6.4.1 of the EPA *Guidance for Controlling Asbestos-Containing Materials* (EPA 560/5-85-024) and the Completeness of Removal inspection in ASTM Standard E1368-14 *Standard Practice for Visual Inspection of Asbestos Abatement Projects*.

3.2. Final visual inspections shall be completed upon conclusion of the asbestos abatement activities to ensure the effectiveness of the controls, confirm job completeness, to ensure that the work area is visibly clean of debris, and to ensure the abatement work methods complied with applicable regulations and GSA protocols.

3.3. Final visual inspections shall include the entire work area(s) including all surfaces, ceilings, walls, flooring, decontamination units, remaining plastic sheeting / critical barriers, etc. looking for debris from any source, residue on surfaces, dust, or other matter.

3.4. If the area does not pass visual inspection, the abatement contractor shall be directed to re-clean the area at no additional cost, and the process will be repeated until clearance is achieved.

4. FINAL AIR MONITORING CLEARANCE REQUIREMENTS

4.1. Where feasible, five (5) aggressive air clearance samples per containment / regulated area shall be collected. For smaller work areas and multiple glove bags in a single functional space, please consult with the GSA OFM Industrial Hygiene Group for clearance sample requirements.

4.2. Air samples collection methodology shall be in accordance with the NIOSH 7400 PCM method.

4.3. Air samples shall be collected on open-faced, 0.8-micron, 25-millimeter (mm), mixed cellulose ester (MCE) filter air sampling cassettes using electric high-volume sampling pumps.

4.4. Air sampling cassettes shall be placed on a sampling stand to achieve cassette heights between 3 to 5 feet above floor level and with the cassette opening orientated downward at a 45° angle.

4.5. Each air sampling pump shall be calibrated with the cassette in-line with a rotameter before and after air sampling; adjusting the flow as necessary to obtain the desired flow rate. Rotameters shall be properly calibrated against a primary standard.

4.6. Sample flow rates shall be approximately 10 liters (L) per minute.

4.7. A minimum sample volume of 1,200 liters (L) per sample shall be collected.

4.8. An appropriate number of field blanks shall be used pursuant with the NIOSH Method 7400.

4.9. Asbestos air sample analysis shall be conducted either onsite by a NIOSH 582 trained microscopist participating in the American Industrial Hygiene Association Proficiency Analytical Testing (PAT) Program for PCM or performed by an American Industrial Hygiene

Association (AIHA) and/or National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) -accredited analytical laboratory.

4.10. Final clearance sample results shall be compared to the AHERA PCM clearance criteria threshold of 0.01 fibers per cubic centimeter (f/cc).

4.11. Work area shall not be cleared or abatement contractor released until all final air clearance samples collected are less than the clearance criteria. If clearance samples fail, please contact GSA Project Manager and Regional Industrial Hygienist for direction. The regulated area may have to be re-cleaned or re-cleared or samples reanalyzed by TEM.

5. DELIVERABLE REQUIREMENTS

5.1.1. The third-party IH shall provide a written letter report including the following at a minimum.

5.1.2. Written report narrative

5.1.2.1.1. A summary of the abatement activity including the building, location within the building, type of asbestos material, quantity removed, and number and types of containments / regulated work areas.

5.1.2.1.2. A description of sample collection, including number and types of samples collected, and samples analysis methodologies.

5.1.2.1.3. Observations, findings, and conclusions.

5.1.3. Table of final air clearance results

5.1.3.1. A table including sample identification, location, and result compared to clearance thresholds at a minimum.

5.1.4. Attachments

5.1.4.1. Air sample collection data sheets or laboratory analytical data, with chain-of-custody documentation and lab accreditation

5.1.4.2. Copies of firm/personnel certifications

5.1.4.3. Daily logs, clearance checklists, and all other field paperwork

5.1.4.4. Figure depicting containment configuration (i.e., critical barriers, NAM, exhaust, decon/waste loadout) and air sample locations)

5.1.4.5. Photographic log

END OF SECTION

APPENDIX XD

GSA BASE LEAD MATERIAL DISTURBANCE REQUIREMENTS

GSA BASE LEAD MATERIAL DISTURBANCE REQUIREMENTS

NOTE: This document provides the minimum (base) GSA requirements for all lead disturbing activities at a GSA-administered building. Lead disturbing activities includes but is not limited to any sanding, burning, welding, cutting, sawing, abrading, scraping, or otherwise impacting materials with lead containing paints or coatings or other building materials containing lead. Specific requirements for the disturbance or removal of lead containing materials may vary due to field conditions, types or quantities of involved lead materials, lead content, proposed work activity methodologies, controls, etc. For activity-specific requirements please consult with the GSA Industrial Hygienist. *NOTE: If the building contains pre-1978 residential dwellings or child-occupied facilities, then additional requirements from EPA, HUD and the state environmental protection agency may also apply.*

1. PROJECT OBJECTIVES

1.1. The contractor shall provide all labor, materials, equipment and supervision necessary to perform disturbance of materials with lead containing paints or coatings ("Lead containing paint" or "LCP") or other lead containing materials.

2. DEFINITIONS

2.1. "Lead Disturbing Activities" includes but is not limited to any demolition or renovation activity that includes the sanding, burning, welding, cutting, sawing, abrading, scraping, or otherwise impacting materials with lead containing paints or coatings, or other building materials containing lead.

2.2. "Lead Containing Paint." Under the OSHA Lead in Construction Standard disturbance of paints and coatings with any detectable level of lead are regulated, not just the EPA/HUD definition of lead based paint of 0.5% by weight. **Therefore, all paints and coatings with any lead content shall be considered as Lead Containing Paint (LCP) and managed as such**.

3. PERMITTING/REGULATIONS/CODES

3.1. Contractor shall be responsible for obtaining all necessary local, state, and federal permits and licenses and payment of related fees.

3.2. Contractor shall comply with all applicable federal, state, and local regulations including but not limited to:

3.2.1. Occupational Safety & Health Administration (OSHA) Lead Occupational Safety and Health General Industry Standard - 29 CFR 1910.1025

3.2.2. OSHA Lead Safety and Health Regulations for Construction Standard – 29 CFR 1926.62

3.2.3. OSHA Respiratory Protection Standard - 29 CFR 1910.134

3.2.4. U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act Regulations - 40 CFR 260 et seq.

3.2.5. U.S. Department of Transportation Hazardous Material Transportation Regulations – 49 CFR 171 and 172

3.2.6. State environmental protection agency's hazardous waste management rules and regulations.

3.3. All work shall comply with codes and standards applicable to each type of work through the course of this project. The contractor shall also comply with the requirements of GSA Core Building Standards.

4. LEAD DISTRUBANCE REQUIREMENTS

4.1. General

4.1.1. All regulated lead disturbing activities shall be conducted by a qualified contractor with the proper licenses, certification, training, experience, personnel, and equipment necessary to properly conduct the work.

4.1.2. Contractor shall field verify all conditions, requirements, and quantity of lead containing material to be disturbed at time of pre-bid walk through.

4.1.3. Contractor to coordinate schedule of work with the GSA Building and Project Manager.

4.2. Lead Disturbing Work Practices and Control Requirements

4.2.1. The Contractor and their OSHA-defined Competent Person shall evaluate and implement all necessary measures to comply with the OSHA Lead in Construction Standard (29 CFR 1926.62) and ensure that any building occupants or other non-lead workers are not exposed to lead or lead dust per 29 CFR 1910.1025. This shall include but is not limited to:

4.2.1.1. All workers engaging in lead disturbing activities shall be properly trained per the OSHA standards.

4.2.1.2. Proper personal protective equipment (PPE) shall be used as determined by hazard evaluations conducted by the Contractor's OSHA-defined Competent Person. Workers shall have the proper training, medical surveillance and clearance, and fitting testing.

4.2.1.3. Work areas shall be marked and demarcated with the proper signage, and access shall be restricted.

4.2.1.4. Work areas shall be isolated and proper engineering controls implemented to minimize the potential for lead dust to migrate out of the work areas, as appropriate. This can include:

4.2.1.4.1. Floors in the work area covered with 6-millimeter polyethylene sheeting and walls covered with 4-millimeter or greater polyethylene sheeting.

4.2.1.4.2. Protection of the HVAC system through 6-millimeter polyethylene critical barriers over air supply and return ducts

4.2.1.4.3. Critical barriers over all openings into the work area

4.2.1.4.4. Establishment of negative pressure in the work area using high efficiency particulate air (HEPA) filter equipped negative air machines (NAM)

4.2.1.5. Proper equipment and work practices shall be implemented to minimize the potential for lead dust generation. This includes but is not limited to:

4.2.1.5.1. Use of HEPA-shrouded equipment

4.2.1.5.2. Application of water at point of cut

4.2.1.5.3. Prohibition on dry sweeping, compressed air, etc.

4.2.1.5.4. All vacuums shall be industrial grade equipped with true HEPA filters

4.2.1.5.5. Structural steel, piping or other metal substrates with LCP that needs to be cut, welded, or heated shall be stripped of paint in the affected area prior to cutting, welding or heating

4.2.1.5.6. If LCP needs to be scrapped off, Contractor shall use wet scraping with a HEPA vacuum or shroud at point of scrape

4.2.1.5.7. For the removal or disturbance of unpainted copper piping, cut the piping above or below the solder joint and avoid heating up the pipe

4.2.1.6. The Contractor shall conduct an initial exposure assessment and ongoing monitoring as required.

4.2.1.7. Promptly clean up dust and debris on an ongoing basis in the work areas during lead disturbing activities and ensuring that proper engineering controls and hygiene practices are continuously implemented to prevent migration or tracking out of dust and debris from the regulated areas. Discovery of dust and debris outside of regulated areas will require an immediate assessment, response, and cleanup.

4.2.1.8. Workers shall practice good hygiene practices in accordance with the OSHA standard

4.2.2. Any welding, cutting or heating of lead containing materials shall also meet applicable requirements of 29 CFR 1926.353(c)(2)(i) and 29 CFR 1926.354(c)(1) if performed in an enclosed space.

4.2.3. Contractor shall not seek or apply for any variance or alternative work procedures from any authority having jurisdiction (AHJ) unless previously approved in writing by the GSA Industrial Hygienist. Once approved by GSA, Contractor may request a variance or alternative work procedures in writing from any AHJ and must receive written approval from the AHJ prior to the commencement of lead disturbing activities. Written AHJ approval of any variance or alternative work procedures shall be provided to GSA.

4.2.4. Negative air machine (NAM) exhaust shall be exhausted to the exterior of the building, if feasible.

4.3. Final Clean and Oversight Requirements

4.3.1. Depending upon site-specific factors, including but not limited to the extent and type of lead disturbing activities, lead content of the affected materials, work methods and engineering controls, proximity to occupied areas, etc., the GSA Industrial Hygienist may require third-party oversight of the lead disturbing activities in accordance with this section.

4.3.2. In each work area upon the completion of disturbing activities, the Contractor shall perform final cleaning of the regulated areas including on top of ductwork, conduits, other horizontal surfaces, etc., by wet wiping and use of HEPA filtered vacuums, as directed.

4.3.3. Third-party oversight shall be conducted by a qualified industrial hygienist, as directed. This can include visual observations of work practices and controls, ambient air sampling, final visual clearances, and final wipe clearances.

4.3.4. If the area does not pass final clearances, the Contractor shall re-clean the area at no additional cost, and the process will be repeated until clearance is achieved.

4.3.5. Upon successful clearances, the Contractor shall deregulate the area by properly removing all waste, remaining items and equipment, controls, and signage.

4.4. Lead Bearing Waste Material Disposal Requirements

4.4.1. All lead containing debris shall be double bagged in 6-millimeter, labeled polyethylene bags, containerized, and transported and properly disposed of off-site at an appropriate facility.

4.4.2. Contractor shall be responsible for the proper characterization and management of lead bearing waste in accordance with applicable federal, state, and local hazardous waste regulations including 40 CFR 260-299, and 49 CFR Parts 171 & 172.

4.4.3. Lead bearing waste shall be properly characterized. Representative waste stream samples shall be collected in accordance with ASTM E1908 *Standard Practice for Sample Selection of Debris Waste from a Building Renovation or Lead Abatement Project for Toxicity Characteristic Leaching Procedure (TCLP) Testing for Leachable Lead (Pb),* latest edition. The samples shall be submitted to an accredited analytical laboratory for analysis via EPA Method SW-846 Test Method 1311 TCLP.

4.4.4. Metal building materials containing lead or covered with LCP may be recycled provided all applicable regulations are met, the recycling destination facility accepts lead painted metal, and the presence the lead painted metal is disclosed to the recycling destination facility.

5. SUBMITTAL AND DELIVERABLE REQUIREMENTS

5.1. Lead Disturbance Specific Pre-Work Submittals

5.1.1. Prior to the commencement of lead disturbing actions, the Contractor shall provide the following documentation to GSA for review and approval by the GSA Project Manager and GSA Industrial Hygienist:

5.1.2. Contractor shall provide a written method of procedure (MOP) providing the following at a minimum:

5.1.2.1. Statement of contractor's qualifications and copies of the firm's relevant licenses or certifications, worker certification and training, as applicable

5.1.2.2. Types, quantities, and locations of lead disturbing work to occur

5.1.2.3. A very detailed description of specific controls and work methods to be employed for each type of lead disturbing work

5.1.2.4. Number and types of regulated areas

5.1.2.5. Project phasing and tentative schedule

5.1.2.6. Waste characterization and management including how lead bearing waste will be bagged, managed, characterized, and the name and address of disposal or recycling facility(ies) to be used

5.1.2.7. Copies of safety data sheets (SDSs) for all chemical products to be used.

5.2. Lead Disturbance Specific Close-Out Deliverables

5.2.1. Upon completion of lead disturbing activities, the Contractor shall provide the following documentation in a closure report:

5.2.1.1. A written statement by the Contractor on their company letterhead describing the lead disturbing activities, types, quantities and location of disturbing, controls and work methods that were used, waste bagging and handling, and name and address of disposal or recycling facility(ies).

5.2.1.2. Copies of firm's licenses and certifications

5.2.1.3. Copies of current certification, licenses, training for all lead workers

5.2.1.4. OSHA-required respirator fit testing and medical clearance documentation for all lead workers

5.2.1.5. Copies of personal air monitoring data

5.2.1.6. Legible copies of all daily logs.

5.2.1.7. Legible copies of waste characterization data, final signed waste manifests or all other related shipping and disposal documentation.