GENERAL CONSTRUCTION AT MULTIPLE SITES

Oxford, PA
Phoenixville, PA

Project Manual

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Thriven Design Project No.: 22171

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SECTION 000010

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NOT USED

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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.

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: General Construction at Multiple Sites in West Chester, Oxford and Phoenixville.

1. Project Locations:
   a. Kings Terrace, Phoenixville
   b. Oxford Terrace, Oxford

B. Owner: Housing Authority of the County of Chester.

1. Owner's Representative: Jackie Sweeney, Harrison Street Advisors, 610-636-0767; jackie@harrisonstreetllc.com

C. Architect: Thriven Design, 756 Haddon Avenue, Collingswood, NJ. 856-854-1880. Attention of Eugene Schiavo, AIA, Principal.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:
1. Kings Terrace: Replace exterior doors. Replace roof. Replace windows.
2. Oxford Terrace: Replace roofing, gutters and downspouts. Replace exterior doors. Replace windows. Add blown-in attic insulation.
3. and other Work indicated in the Contract Documents.

B. Type of Contract:

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

1.4 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 **areas within the Contract limits** 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 for storage of materials.

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.

1.5 COORDINATION WITH OCCUPANTS

A. Full Owner Occupancy: Owner will occupy site and **existing** building(s) 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.

B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1.6 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 8 a.m. to 4 p.m., Monday through Friday, unless otherwise indicated.

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

1.7 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 012200

UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.

1.2 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1 - Roof sheathing:

1. Description: Demolition and installation of replacement APA rated roof sheathing according to Section 064013 “EXTERIOR ARCHITECTURAL WOODWORK."
2. Unit of Measurement: Sheet (32 SF).

B. Unit Price No. 2 – Asphalt shingle roofing:

1. Description: Demolition and installation of replacement asphalt roof shingle systems according to Sections 070150.19 “PREPARATION FOR REROOFING” AND 073113 “ASPHALT SHINGLES.”
2. Unit of Measurement: Square (100 SF).

END OF SECTION

SECTION 012300

ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Deduct Alternate No. 1: King's Terrace thermally broken storefront doors.

1. Base Bid: Replace existing storefront and sliding doors with Energy Star thermally broken, double glazed storefront door system as indicated on the drawings and as specified.
2. Alternate: Replace existing storefront and sliding doors with standard double glazed storefront door system.

B. Deduct Alternate No. 2: Oxford Terrace thermally broken storefront doors.

1. Base Bid: Replace existing storefront doors with Energy Star thermally broken, double glazed storefront door system as indicated on the drawings and as specified.
2. Alternate: Replace existing storefront doors with standard double glazed storefront door system.

C. Deduct Alternate No. 3: Oxford Terrace windows.

1. Base Bid: Provide fiberglass window replacement system as indicated on the drawings and as specified in section 085413.
2. Alternate: In lieu of the fiberglass window system, provide vinyl window replacement system as specified in section 085313.

D. Add Alternate No. **4**: King's Terrace Exit Signs.

1. Base Bid: Do not provide the exit signs indicated on drawing A140 and specified in the Lighting Schedule on drawing A143.
2. Alternate: Provide the exit signs and power wiring indicated on drawing A140 and specified in the Lighting Schedule on drawing A143

E. Add Alternate No. 5 King's Terrace Windows.

1. Base Bid: Do not replace apartment and common area windows, wall louvers, and exterior security screens as indicated on the Drawings and Specifications.
2. Alternate: Provide fiberglass window replacement system and exterior security screens as indicated on the drawings and as specified in Section 085413.

F. Add Alternate No. 6: King's Terrace Mansard refinishing.

1. Base Bid: Do not clean and paint existing metal panel mansards per Keynote 7.5.
2. Alternate: Clean and paint existing metal panel mansards per Keynote 7.5, with coating as specified in Section 099123.

G. Add Alternate No. 7: Oxford Terrace front porch reconstruction.

1. Base Bid: Do not replace existing first floor entrance porch columns and soffit per Keynotes 6.1 and 6.2.
2. Alternate: Replace existing first floor entrance porch columns and soffit per Keynotes 6.1 and 6.2, with coating as specified in Section 099123.

H. Add Alternate No. 8: Oxford Terrace Shutter Replacement.

1. Base Bid: Do not replace existing decorative shutters per Keynote 10.2.
2. Alternate: Provide replacement decorative shutters at all windows per Keynote 10.2 and as specified in Section 107113.

END OF SECTION

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SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "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. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 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. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
h. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
i. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. 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.

1.5 PROCEDURES

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

1.6 SUBSTITUTIONS

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

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

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

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

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

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 MINOR CHANGES IN THE WORK

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

1.3 PROPOSAL REQUESTS

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

1. Work Change Proposal Requests issued by **Architect** are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

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

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.

1.4 CHANGE ORDER PROCEDURES

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

1.5 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: **Architect** may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 012900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 SCHEDULE OF VALUES

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

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than [**five**] days before the date scheduled for submittal of initial Applications for Payment.

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

1. Arrange schedule of values consistent with format of **AIA Document G703.**
2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of [**five**] percent of the Contract Sum. Provide line items per building address.
3. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

    a. Differentiate between items stored on-site and items stored off-site.

4. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
5. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
6. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.3 APPLICATIONS FOR PAYMENT

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

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

1. Submit draft copy of Application for Payment [**five**] days prior to due date for review by Architect.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit [**three**] signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

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

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Products list (preliminary if not final).
5. Schedule of unit prices.
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.
13. Performance and payment bonds.
14. Data needed to acquire Owner's insurance.

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

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

I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

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SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1. General coordination procedures.
2. RFIs.
3. Digital project management procedures.
4. Project meetings.

B. Related Requirements:
1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.3 DEFINITIONS

A. BIM: Building Information Modeling.

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

1.4 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. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.

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

1.5 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. 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.

1.6 REQUEST FOR INFORMATION (RFI)

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

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
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 suggested resolution 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 Contractor-generated RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for approval of Contractor's means and methods.
    d. Requests for coordination information already indicated in the Contract Documents.
    e. Requests for adjustments in the Contract Time or the Contract Sum.
    f. Requests for interpretation of Architect's actions on submittals.
    g. 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 by Architect 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 Section 012600 "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 monthly. 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 returned without action or withdrawn.
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.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Architect's Data Files Not Available: Architect will not provide Architect's CAD drawing digital data files for Contractor's use during construction.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare 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.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.8 PROJECT MEETINGS

A. General: Owner will schedule and Architect will conduct meetings and conferences at Project site unless otherwise indicated.

B. Preconstruction Conference: Owner and Architect will 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. Responsibilities and personnel assignments.
b. Tentative construction schedule.
c. Phasing.
d. Critical work sequencing and long lead items.
e. Designation of key personnel and their duties.
f. Lines of communications.
g. Procedures for processing field decisions and Change Orders.
h. Procedures for RFIs.
i. Procedures for processing Applications for Payment.
j. Distribution of the Contract Documents.
k. Submittal procedures.
l. Preparation of Record Documents.
m. Use of the premises and existing building.
n. Work restrictions.
o. Working hours.
p. Owner's occupancy requirements.
q. Responsibility for temporary facilities and controls.
r. Procedures for moisture and mold control.
s. Procedures for disruptions and shutdowns.
t. Construction waste management and recycling.

u. Parking availability.
v. Office, work, and storage areas.
w. Equipment deliveries and priorities.
x. First aid.
y. Security.
z. 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 when required by other sections and when required for 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 and Owner 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. Possible conflicts.
i. Compatibility requirements.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's written instructions.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities and controls.
q. Space and access limitations.
r. Regulations of authorities having jurisdiction.
s. Testing and inspecting requirements.
t. Installation procedures.
u. Coordination with other work.
v. Required performance results.
w. Protection of adjacent work.
x. 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: Owner and Architect will conduct progress meetings at monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. 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.
3. 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 use.
        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.

4. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.
3. Daily construction reports.
4. Site condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Event: The starting or ending point of an activity.

C. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:
1. PDF file.
2. [**Two**] paper copies, of sufficient size to display entire period or schedule, as required.

B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

C. Construction Schedule Updating Reports: Submit with Applications for Payment.

D. Daily Construction Reports: Submit at [**monthly**] intervals.

E. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than [**30**] days, unless specifically allowed by Architect.
2. Activity location: Separate activities by property.
3. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
5. Punch List and Final Completion: Include not more than [**30**] days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:

a. Coordination with existing construction.
b. Limitations of continued occupancies.
c. Uninterruptible services.
d. Partial occupancy before Substantial Completion.

e. Use-of-premises restrictions.
f. Provisions for future construction.
g. Seasonal variations.
h. Environmental control.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

F. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule concurrent with each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

G. Recovery Schedule: When periodic update indicates the Work is [**14**] or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within [**30**] days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in [**10**] percent increments within time bar.

1.7 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.
3. Equipment at Project site.
4. Material deliveries.
5. High and low temperatures and general weather conditions, including presence of rain or snow.
6. Testing and inspection.
7. Accidents.
8. Meetings and significant decisions.
9. Stoppages, delays, shortages, and losses.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received and implemented.
14. Services connected and disconnected.
15. Partial completions and occupancies.
16. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

1.2 DEFINITIONS

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

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

1.3 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

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

B. Options: Identify options requiring selection by Architect.

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

D. Paper Submittals:
   1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
   2. Action Submittals: Submit [**three**] paper copies of each submittal unless otherwise indicated. Architect will return [**two**] copies.
   3. Informational Submittals: Submit [**two**] paper copies of each submittal unless otherwise indicated. Architect will not return copies.
   4. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling.

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

1.4 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections. Contactor shall select method to prepare and submit required submittals.

   1. Email: Prepare submittals as PDF package, and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
   2. Paper: Prepare submittals in paper form, and deliver to Architect.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on **Architect's** receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

   1. Initial Review: Allow [**15**] days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. **Architect** will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Resubmittal Review: Allow [**15**] days for review of each resubmittal.

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

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

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

1.5 SUBMITTAL REQUIREMENTS

A. 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 unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

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

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

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm), but no larger than 30 by 42 inches (750 by 1067 mm).
    a. [**Three**] opaque copies of each submittal. Architect will retain [**two**] copies; remainder will be returned.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

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

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.
4. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
5. 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.

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

    a. Number of Samples: Submit [**one**] 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.

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

a. Number of Samples: Submit [**three**] sets of Samples. Architect will retain [**two**]. Sample sets; remainder will be returned.

1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least [**three**] sets of paired units that show approximate limits of variations.

D. 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.

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

F. Certificates:

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

G. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.6 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.7 CONTRACTOR'S REVIEW

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

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
1. Architect's review stamp will indicate one of the following actions:
a. Reviewed without comment
b. Reviewed as noted
c. Correct and resubmit
d. Rejected.

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

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

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

E. Architect will return without review submittals received from sources other than Contractor.

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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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. Section 012500 "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 by Architect 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 single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.3 ACTION SUBMITTALS

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

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within [**seven**] days 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 Architect's Approval of Submittal: As specified in Section 013300 "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 Section 013300 "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. See other Sections for specific content requirements and particular requirements for submitting special warranties.

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 meeting 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. Sole 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.

    a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: …"

2. Sole 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.

    a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: …"

3. Limited List of Products: 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.

    a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: …"

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.

    a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: …"

5. Limited List of Manufacturers: 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.

    a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: …"

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.

    a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: …"

7. 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.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

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 Section 012500 "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 of Comparable Products: 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 proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
2. Evidence that proposed product provides specified warranty.
3. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
4. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

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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. Installation of the Work.
   2. Cutting and patching.
   3. Progress cleaning.
   4. Protection of installed construction.

B. Related Requirements:

   1. Section 011000 "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 elements 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.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. 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. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. 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.

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

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. 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.

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

D. 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 Section 013100 "Project Management and Coordination."

3.3 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: Where possible, select tools or equipment that minimize production of excessive 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 portions of the 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. Remove and replace damaged, defective, or non-conforming Work.

3.4 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: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 011000 "Summary."

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 **minimize** 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. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. 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.
6. 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.

3.5 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.

a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

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. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

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 ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 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. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

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

END OF SECTION

SECTION 017419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

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

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.

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

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

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

1.3 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons (tonnes).
4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).

7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.4 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements.

B. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.5 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.

4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS

2.1 NOT USED.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
   1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.

3.2 SALVAGING DEMOLITION WASTE

A. Comply with requirements in Section 024119 "Selective Demolition" for salvaging demolition waste.

B. Salvaged Items for Reuse in the Work:

   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.

5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

C. Salvaged Items for Sale and Donation: Not permitted on Project site.

D. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

3.3 RECYCLING WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Co-mingle recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.4 RECYCLING DEMOLITION WASTE

A. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

B. Metals: Separate metals by type.

1. Structural Steel: Stack members according to size, type of member, and length.
2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

C. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

D. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

E. Conduit: Reduce conduit to straight lengths and store by material and size.

F. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
1. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

D. Paint: Seal containers and store by type.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of.

C. Burning: Do not burn waste materials.

END OF SECTION

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. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.2 ACTION SUBMITTALS

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

B. 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 SUBSTANTIAL COMPLETION PROCEDURES

A. Submittals Prior to Substantial Completion: Complete the following a minimum of [**10**] days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, and similar final record information.

3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by **Owner**. Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.

B. 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. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements.
5. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

C. 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 and Owner 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.

1.5 FINAL COMPLETION PROCEDURES

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

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

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

1.6 SUBMITTAL OF PROJECT WARRANTIES

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

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

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

1. Submit on digital media acceptable to Architect.

D. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.

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

b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
c. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
d. Sweep concrete floors broom clean in unoccupied spaces.
e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
f. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
g. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
h. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

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.

END OF SECTION

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.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
1. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:
1) Submit PDF electronic files of scanned record prints and [**one**] file prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit PDF electronic files of scanned record prints and [**three**] set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy or annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy or annotated PDF electronic files and directories of each submittal.

1.3 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. Accurately record information in an acceptable drawing technique.
c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Revisions to routing of piping and conduits.
d. Revisions to electrical circuitry.
e. Actual equipment locations.
f. Locations of concealed internal utilities.
g. Changes made by Change Order or Construction Change Directive.
h. Changes made following Architect's written orders.
i. Details not on the original Contract Drawings.
j. Field records for variable and concealed conditions.
k. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. 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 into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

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

1.4 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. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.5 RECORD PRODUCT DATA

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. 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.

C. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents 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 reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

SECTION 024119

SELECTIVE 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 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.3 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at **Project site**.

1.4 INFORMATIONAL SUBMITTALS

A. Engineering Survey: Submit engineering survey of condition of building.

B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property**,** for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of selective demolition activities with starting and ending dates for each activity.

D. Predemolition photographs or video.

1.5 CLOSEOUT SUBMITTALS

A. Inventory of items that have been removed and salvaged.

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.

1. Before selective demolition, Owner will remove the following items:

a. Loose furnishings.

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

D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

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.

G. Arrange selective demolition schedule so as not to interfere with Owner's 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 and using approved contractors so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 PERFORMANCE 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/ASSP A10.6 and NFPA 241.

C. Do not demolish beyond indicated limits.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Inventory and record the condition of items to be removed and salvaged.

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.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

B. Temporary Shoring: Design, 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.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION

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

1. 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. 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 portable fire-suppression devices during flame-cutting operations.
4. Maintain fire watch during and for at least four hours after flame-cutting operations.
5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
6. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. 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.

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

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

E. 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 CLEANING

A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

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 Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. 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

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SECTION 064013

EXTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior standing and running trim.
2. Exterior frames and jambs.
3. Wood furring, blocking, shims, and hanging strips for installing exterior architectural woodwork items that are not concealed within other construction.
4. Sheathing.
5. Shop priming of exterior architectural woodwork.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Wood-Preservative Treatment:

a. Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
b. Indicate type of preservative used and net amount of preservative retained.
c. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.

2. Fire-Retardant Treatment: Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
3. Waterborne Treatments: For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 EXTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: [**Premium**]. Alternate: Manufactured trim such as that produced by Azek, Fypon, CertainTeed, or other comparable product lines.

B. Backout or groove backs of flat trim members, and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

C. Wood Species: Any closed-grain hardwood.

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (76 mm) wide.
2. Wood Moisture Content: [**9 to 15**] percent.

2.3 EXTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: [**Premium**].

B. Wood Species: Any closed-grain hardwood.

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (76 mm) wide.
2. Wood Moisture Content: [**9 to 15**] percent.

2.4 WOOD MATERIALS

A. Hardboard: ANSI A135.4.

B. Softwood Plywood: DOC PS 1, exterior, medium-density overlay.

C. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

D. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.5 PRESERVATIVE-TREATED-WOOD MATERIALS

A. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWPA N1 (dip, spray, flood, or vacuum-pressure treatment).

1. Preservative Chemicals: 3-iodo-2-propynyl butyl carbamate (IPBC.
2. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.

B. Extent of Preservative-Treated Wood Materials: Treat wood materials except items indicated to be fire-retardant treated.

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.

2.6 FIRE-RETARDANT-TREATED WOOD MATERIALS

A. Fire-Retardant-Treated Wood Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.

1. Use treated materials that comply with requirements of the Architectural Woodwork Standards for the grade specified. Do not use materials that are warped, discolored, or otherwise defective.
2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

B. Exterior Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84 after being subjected to accelerated weathering according to ASTM D2898, 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. Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
2. For items indicated to receive a stained, transparent, or natural finish, use organic resin chemical formulation.
3. Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.
4. Mill lumber before treatment and implement procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying

sticks or other causes, marring, and other defects affecting appearance of treated woodwork.

C. Extent of Fire-Retardant-Treated Wood Materials:

1. Exterior architectural woodwork located more than 40 feet (12.192 m) above grade.
2. Exterior architectural woodwork in locations with a fire-separation distance of 5 feet (1.524 m) or less.
3. Exterior sheathing located within 4 feet of fire separation partitions.

2.7 FASTENERS

A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches (38 mm) into wood substrate.

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 of Type 304 stainless steel.
2. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails: ASTM F1667.

C. Power-Driven Fasteners: ICC-ES AC70.

D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.

E. Carbon-Steel Bolts: ASTM A307 with ASTM A563 (ASTM A563M) hex nuts and, where indicated, flat washers all hot-dip zinc coated.

F. Stainless Steel Bolts: ASTM F593, Alloy Group 1 or 2; with ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or Grade A4) hex nuts and, where indicated, flat washers.

G. Postinstalled Anchors: Stainless steel, chemical or torque-controlled expansion anchors with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing according to ASTM E488/E488M conducted by a qualified independent testing and inspecting agency.

1. Stainless steel bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2 (ASTM F836M, Grade A1 or Grade A4).

2.8 ROOF SHEATHING

A. Plywood Sheathing: Exposure 1 sheathing. (verify thickness in field for replacement and per drawings.)

2.9 MISCELLANEOUS MATERIALS

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

1. Wood-Preservative Treatment: By pressure process, AWPA U1; Use Category UC3b.

a. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
b. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
c. Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.

2. Fire-Retardant Treatment: Complying with requirements; provide where indicated on Drawings.

1. Adhesives: Do not use adhesives that contain urea formaldehyde.

a. Adhesives shall have a VOC content of [70] g/L or less.

B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

2.10 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate exterior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:

a. Edges of Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.
b. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).

C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
3. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.

a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

2.11 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

B. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

C. Exterior Architectural Woodwork for Opaque Finish: Shop prime all surfaces with one coat of wood primer as specified in Section 099123 "Painting."

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition exterior architectural woodwork to average prevailing humidity conditions at Project site.

B. Before installing exterior architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including removing packing and backpriming concealed surfaces.

3.2 INSTALLATION

A. Grade: Install exterior architectural woodwork to comply with same grade as item to be installed.

B. Assemble exterior architectural woodwork, and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install exterior architectural woodwork level, plumb, true in line, and without distortion.

1. Shim as required with concealed shims.
2. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

D. Standing and Running Trim:

1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
2. Do not use pieces less than [**60 inches (1500 mm)**] long, except where shorter single-length pieces are necessary.
3. Scarf running joints and stagger in adjacent and related members.

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

F. Preservative-Treated Wood Materials: Where field cut or drilled, treat cut ends and drilled holes according to AWPA M4.

G. Fire-Retardant-Treated Wood Materials: Install fire-retardant-treated materials to comply with chemical treatment manufacturer's written instructions.

H. Anchor exterior architectural woodwork to anchors or blocking built in or directly attached to substrates.

1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with exterior architectural woodwork.
3. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.
4. For shop-finished items, use filler matching finish of items being installed.

I. Touch up finishing work specified in this Section after installation of exterior architectural woodwork.

1. Fill nail holes with matching filler where exposed.
2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

J. Field Finishing: See Section 099123 "Painting" for final finishing of installed exterior architectural woodwork.

END OF SECTION

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SECTION 064023

INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior standing and running trim.
2. Interior frames and jambs.
3. Shop priming of interior architectural woodwork.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Anchors.
2. Adhesives.
3. Shop finishing materials.
4. Fire-Retardant Treatment: Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: [**Premium**].

1. Wood Species: [Any closed-grain hardwood].
2. Wood Moisture Content: [**5 to 10**] percent.
3. Finger jointing permitted.

2.3 INTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH

A. Architectural Woodwork Standards Grade: [Premium].

B. Wood Species: [Any closed-grain hardwood].

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches (76 mm) wide.
2. Wood Moisture Content: [**5 to 10**] percent.

2.4 HARDWOOD SHEET MATERIALS

A. Composite Wood Products: Provide materials that comply with requirements of the Architectural Woodwork Standards for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.
1. Composite Wood Products: Products shall be made without urea formaldehyde.
2. Medium-Density Fiberboard (MDF): ANSI A208.2, [Grade 130].
3. Particleboard: ANSI A208.1, [Grade M-2-Exterior Glue].
4. Softwood Plywood: DOC PS 1, medium-density overlay.
5. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

2.5 MISCELLANEOUS MATERIALS

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

B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.

C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.

1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

D. Adhesives: Do not use adhesives that contain urea formaldehyde.

E. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

1. Adhesives shall have a VOC content of [**70**] g/L or less.

2.6 FABRICATION

A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:

a. Edges of Solid-Wood (Lumber) Members: 1/16 inch (1.5 mm) unless otherwise indicated.
b. Edges of Rails and Similar Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch (3 mm).

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.
3. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.

a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

2.7 SHOP PRIMING

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 099123 "Painting."

1. Backpriming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.

B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.

3.2 INSTALLATION

A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.

B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion.

1. Shim as required with concealed shims.
2. Install level and plumb to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm).

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

E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.

1. Secure with countersunk, concealed fasteners and blind nailing.
2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.
3. For shop-finished items, use filler matching finish of items being installed.

F. Standing and Running Trim:

1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
2. Do not use pieces less than [**60 inches (1500 mm)**] long, except where shorter single-length pieces are necessary.
3. Scarf running joints and stagger in adjacent and related members.
4. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches (3 mm in 2400 mm).

END OF SECTION

SECTION 070150.19

PREPARATION FOR REROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Full tear-off of low-slope roof systems and steep-slope roof systems at areas indicated on Drawings.
2. Removal of flashings and counterflashings.

1.2 ALLOWANCES

A. **Include allowance for removal of 10%** of existing deteriorated wood roof deck, and replacement with new wood deck.

1.3 UNIT PRICES

A. Additional or lesser quantities of allowance items is affected by roof sheathing removal and replacement unit price.

1.4 PREINSTALLATION MEETINGS

A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at **Project site**.

1.5 INFORMATIONAL SUBMITTALS

A. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations.

1. Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Approved by membrane manufacturer, with any required certifications and/or approvals, to receive indicated roofing warranty.

1.7 FIELD CONDITIONS

A. Existing Roofing System:
   1. Low-slope: SBS-modified bituminous roofing including downspouts.
   2. Steep-slope: Asphalt shingle roofing including gutters and downspouts. Specifically excluded are pre-formed metal panels.

B. Owner **will** occupy portions of building immediately below reroofing area.

   1. Conduct reroofing so Owner's operations are not disrupted.
   2. Provide Owner with not less than [**72**] hours' written notice of activities that may affect Owner's operations.
   3. Coordinate work activities daily with Owner so Owner has adequate advance notice to place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
   4. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area.

C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

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

F. Limit construction loads on existing roof areas to remain, and existing roof areas scheduled to be reroofed to **30 psf** for rooftop equipment wheel loads and **20 psf** for uniformly distributed loads.

G. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

   1. Remove only as much roofing in one day as can be made watertight in the same day.

PART 2 - PRODUCTS

2.1 AUXILIARY REROOFING MATERIALS

A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

PART 3 - EXECUTION

3.1 PREPARATION

A. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.

B. Shut off rooftop utilities and service piping before beginning the Work.

C. Test existing roof drains to verify that they are not blocked or restricted.

1. Immediately notify Owner of any blockages or restrictions.

D. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

E. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.

1. Prevent debris from entering or blocking roof drains and conductors.

a. Use roof-drain plugs specifically designed for this purpose.
b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

2. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water and eliminate ponding.

a. Do not permit water to enter into or under existing roofing system components that are to remain.

3.2 ROOF TEAR-OFF

A. Notify Owner each day of extent of roof tear-off proposed for that day **and obtain authorization to proceed**.

B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.

C. Full Roof Tear-off: **Where indicated on Drawings, remove** existing roofing and other roofing system components down to the existing **roof deck**.

1. Remove **roof insulation**.
2. Remove base flashings and counter flashings.
3. Remove perimeter edge flashing and gravel stops.
4. Remove copings.
5. Remove flashings at pipes, curbs, mechanical equipment, and other penetrations.
6. Remove roof drains indicated on Drawings to be removed.
7. Remove wood blocking, curbs, and nailers.
8. Remove gutters and downspouts where indicted on the Drawings to be removed.

9. Remove fasteners from deck **or cut fasteners off slightly above deck surface**.

3.3 DECK PREPARATION

A. Inspect deck after tear-off of roofing system.

B. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Architect.

1. Do not proceed with installation until directed by Architect.

C. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect.

1. Do not proceed with installation until directed by Architect.

D. Provide additional deck securement as indicated on Drawings.

E. Replace plywood roof sheathing as directed by Architect.

1. Roof sheathing replacement will be paid for by adjusting the Contract Sum according to unit prices included in the Contract Documents.

3.4 BASE FLASHING REMOVAL

A. Remove existing base flashings.

1. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.

B. Do not damage metal counterflashings that are to remain.

1. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish as existing.

C. When directed by Architect, replace parapet framing, wood blocking, curbs, and nailers.

END OF SECTION

SECTION 072100

THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Loose-fill insulation.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Loose-fill insulation

1.3 INFORMATIONAL SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

   1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
   2. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Research Reports: For foam-plastic insulation, from ICC-ES.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indexes [**less than 25 and 450**] when tested in accordance with ASTM E84.

B. Thermal-Resistance Value (R-Value): [**R-value as indicated on Drawings**]

2.2 LOOSE-FILL INSULATION

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C739, chemically treated for flame-resistance, processing, and handling characteristics.

2.3 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.

B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.

C. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.2 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

B. Loose-Fill Insulation: Apply in accordance with ASTM C1015 and manufacturer's written instructions.

1. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.

2. For cellulosic-fiber loose-fill insulation, comply with CIMA's Bulletin #2, "Standard Practice for Installing Cellulose Insulation."
3. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.

3.3 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

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SECTION 073113

ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Asphalt shingles.
2. Underlayment.
3. Ridge vents.
4. Metal flashing and trim.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [**Project site**].

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.

1. Material Warranty Period: 25 years from date of Substantial Completion.
2. Workmanship Warranty Period: **Two** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance according to ASTM E108 or UL 790 by Underwriters Laboratories, Inc. or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Laminated-Strip Asphalt Shingles: ASTM D3462/D3462M, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

1. Basis of Design: GAF Timberline
2. Butt Edge: **Straight** cut.
3. Strip Size: **Manufacturer's standard**.
4. Algae Resistance: Granules resist algae discoloration.
5. Impact Resistance: UL 2218, Class 4.
6. Color and Blends: Pewter Gray, or as **selected by Owner from manufacturer's standard range**.

B. Hip and Ridge Shingles: **Manufacturer's standard units to match asphalt shingles**.

2.3 UNDERLAYMENT MATERIALS

A. Felt: [**ASTM D226/D226M**], asphalt-saturated organic felts, nonperforated.

1. Type: [**Type I**].

B. Synthetic Underlayment: UV-resistant polypropylene, polyolefin, or polyethylene polymer fabric with surface coatings or treatments to improve traction underfoot and abrasion resistance; evaluated and documented to be suitable for use as a roof underlayment under applicable codes by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Provide system recommended by roofing shingle manufacturer.

C. Self-Adhering Sheet Underlayment, Granular Surfaced: ASTM D1970/D1970M, minimum of [**55-mil- (1.4-mm-)**] thick sheet; glass-fiber-mat-reinforced, SBS-modified asphalt; mineral-granule surfaced; with release backing; cold applied. **Provide primer for adjoining concrete or masonry surfaces to receive underlayment.**

1. Provide system recommended by roofing shingle manufacturer

D. Self-Adhering Sheet Underlayment, Polyethylene Faced: ASTM D1970/D1970M, minimum of 40-mil- (1.0-mm-) thick, slip-resisting, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release backing; cold applied. **Provide primer for adjoining concrete or masonry surfaces to receive underlayment.**

1. Provide system recommended by roofing shingle manufacturer.

2.4 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard, rigid section high-density polypropylene or other UV-stabilized plastic ridge vent for use under ridge shingles.

1. Provide system recommended by roofing shingle manufacturer.
2. Features:

    a. Nonwoven geotextile filter strips.

2.5 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D4586, Type II, asbestos free.

B. Roofing Nails: ASTM F1667; aluminum, stainless-steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, sharp-pointed, with a minimum 3/8-inch- (9.5-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.

1. Shank: [**Barbed**].
2. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

C. Felt-Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized-steel wire with low-profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

D. Synthetic-Underlayment Fasteners: As recommended in writing by synthetic-underlayment manufacturer for application indicated.

2.6 METAL FLASHING AND TRIM

A. General: Comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

1. Sheet Metal: [**Aluminum, mill finished**].

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. General: Comply with underlayment manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.

B. Single-Layer Felt Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides a minimum of 2 inches (50 mm) over underlying course. Lap ends a minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with [**felt-underlayment**] nails.

1. Install felt underlayment on roof deck not covered by self-adhering sheet underlayment. Lap sides of felt over self-adhering sheet underlayment not less than 3 inches (75 mm) in direction that sheds water. Lap ends of felt not less than 6 inches (150 mm) over self-adhering sheet underlayment.
2. Install fasteners at no more than 36 inches (914 mm) o.c.

C. Synthetic Underlayment: Install on roof deck parallel with and starting at the eaves. Lap sides and ends and treat laps as recommended in writing by manufacturer. Stagger end laps between succeeding courses at interval recommended in writing by manufacturer. Fasten according to manufacturer's written instructions. Cover underlayment within period recommended in writing by manufacturer.

1. Install in single layer on roofs sloped at 4:12 and greater.
2. Install in double layer on roofs sloped at less than 4:12.

D. Self-Adhering Sheet Underlayment: Install, wrinkle free, on roof deck. Comply with low-temperature installation restrictions of underlayment manufacturer if applicable. Install lapped in direction that sheds water. Lap sides not less than 3-1/2 inches (89 mm). Lap ends not less than 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Roll laps with roller. Cover underlayment within seven days.

1. Prime concrete and masonry surfaces to receive self-adhering sheet underlayment.

3.2 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Section 076200 "Sheet Metal Flashing and Trim."

1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

3.3 ASPHALT-SHINGLE INSTALLATION

A. General: Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Install starter strip along lowest roof edge, consisting of an asphalt-shingle strip [**with tabs removed**] with self-sealing strip face up at roof edge.

1. Extend asphalt shingles **maximum** [**3/4 inch (19 mm)**] over fasciae at eaves and rakes.
2. Install starter strip along rake edge.

C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Fasten asphalt-shingle strips with a minimum of [**four**] roofing nails located according to manufacturer's written instructions.
1. Where roof slope is less than 4:12, seal asphalt shingles with asphalt roofing cement spots.
2. When ambient temperature during installation is below [**50 deg F (10 deg C)**], seal asphalt shingles with asphalt roofing cement spots.

E. Closed-Cut Valleys: Extend asphalt-shingle strips from one side of valley [**12 inches (300 mm)**] beyond center of valley. Use one-piece shingle strips without joints in valley. Fasten with extra nail in upper end of shingle. Install asphalt-shingle courses from other side of valley and cut back to a straight line 2 inches (50 mm) short of valley centerline. Trim upper concealed corners of cut-back shingle strips.

1. Do not nail asphalt shingles within 6 inches (150 mm) of valley center.
2. Set trimmed, concealed-corner asphalt shingles in a 3-inch- (75-mm-) wide bed of asphalt roofing cement.

F. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

G. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION

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SECTION 075323

ETHYLENE-PROPYLENE-DIENE-MONOMER (EPDM) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
2. Roof insulation.
3. ReCover board.
4. Walkways.

1.2 PREINSTALLATION MEETINGS

A. Preliminary Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Product Data: For adhesives and sealants, indicating VOC content.

B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness if insulation.
2. Base flashings and membrane terminations.
3. Flashing details at penetrations.
4. Tapered insulation, thickness, and slopes.
5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

C. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.

   a. Submit evidence of complying with performance requirements.

2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.

B. Product Test Reports: For components of roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

C. Field quality-control reports.

D. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is [**UL listed**] for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: [**20**] years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.

B. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the Resistance to Foot Traffic Test in FM Approvals 4470.

C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to UL 580, or UL 1897:
1. Wind uplift resistance are per structural drawings.

D. Exterior Fire-Test Exposure: ASTM E108 or UL 790, minimum [**Class C**]; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.2 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

A. EPDM Sheet: ASTM D4637/D4637M, **Type I, nonreinforced,** EPDM sheet.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Carlisle SynTec Incorporated.
b. Firestone Building Products.
c. GAF Materials Corporation.
d. GenFlex Roofing Systems.
e. Johns Manville.
f. Mule-Hide Products Co., Inc.
g. Versico Incorporated.

2. Thickness: **60 mils (1.5 mm,** nominal.
3. Exposed Face Color: [**Black**].

2.3 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.

1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
2. Adhesives and sealants shall comply with the following limits for VOC content:

a. Plastic Foam Adhesives: 50 g/L.
b. Gypsum Board and Panel Adhesives: 50 g/L.
c. Multipurpose Construction Adhesives: 70 g/L.
d. Fiberglass Adhesives: 80 g/L.
e. Contact Adhesives: 80 g/L.
f. PVC Welding Compounds: 510 g/L.
g. Other Adhesives: 250 g/L.
h. Single-Ply Roof Membrane Sealants: 450 g/L.
i. Nonmembrane Roof Sealants: 300 g/L.
j. Sealant Primers for Nonporous Substrates: 250 g/L.
k. Sealant Primers for Porous Substrates: 775 g/L.

B. Sheet Flashing: 60-mil- (1.5-mm-) thick EPDM, partially cured or cured, according to application.

C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

D. Bonding Adhesive: Manufacturer's standard**, water based**.

E. Seaming Material: **Manufacturer's standard, synthetic-rubber polymer primer and 3-inch- (75-mm-) wide minimum, butyl splice tape with release film**.

F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.

G. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.

I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 ROOF INSULATION

A. Polyisocyanurate Board Insulation: ASTM C 1289, **Type II, Class 1, Grade 2**, felt or glass-fiber mat facer on both major surfaces.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following, or approved equal:

    a. Atlas Roofing Corporation.
    b. Carlisle SynTec Incorporated.
    c. Firestone Building Products.
    d. GAF Materials Corporation.
2. Size: **48 by 48 inches (1219 by 1219 mm)**
3. Thickness:

    a. Base Layer: [**1-1/2 inches (38 mm)**].
    b. U value: Maximum U value = 0.048.

B. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: [**Match roof insulation**].
2. Minimum Thickness: 1/4 inch (6.35 mm).
3. Slope:

    a. Roof Field: [**1/4 inch per foot (1:48)**] unless otherwise indicated on Drawings.
    b. Saddles and Crickets: [**1/2 inch per foot (1:24)**] unless otherwise indicated on Drawings.

2.5 INSULATION ACCESSORIES

A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation[**and recover boards**] to substrate, and acceptable to roofing system manufacturer.

B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.

2. Full-spread, spray-applied, low-rise, two-component urethane adhesive.
3. Adhesives and sealants shall comply with the following limits for VOC content:

    a. Plastic Foam Adhesives: 50 g/L.
    b. Gypsum Board and Panel Adhesives: 50 g/L.
    c. Multipurpose Construction Adhesives: 70 g/L.
    d. Fiberglass Adhesives: 80 g/L.
    e. Contact Adhesives: 80 g/L.
    f. PVC Welding Compounds: 510 g/L.
    g. Other Adhesives: 250 g/L.
    h. Single-Ply Roof Membrane Sealants: 450 g/L.
    i. Nonmembrane Roof Sealants: 300 g/L.
    j. Sealant Primers for Nonporous Substrates: 250 g/L.
    k. Sealant Primers for Porous Substrates: 775 g/L.

C. ReCover Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum substrate, or ASTM C1278/C1278M, fiber-reinforced gypsum board.
1. Thickness: [**5/8 inch**].
2. Surface Finish: [**Factory primed**].

2.6 ASPHALT MATERIALS

A. Roofing Asphalt: [**ASTM D312/D312M, Type III or Type IV**].

B. Asphalt Primer: ASTM D41/D41M.

2.7 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway **pads or rolls**, approximately 3/16 inch (5 mm) thick and acceptable to roofing system manufacturer.

1. Size: Approximately 36 by 60 inches (914 by 1524 mm).
2. Color: Contrasting with roof membrane.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

3.2 PREPARATION

A. Perform fastener-pullout tests according to roof system manufacturer's written instructions.

1. Submit test result within 24 hours of performing tests.

a. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roof membrane and auxiliary materials to tie in to steep slope roofing to maintain weathertightness of transition.

3.4 INSULATION INSTALLATION

A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over **Wood** Decking:

1. Install base layer of insulation with **joints staggered not less than 24 inches (610 mm) in adjacent rows**.

    a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
    b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).

        1) Trim insulation so that water flow is unrestricted.

    e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
    g. Mechanically attach base layer of insulation[**and substrate board**] using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to **wood** decks.
        1) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation[**and tapered insulation**] with joints of each layer offset not less than 12 inches (305 mm) from previous layer of insulation.

    a. Staggered end joints within each layer not less than 24 inches (610 mm) in adjacent rows.
    b. Install with long joints continuous and with end joints staggered not less than 12 inches (305 mm) in adjacent rows.
    c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
    e. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches (610 mm).

        1) Trim insulation so that water flow is unrestricted.

    f. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
    g. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

3.5 INSTALLATION OF RECOVER BOARDS

A. Install recover boards with long joints in continuous straight lines with end joints staggered between rows.

1. Trim recover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. At internal roof drains, conform to slope of drain sump.

    a. Trim recover board so that water flow is unrestricted.

3. Cut and fit recover board tight to nailers, projections, and penetrations.
4. Adhere recover board to substrate using adhesive according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
    a. Set recover board in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
    b. Set recover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 ADHERED ROOFING INSTALLATION

A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.

B. Unroll membrane roof membrane and allow to relax before installing.

C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.

D. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.

F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.

G. Apply roof membrane with side laps shingled with slope of roof deck where possible.

H. Adhesive Seam Installation: Clean both faces of splice areas, apply splicing cement.

1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
2. Apply lap sealant and seal exposed edges of roofing terminations.
3. Apply a continuous bead of in-seam sealant before closing splice if required by roofing system manufacturer.

I. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.

1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
2. Apply lap sealant and seal exposed edges of roofing terminations.

J. Spread sealant or mastic bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

K. Adhere protection sheet over roof membrane at locations indicated.

3.7 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.

1. Install flexible walkways at the following locations:
   a. Locations indicated on Drawings.
   b. As required by roof membrane manufacturer's warranty requirements.

2. Provide 6-inch (76-mm) clearance between adjoining pads.
3. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION

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SECTION 077100

ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copings.
2. Roof-edge specialties.
3. Roof-edge drainage systems.
4. Reglets and counterflashings.

B. Preinstallation Conference: Conduct conference at **Project site**.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For roof copings.

C. Samples: For each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For tests performed by a qualified testing agency.

B. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.5 WARRANTY

A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section 075323 and 073113.

B. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: [**10**] years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. SPRI Wind Design Standard: Manufacture and install [**copings**] tested according to SPRI ES-1 and capable of resisting the following design pressures:

1. Design Pressure: [**As indicated on Drawings**].

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): [**120 deg F (67 deg C), ambient; 180 deg F (100 deg C)**], material surfaces.

2.2 COPINGS

A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding [**12 feet (3.6 m)**], concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.

1. Formed Aluminum Sheet Coping Caps: Aluminum sheet, [**0.040 inch (1.02 mm) thick**] [**0.050 inch (1.27 mm) thick**] [**0.063 inch (1.60 mm) thick**] [**thickness as required to meet performance requirements**].

a. Surface: [**Smooth, flat**] finish.
b. Finish: [**Two-coat fluoropolymer**].
c. Color: **As selected by Architect from manufacturer's full range**.

2. Corners: Factory mitered and [**soldered**] or [**continuously welded**].
3. Coping-Cap Attachment Method: **Snap-on or face leg hooked to continuous cleat with back leg fastener exposed**, fabricated from coping-cap material.

a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches (300 mm) wide, with integral cleats.
b. Face-Leg Cleats: Concealed, continuous [**galvanized-steel sheet**].

2.3 ROOF-EDGE SPECIALTIES

A. Canted Roof-Edge **Fascia and Gravel Stop**: Manufactured, two-piece, roof-edge fascia consisting of [**compression-clamped**] metal fascia cover in section lengths not exceeding [**12 feet (3.6 m)**] and a continuous formed galvanized-steel sheet cant, 0.028 inch (0.71 mm) thick, minimum, with extended vertical leg terminating in a drip-edge cleat. Provide matching corner units.

1. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, [**thickness as required to meet performance requirements**]

    a. Surface: [**Smooth, flat**] finish.
    b. Finish: [**Two-coat fluoropolymer**].
    c. Color: [**As selected by Architect from manufacturer's full range**].

2. Corners: Factory mitered and [**mechanically clinched and sealed watertight**].
3. Splice Plates: [**Concealed**], of same material, finish, and shape as fascia cover.
4. Fascia Accessories: [**Soffit trim**].

B. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding [**12 feet (3.6 m)**] and a continuous metal receiver with integral drip-edge cleat to engage fascia cover **and secure single-ply roof membrane**. Provide matching corner units.

1. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, **thickness as required to meet performance requirements**.

    a. Surface: [**Smooth, flat**] finish.
    b. Finish: [**Two-coat fluoropolymer**].
    c. Color: [**As selected by Architect from manufacturer's full range**].

2. Corners: Factory mitered and [**soldered**].
3. Splice Plates: [**Concealed**], of same material, finish, and shape as fascia cover.
4. Receiver: [**Manufacturer's standard material and thickness**].
5. Fascia Accessories: [**Downspout scuppers with integral conductor head and downspout adapters**]

2.4 ROOF-EDGE DRAINAGE SYSTEMS

A. Gutters: Manufactured in uniform section lengths not exceeding [**12 feet (3.6 m)**], with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch (25 mm) above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.
1. Aluminum Sheet: [**0.032 inch (0.81 mm)**] minimum thick.
2. Gutter Profile: [**Style K**] according to SMACNA's "Architectural Sheet Metal Manual."
3. Corners: Factory mitered and [**soldered**].
4. Gutter Supports: [**Gutter brackets**] with finish matching the gutters.

B. Downspouts: [**Corrugated rectangular**] complete with [**machine-crimped**] elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.
   1. Formed Aluminum: [**0.032 inch (0.81 mm)**] minimum thick.

C. Parapet Scuppers: Manufactured with closure flange trim to exterior, 4-inch- (100-mm-) wide wall flanges to interior, and base extending 4 inches (100 mm) beyond cant or tapered strip into field of roof.
   1. Formed Aluminum: [**0.032 inch (0.81 mm)**] thick.

D. Conductor Heads: Manufactured conductor heads, each with flanged back and stiffened top edge, and of dimensions and shape indicated, complete with outlet tube that nests into upper end of downspout**, exterior flange trim, and built-in overflow**.
   1. Formed Aluminum: [**0.032 inch (0.81 mm)**] thick.

E. Aluminum Finish: [**Two-coat fluoropolymer**].

   1. Color: [**As selected by Architect from manufacturer's full range**].

2.5 REGLETS AND COUNTERFLASHINGS

A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
   1. Formed Aluminum: [[**0.050 inch (1.27 mm)**] thick.
   2. Stainless Steel: [**0.025 inch (0.64 mm)**] thick.
   3. Corners: Factory mitered and [**mechanically clinched and sealed watertight**].
   4. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
   5. Stucco Type, Embedded: Provide reglets with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
   6. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
   7. Multiuse Type, Embedded: For multiuse embedment in [**masonry mortar joints**].

B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches (100 mm) and in lengths not exceeding [**12 feet (3.6 m)**] designed to snap into **reglets or through-wall-flashing receiver** and compress against base flashings with joints lapped, from the following exposed metal:
   1. Formed Aluminum: [**0.032 inch (0.81 mm)**] thick.
   2. Stainless Steel: [**0.025 inch (0.64 mm)**] thick.

C. Accessories:

   1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.
   2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

D. Aluminum Finish: [**Two-coat fluoropolymer**].

1. Color: [**As selected by Architect from manufacturer's full range**].

E. Stainless-Steel Finish: [**No. 2B (bright, cold rolled, unpolished)**]

2.6 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 (Z275) coating designation.

B. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

C. Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.

2.7 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
1. Thermal Stability: ASTM D1970/D1970M; stable after testing at 240 deg F (116 deg C).
2. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F (29 deg C).

B. Slip Sheet: Rosin-sized building paper, 3-lb/100 sq. ft. (0.16-kg/sq. m) minimum.

2.8 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
2. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.
4. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.

B. Elastomeric Sealant: ASTM C920, elastomeric [**polyurethane**] polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

C. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.

2.9 FINISHES

A. Coil-Coated Galvanized-Steel Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A755/A755M and coating and resin manufacturers' written instructions.

a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.

B. Coil-Coated Aluminum Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.

2. Clear Anodic Finish: AAMA 611, [**AA-M12C22A41, Class I, 0.018 mm**] or thicker.

PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 14 days.

1. Apply continuously under **copings and reglets and counterflashings**.
2. Coordinate application of self-adhering sheet underlayment under roof specialties with requirements for continuity with adjacent air barrier materials.

3.2 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
2. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
4. Torch cutting of roof specialties is not permitted.
5. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of [**uncoated aluminum**] [**and**] [**stainless-steel**] roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of [**12 feet (3.6 m)**] with no joints within [**18 inches (450 mm)**] of corners or intersections unless otherwise indicated on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that penetrate [**substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance**].

E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm); however, reduce pre-tinning where pre-tinned surface would show in completed Work. Tin edges of uncoated copper sheets using solder for copper. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

3.3 COPING INSTALLATION

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at [**manufacturer's required spacing that meets performance requirements**].
2. Interlock face-leg drip edge into continuous cleat anchored to substrate at [**manufacturer's required spacing that meets performance requirements**]. Anchor back leg of coping with screw fasteners and elastomeric washers at [**manufacturer's required spacing that meets performance requirements**].

3.4 ROOF-EDGE SPECIALTIES INSTALLATION

A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.5 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than [**12 inches (305 mm)**] to [**24 inches (610 mm)**] apart. Attach ends with rivets and [**solder**] to make watertight. Slope to downspouts.

1. Install gutter with expansion joints at locations indicated but not exceeding [**50 feet (15.2 m)**] apart. Install expansion-joint caps.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately **60 inches (1500 mm)** o.c.
1. Connect downspouts to underground drainage system as occurs.
2. Provide elbows at base of downspouts at grade to direct water away from building as occurs.

D. Parapet Scuppers: Install scuppers through parapet where indicated. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

E. Conductor Heads: Anchor securely to wall with elevation of conductor top edge 1 inch (25 mm) below [**scupper**] discharge.

3.6 REGLET AND COUNTERFLASHING INSTALLATION

A. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches (100 mm) over top edge of base flashings.

B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches (100 mm) over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches (100 mm) and bed with butyl sealant. Fit counterflashings tightly to base flashings.

3.7 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION

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SECTION 079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Urethane joint sealants.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

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

1.4 WARRANTY

A. Special Installer's Warranty: 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.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. VOC Content: Sealants and sealant primers shall comply with the following:

   1. Architectural sealants shall have a VOC content of [**250**] g/L or less.
   2. Sealants and sealant primers for nonporous substrates shall have a VOC content of [**250**] g/L or less.

B. Colors of Exposed Joint Sealants: [**As selected by Architect from manufacturer's full range**].

2.2 URETHANE JOINT SEALANTS

A. Urethane: Single-component, urethaned elastomeric sealant, plus 35 percent and minus 35 percent movement capability; ASTM C920, Class 35, Uses T and NT.

1. Sher-Max or approved equal.

B. Urethane, Single-component, pourable, plus 35 percent and minus 35 percent movement capability, smooth polyurethane joint sealant; ASTM C920, Class 35, Uses T and NT.

1. Loxon S1 or approved equal

C. Urethane: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, smooth low-modulus hybrid joint sealant; ASTM C920, Class 50, Use NT.

1. Loxon H1 or approved equal.

2.3 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C1330, **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.

2.4 MISCELLANEOUS MATERIALS

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

B. 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 and the following requirements:

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.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with ASTM C1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

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.

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 to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

1. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.3 JOINT-SEALANT SCHEDULE

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

1. Joint Locations:

a. Steel and aluminum door frames and sills to stucco.
b. Window frames to stucco.
c. Other joints as indicated on Drawings.

2. Joint Sealant: **Hybrid, class 50**.
3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors**.

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

1. Joint Locations:

a. Steel and aluminum door frames and sills to masonry/brick/block walls.
b. Window frames to stucco, masonry/brick
c. Counterflashing to masonry
d. Brick expansion joints
e. Other joints as indicated on Drawings.

2. Joint Sealant: **Polyurethane, class 35**.
3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors**.

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

1. Joint Locations:

   a. Steel and aluminum door frames and sills to wood/drywall.
   b. Window frames to wood/drywall
   c. Other joints as indicated on Drawings.

2. Joint Sealant: **urethane elastomeric, class 35**.
3. Joint-Sealant Color: **As selected by Architect from manufacturer's full range of colors**.

END OF SECTION

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Interior standard steel doors and frames.
2. Exterior standard steel doors and frames.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

D. Samples: Selection samples for finishes of storm doors and hardware.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

1.4 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers- Hollow Metal: 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. Amweld International, LLC.
2. Ceco Door Products; an Assa Abloy Group company.
3. Commercial Door & Hardware Inc.
4. Curries Company; an Assa Abloy Group company.
5. Republic Doors and Frames.
6. Steelcraft; an Ingersoll-Rand company.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

B. Fire-Rated, Borrowed-Lite Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

C. Thermally Rated Flush Door Assemblies: Provide door assemblies with U-factor of not more than [**0.17 deg Btu/F x h x sq. ft.**] when tested according to ASTM C518.

D. Thermally Rated half-glazed Door Assemblies: Provide door assemblies with U-factor of not more than [**0.25 deg Btu/F x h x sq. ft.**] when tested according to ASTM C518.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Standard-Duty Doors and Frames: SDI A250.8, Level 1; SDI A250.4, Level C.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: [**1-3/4 inches (44.5 mm)**].
c. Face: [**Uncoated**] steel sheet, minimum thickness of 0.032 inch (0.8 mm).
d. Edge Construction: [**Model 1, Full Flush**].
e. Core: **Manufacturer's standard** .
f. Fire-Rated Core: Manufacturer's standard **vertical steel stiffener** core for fire-rated doors.

2. Frames:

a. Materials: **Metallic-coated** steel sheet, minimum thickness of 0.042 inch (1.0 mm).
b. **Sidelite and Transom** Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: **Knocked down**.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2; SDI A250.4, Level B.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch (1.0 mm), with minimum [**A40 (ZF120)**] coating.
d. Edge Construction: **Model 1, Full Flush**.
e. Edge Bevel: [**Provide manufacturer's standard beveled or square edges**].
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: **Manufacturer's standard** .
i. Fire-Rated Core: Manufacturer's standard **vertical steel stiffener with insulation** [**laminated mineral board**] core for fire-rated doors.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum [**A40 (ZF120)**] [**A60 (ZF180)**] coating.
b. Construction: **Knocked down**.

2.5 BORROWED LITES

A. Fabricate of **uncoated** steel sheet, minimum thickness of [**0.053 inch (1.3 mm)**] .

B. Construction: **Knocked down** or **Face welded**.

C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.

D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.6 ACCESSORIES

A. Louvers: Provide louvers for doors, where indicated, which comply with SDI 111C, with drainable blades or baffles formed of 0.020-inch- (0.5-mm-) thick, cold-rolled steel sheet set into 0.032-inch- (0.8-mm-) thick steel frame.

2.7 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.8 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

E. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

F. Glazing: Comply with requirements in Section 088000 "Glazing."

2.9 FABRICATION

A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch (19 mm) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.

B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding, or by rigid mechanical anchors.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with **butted or mitered** hairline joints.

1. Provide stops and moldings flush with face of door, and with **beveled** stops unless otherwise indicated.
2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

2.10 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hollow-Metal Frames: Comply with SDI A250.11 or NAAMM-HMMA 840.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: Secure with postinstalled expansion anchors.

4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

B. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with SDI A250.8 or NAAMM-HMMA 841 and NAAMM-HMMA guide specification indicated.
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

C. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

D. Storm doors: Install storm doors plumb, level and square. Anchor doors securely to structure in correct orientation to flashing and adjacent construction as indicated. Comply with product installation instructions for proper flashing integration into wall system. Install doors so as to drain water penetration to the exterior. Adjust storm door, insect screens, hardware and accessories as applicable for correct fit. Adjust weatherstrip for smooth operation and weathertight closure.

3.2 ADJUSTING, CLEANING AND TOUCHUP

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Remove grout and other bonding material from hollow-metal work immediately after installation.

C. Remove protective films and non-permanent labels within 90 days of installation.

D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

E. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION

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SECTION 084113

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed entrance and storefront systems.

B. Related items specified elsewhere:
1. Door Hardware

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

A. Product data.
1. For sealants, indicating VOC content.

B. Shop Drawings:

1. Plans, elevations, sections, full-size details, and attachments to other work.
2. Connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
3. Point-to-point wiring diagrams.

C. Samples: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

1.4 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: NFRC-certified energy performance values from manufacturer.

B. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

   1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 WARRANTY

A. Special Warranty: **Manufacturer agrees** to repair or replace components of aluminum-framed entrance and storefront systems that fail in materials or workmanship within specified warranty period.

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

B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked-enamel, powder-coat, or organic finishes within specified warranty period.

   1. Warranty Period: **10** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrance and storefront systems representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

   1. Aluminum-framed entrance and storefront systems to withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
   2. Failure also includes the following:

      a. Thermal stresses transferring to building structure.
      b. Glass breakage.
      c. Noise or vibration created by wind and thermal and structural movements.
      d. Loosening or weakening of fasteners, attachments, and other components.
      e. Failure of operating units.

B. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to **1/175 of clear span for spans of up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m)**.
2. Deflection Parallel to Glazing Plane: Limited to **amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm)**.

    a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.

C. Structural: Test in accordance with ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at [**150**] percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding [**0.2**] percent of span.
3. Test Durations: As required by design wind velocity, but not less than [**10**] seconds.

D. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

    a. Fixed Glazing and Framing Areas: U-factor for the system of not more than [**0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K)**] as determined in accordance with NFRC 100.
    b. Entrance Doors: U-factor of not more than [**0.68 Btu/sq. ft. x h x deg F (3.86 W/sq. m x K)**] as determined in accordance with NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

    a. Fixed Glazing and Framing Areas: SHGC for the system of not more than [**0.40**] as determined in accordance with NFRC 200.
    b. Entrance Doors: SHGC of not more than [**0.40**] as determined in accordance with NFRC 200.

3. Air Leakage:

    a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than [**0.06 cfm/sq. ft. (0.30 L/s per sq. m** > at a static-air-pressure differential of [**1.57 lbf/sq. ft. (75 Pa)**] when tested in accordance with ASTM E283.
    b. Entrance Door (Swinging): Air leakage of not more than [**1.0 cfm/sq. ft. (5.08 L/s per sq. m)**] at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than [**35**] as determined in accordance with AAMA 1503.
b. Entrance Doors: CRF of not less than [**57**] as determined in accordance with AAMA 1503.

E. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Basis of Design:
1. Storefront: Kawneer Trifab 451T Framing System
2. Doors: Kawneer 350T Insulpour Thermal entrance

B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing and Door Construction: [**Thermally broken**].
2. Interior Vestibule Framing and Door Construction: [**Nonthermal**].
3. System Dimension: 2” x 4-1/2”.
4. Glazing System: Retained mechanically with gaskets on four sides.
5. Finish: [**High-performance organic finish**].
6. Fabrication Method: Field-fabricated stick system.
7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
8. Steel Reinforcement: As required by manufacturer.

C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

E. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: Minimum **1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-)** thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

2. Door Design: **Medium stile; 3-1/2-inch (88.9-mm) nominal width**, with 10” high solid bottom rail.
3. Glazing Stops and Gaskets: **Beveled** , snap-on, extruded-aluminum stops and preformed gaskets.

a. Provide nonremovable glazing stops on outside of door.

4. Finish: [**High-performance organic finish**].

2.3 ENTRANCE DOOR SYSTEMS - BID ALTERNATE

A. Basis of Design: Kawneer 350 Swing Door, medium stile.

B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: **1-3/4-inch (44.5-mm) overall thickness, with minimum** 0.090-inch thick extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.

2. Door Design: [**Medium stile; 3-1/2-inch (88.9-mm) nominal width**], with 10" bottom rail.
3. Glazing Stops and Gaskets: [**Beveled**], snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.
    b. Gaskets shall be manufacturer's standard compression types, replaceable, extruded EPDM rubber.
4. Finish: [**High-performance organic finish**].

2.4 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in **Section 087100 "Door Hardware."**

2.5 GLAZING

A. Glazing: Comply with Section 088000 "Glazing."

B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

C. Glazing Sealants: As recommended by manufacturer.

2.6 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.

2.7 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.

C. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from **exterior**.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.8 ALUMINUM FINISHES

A. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with [**AAMA 2604**] and containing not less than [**50**] percent PVDF resin by weight in color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Color and Gloss: **As selected by Architect from manufacturer's full range**.

PART 3 - EXECUTION

3.1 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE AND STOREFRONT SYSTEMS

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

K. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

L. Install glazing as specified in Section 088000 "Glazing."

END OF SECTION

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SECTION 084229.23

SLIDING AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes exterior and interior, sliding, power-operated automatic entrances.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For sliding automatic entrances.

1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
2. Include diagrams for power, signal, and control wiring.
3. Indicate locations of activation and safety devices.
4. Include hardware schedule and indicate hardware types, functions, quantities, and locations.

C. Samples: For each type of exposed finish required.

D. Delegated Design Submittals: For automatic entrances.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Product test reports.

C. Field quality-control reports.

D. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation and maintenance of units required for this Project .

B. Certified Inspector Qualifications: Certified by AAADM.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of automatic entrances that fail in materials or workmanship within specified warranty period.

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

B. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested in accordance with ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: [**Five**] [**10**] [**20**] <**Insert number**> years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 AUTOMATIC ENTRANCE ASSEMBLIES

A. 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.

B. Power-Operated Door Standard: BHMA A156.10.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design automatic entrances.

B. Structural Performance: Automatic entrances to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated in accordance with [**ASCE/SEI 7**]

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: [120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces].

D. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-Factor):

a. Entrance Doors: U-factor of not more than [**0.63 Btu/sq. ft. x h x deg F (3.58 W/sq. m x K)**] as determined in accordance with NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Entrance Doors: SHGC of not more than [**0.40**] as determined in accordance with NFRC 200.

3. Air Leakage:

a. Power-Operated Sliding Doors: Air leakage of not more than [**1.0 cfm/sq. ft. (5.1 L/s per sq. m)**] at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

4. Condensation Resistance Factor (CRF):

a. Entrance Doors: CRF of not less than [**57**] as determined in accordance with AAMA 1503.

2.3 SLIDING AUTOMATIC ENTRANCES

A. General: Provide manufacturer's standard automatic entrances, including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, controls, and accessories required for a complete installation.

B. Sliding, Power-Operated Automatic Entrances:

1. Manufacturers include, but are not limited to:
   a. Stanley Dura-Glide 2000
   b. Besam
2. Configuration: Single-sliding door with one sliding leaf **and** sidelite.

a. Traffic Pattern: [**Two**] way.
b. Emergency Breakaway Capability: **Sliding leaf only**.
c. Mounting: **Between jambs**.

3. Operator Features:

a. Power opening and closing.
b. Drive System: [**Chain**] [**or**] [**belt**].
c. Adjustable opening and closing speeds.
d. Adjustable hold-open time between zero and 30 seconds.
e. Obstruction recycle.
f. On-off/hold-open switch to control electric power to operator**, key operated**.

4. Sliding-Door Carrier Assemblies and Overhead Roller Tracks: Carrier assembly that allows vertical adjustment; consisting of nylon- or delrin-covered, ball-bearing-center steel wheels operating on a continuous roller track, or ball-bearing-center steel wheels operating on a nylon- or delrin-covered, continuous roller track. Support doors from carrier assembly by cantilever and pivot assembly.

    a. Rollers: Minimum of two ball-bearing roller wheels and two antirise rollers for each active leaf.

5. Sliding-Door Threshold: Threshold members and bottom-guide-track system with stainless steel, ball-bearing-center roller wheels.

    a. Configuration: Saddle-type threshold across door opening and **surface-mounted** guide-track system at sidelites.

6. Controls: Activation and safety devices [**as indicated on Drawings and**]in accordance with BHMA standards.

    a. Activation Device:
        1) Exterior door: Motion sensor mounted on each side of door header to detect pedestrians in activating zone and to open door.
        2) Interior door: Motion sensor egress; access control system ingress.
    b. Safety Device: Presence sensor mounted on each side of door header and two photoelectric beams mounted in sidelite jambs on one side of the door to detect pedestrians in presence zone and to prevent door from closing.

7. Finish: Finish framing, door(s), and header with **high-performance organic finish (two-coat fluoropolymer)**.

    a. Color: **As selected by Architect from full range of industry colors and color densities**.

2.4 ENTRANCE COMPONENTS

A. Framing Members: Extruded aluminum, minimum 0.125 inch (3.2 mm) thick and reinforced as required to support imposed loads.

1. Nominal Size: [**1-3/4 by 4-1/2 inches (45 by 115 mm)**].
2. Extruded Glazing Stops and Applied Trim: Minimum 0.062-inch (1.6-mm) wall thickness.

B. Stile and Rail Doors: 1-3/4-inch- (45-mm-) thick, glazed doors with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded, or incorporate concealed tie-rods that span full length of top and bottom rails.

1. Glazing Stops and Gaskets: Snap-on, extruded-aluminum stops and preformed gaskets.
2. Stile Design: Narrow stile.
3. Bottom Rail Design: [**10-inch (254-mm) nominal height**].
4. Muntin Bars: Horizontal tubular rail member for each door; match stile design and finish.

C. **Sidelite(s)**: 1-3/4-inch- (45-mm-) deep **sidelite(s)** with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members matching door design.

1. Glazing Stops and Gaskets: Same materials and design as for stile and rail door.
2. Muntin Bars: Horizontal tubular rail members for each sidelite; match stile design.

D. Headers: Fabricated from minimum 0.125-inch- (3.2-mm-) thick extruded aluminum and extending full width of automatic entrance units to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

1. Mounting: [**Surface mounted**]

E. Signage: As required by cited BHMA standard.

1. Application Process: **Door manufacturer's standard process**.

2.5 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Extrusions: ASTM B221 (ASTM B221M).
2. Sheet: ASTM B209 (ASTM B209M).

B. Steel Reinforcement: Reinforcement with corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Use surface preparation methods in accordance with recommendations in SSPC-SP COM and prepare surfaces in accordance with applicable SSPC standard.

C. Stainless Steel Bars: ASTM A276/A276M or ASTM A666, [**type 304**].

D. Stainless Steel Tubing: ASTM A554, [**Grade MT 304**].

E. Glazing: As specified in **Section 088000 "Glazing."**

F. Sealants and Joint Fillers: As specified in Section 079200 "Joint Sealants."

G. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C1107/C1107M; of consistency suitable for application.

H. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

I. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.6 DOOR OPERATORS AND CONTROLS

A. General: Provide operators and controls, which include activation and safety devices, in accordance with BHMA standards, for condition of exposure, and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.

B. Door Operators: Provide door operators of size recommended by manufacturer for door size, weight, and movement.

1. Door Operator Performance: Door operators to open and close doors and maintain them in fully closed position when subjected to Project's design wind loads.
2. Electromechanical Operators: Concealed, self-contained, overhead units powered by fractional-horsepower, permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor; with solid-state microprocessor controller; complying with UL 325; and with manual operation with power off.

C. Motion Sensors: Self-contained, K-band-frequency, microwave-scanner units; fully enclosed by their plastic housings; adjustable to provide detection-field sizes and functions required by BHMA A156.10.

1. Provide capability for switching between bi- and unidirectional detection.
2. For one-way traffic, sensor on egress side to not be active when doors are fully closed.

D. Presence Sensors: Self-contained, active-infrared scanner units; adjustable to provide detection-field sizes and functions required by BHMA A156.10. Sensors remain active at all times.

E. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams to not be active when doors are fully closed.

G. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.

2.7 HARDWARE

A. General: Provide units in sizes and types recommended by automatic entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish **unless otherwise indicated**.

B. Breakaway Device for Power-Operated Doors: Device that allows door to swing out in direction of egress to full 90 degrees from any operating position. Interrupt powered operation of door operator while in breakaway mode.

C. Deadlocks: Deadbolt operated by exterior cylinder and interior thumb turn, with minimum 1-inch- (25-mm-) long throw bolt; BHMA A156.5, Grade 1.

1. At exterior door only: Cylinders: [**BHMA A156.5, Grade 1, six-pin mortise type.**] [

a. Keying: **Integrate into building master** key system.
b. Keys: [**Three**] for each cylinder.

2. Armored Strike: Reinforced security strike plate.

D. Uninterrupted Power Supply: UL 1778, fully integrated unit mounted [**within header**].

E. Weather Stripping: Replaceable components.

1. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

2.8 FABRICATION

A. General: Factory fabricate automatic entrance components to designs, sizes, and thicknesses indicated and to comply with indicated standards.

B. Framing: Provide automatic entrances as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.

1. Provide components with concealed fasteners and anchor and connection devices.
2. Fabricate components with accurately fitted joints, with ends coped or mitered to produce hairline joints free of burrs and distortion.
3. Fabricate exterior components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.
4. Provide anchorage and alignment brackets for concealed support of assembly from building structure.
5. Allow for thermal expansion of exterior units.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

E. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, in accordance with NGA's "GANA Glazing Manual."

F. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.

1. Provide sliding-type weather stripping, mortised into door, at perimeter of doors.

G. Controls:

1. General: Factory install activation and safety devices in doors and headers as required by BHMA A156.10 for type of door and direction of travel.

2.9 ALUMINUM FINISHES

A. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with [**AAMA 2604**] and containing not less than [**50**] percent PVDF resin by weight in color coat.

Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

1. Color and Gloss: **As selected by Architect from manufacturer's full range**.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install automatic entrances in accordance with manufacturer's written instructions and cited BHMA A156.10 for direction of pedestrian travel, including signage, controls, wiring, and connection to the building's power supply.

1. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
2. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
3. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous coating.

B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.
3. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within system to exterior.
4. Level recesses for recessed thresholds using nonshrink grout.

C. Door Operators: Connect door operators to electrical power distribution system.

D. Access-Control Devices: Connect access-control devices to access-control system, as specified in Section 281300 "Access Control Software and Database Management."

E. Controls: Install and adjust activation and safety devices in accordance with manufacturer's written instructions and cited BHMA standard for direction of pedestrian travel. Connect control wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

F. Glazing: Install glazing as specified in **Section 088000 "Glazing."**

G. Sealants: Comply with requirements specified in Section 079200 "Joint Sealants" to provide weathertight installation.

1. Set **thresholds,** framing members and flashings in full sealant bed.
2. Seal perimeter of framing members with sealant.

H. Signage: Apply signage on both sides of each door, as required by cited BHMA standard for direction of pedestrian travel.

I. Wiring within Automatic Entrance Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's written limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 FIELD QUALITY CONTROL

A. Certified Inspector: **Engage** a Certified Inspector to test and inspect components, assemblies, and installations, including connections.

B. Perform the following tests and inspections **with the assistance of a factory-authorized service representative**:

1. Test and inspect each automatic entrance, using AAADM inspection forms, to determine compliance of installed systems with applicable BHMA standards.

C. Automatic entrances will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.3 ADJUSTING

A. Adjust hardware, moving parts, door operators, and controls to function smoothly, and lubricate as recommended by manufacturer; comply with requirements of applicable BHMA standards.

B. Readjust door operators and controls after repeated operation of completed installation equivalent to three days' use by normal traffic (100 to 300 cycles).

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain automatic entrances.

END OF SECTION

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SECTION 085313

VINYL WINDOWS

(BID ALTERNATE)

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes vinyl-framed windows, insect screens, and security screens.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product including color charts.

B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, security screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace vinyl windows that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Window: [**10**] years from date of Substantial Completion.
b. Glazing Units: [**Five**] years from date of Substantial Completion.
c. Security Screens: Manufacturer’s Standard from date of Substantial Completion

PART 2 - PRODUCTS

2.1 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: WDMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: [**R-40**]

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of [**0.32 Btu/sq. ft. x h x deg F (1.83 W/sq. m x K)**].

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of [**0.40**].

2.2 VINYL WINDOWS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Encompass by Pella or comparable product by one of the following:

1. CertainTeed Corporation.
2. JELD-WEN, Inc.
3. Paradigm
4. Pella Corporation.
5. Quaker Windows Products Co.
6. Robert
7. Simonton Building Products, Inc.
8. Weather Shield Mfg., Inc.
9. Wincore Series 5400.

B. Operating Types: **As indicated on Drawings**.

C. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Finish: Integral color, color selected by Owner.
2. Gypsum Board Returns: Repair existing at interior face of frame.

D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.

1. Kind: Fully tempered shall be provided at windows within 24 inches of a door opening per code and/or as indicated on the drawings.

E. Insulating-Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

a. Tint: [**Clear**].
b. Kind: Fully tempered shall be provided at windows within 24 inches of a door opening per code and/or as indicated on the drawings.

2. Lites: [**Two**].
3. Filling: Fill space between glass lites with **argon**.
4. Low-E Coating: **Sputtered on second or third surface** to meet specified U-value and SHGC value.

F. Glazing System: **Manufacturer's standard factory-glazing system that produces weathertight seal**.

G. Hardware, General: Provide manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: **As selected by Architect from manufacturer's full range**.

H. Hung Window Hardware:

1. Counterbalancing Mechanism: AAMA 902.
2. Handicap unit accessible locks and latches: Operated from inside only at maximum 48" height, located on bottom window sash and windowsill. Basis of design is Spring Catch model #269-036 as manufactured by The Bronze Craft Corporation or equal. Provide hardware finish to match window hardware color, or similar/equal product by another manufacturer.
3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.
4. Locks and Latches: Operated from the inside only, shall be finger pulls or lift type handles.
5. Limit Devices: Manufacturer's standard.

I. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

J. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.3 INSECT SCREENS

A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash.

1. Type and Location: **Half, outside for single-hung**; sashes.

B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
1. Finish for Exterior Screens: **Matching color and finish of cladding**.

C. Glass-Fiber Mesh Fabric: **18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm)** mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656/D3656M.

1. Mesh Color: **Manufacturer's standard**.

2.4 SECURITY SCREENS

A. General: Fabricate security screen units to secure to the masonry opening. Provide screen units where indicated. Omit insect screen where security screen utilized.

1. Type and Location:

B. Basis of Design: Metro Screenworks, fixed panel security screen. www.metrosceenworks.com

C. Aluminum Frames: 6063 extruded aluminum, 0.062 (1/16") thickness.
1. Finish for Exterior Screens: Selected from manufacturer's standard colors
2. Provide integral crossbar, centered.
3. Provide spring-loaded barrel bolts in lower corners

D. Stainless Steel Mesh Fabric: 304 high-tensile stainless steel. 12x12 mesh, .028" diameter.

1. Mesh Color: **Manufacturer's standard**.

2.5 FABRICATION

A. Fabricate vinyl windows in sizes indicated. Include a complete system for installing and anchoring windows.

B. Glaze vinyl windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

E. Hardware: Mount hardware through double walls of vinyl extrusions or provide corrosion-resistant reinforcement.

F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, screens, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

D. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.

E. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

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SECTION 085413

FIBERGLASS WINDOWS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes fiberglass-framed windows, insect screens, and security screens.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product including color charts.

B. Shop Drawings: Include plans, elevations, sections, hardware, accessories, insect screens, security screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Sample warranties.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace fiberglass windows that fail in materials or workmanship within specified warranty period.

1. Warranty Period:

a. Window: [**10**] years from date of Substantial Completion.
b. Glazing Units: [**Five**] years from date of Substantial Completion.
c. Security Screens: Manufacturer’s Standard from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: WDMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: [**R-40**]

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of [**0.32 Btu/sq. ft. x h x deg F (1.83 W/sq. m x K)**].

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of [**0.40**].

2.2 FIBERGLASS WINDOWS

A. Basis of Design Product: Impervia by Pella, or comparable product.

B. Operating Types: **As indicated on Drawings**.

C. Frames and Sashes: Pultruded fiberglass complying with AAMA/WDMA/CSA 101/I.S.2/A440 and with exposed exterior fiberglass surfaces finished with manufacturer's standard enamel coating complying with **AAMA 613**.

1. Exterior Color: **As selected by Architect from manufacturer's full range**.
2. Interior Finish: **Matching exterior color and finish**.

D. Glass: Clear annealed glass, ASTM C1036, Type 1, Class 1, q3.

1. Kind: Fully tempered shall be provided at windows within 24 inches of a door opening per code and/or as indicated on the drawings.

E. Insulating-Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

a. Tint: [**Clear**].
b. Kind: Fully tempered shall be provided at windows within 24 inches of a door opening per code and/or as indicated on the drawings.

2. Lites: [**Two**].
3. Filling: Fill space between glass lites with **argon**.
4. Low-E Coating: **Sputtered on second or third surface** to meet specified U-value and SHGC value.

F. Glazing System: **Manufacturer's standard factory-glazing system that produces weathertight seal**.

G. Hardware, General: Provide manufacturer's standard corrosion-resistant hardware sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As **selected by Architect from manufacturer's full range**.

H. Hung Window Hardware:

1. Counterbalancing Mechanism: AAMA 902.
2. Locks and Latches: Operated from the inside only.
3. Handicap unit accessible locks and latches: Operated from inside only at maximum 48" height, located on bottom window sash and windowsill. Basis of design is Spring Catch model #269-036 as manufactured by The Bronze Craft Corporation or equal. Provide hardware finish to match window hardware color, or similar/equal product by another manufacturer.
4. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis.
5. Limit Devices: Manufacturer's standard.

I. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

J. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.3 INSECT SCREENS

A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash.

1. Type and Location: **Half, outside for single-hung**; sashes.

B. Aluminum Frames: Complying with SMA 1004 or SMA 1201.
1. Finish for Exterior Screens: **Matching color and finish of cladding**.

C. Glass-Fiber Mesh Fabric: **18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm)** mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656/D3656M.

1. Mesh Color: **Manufacturer's standard**.

2.4 SECURITY SCREENS

A. General: Fabricate security screen units to secure to the masonry opening. Provide screen units where indicated. Omit insect screen where security screen utilized.

1. Type and Location:

B. Basis of Design: Metro Screenworks, fixed panel security screen. www.metrosceenworks.com

C. Aluminum Frames: 6063 extruded aluminum, 0.062 (1/16") thickness.
1. Finish for Exterior Screens: Selected from manufacturer's standard colors
2. Provide integral crossbar, centered.
3. Provide spring-loaded barrel bolts in lower corners

D. Stainless Steel Mesh Fabric: 304 high-tensile stainless steel. 12x12 mesh, .028" diameter.

1. Mesh Color: **Manufacturer's standard**.

2.5 FABRICATION

A. Fabricate fiberglass windows in sizes indicated. Include a complete system for installing and anchoring windows.

B. Glaze fiberglass windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, screens, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

D. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.

E. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.

END OF SECTION

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SECTION 087100

DOOR HARDWARE

GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware for:

a. Swinging doors.
b. Sliding doors.

2. Electronic access control system components, including:

a. Electronic access control devices.

3. Field verification, preparation and modification of existing doors and frames to receive new door hardware.
4. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

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

1.02 REFERENCES

A. UL - Underwriters Laboratories

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. 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

1.03 SUBMITTALS

A. General:

1. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
2. 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: 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. Samples for Verification: If requested by Architect, submit production sample or sample installations of each type of exposed hardware unit in finish indicated, and tagged with full description for coordination with schedule.

    a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. 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. Quantity, 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. 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 operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.
    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.

5. 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.

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

C. Informational Submittals:

1. Product data for electrified door hardware:

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

2. Certificates of Compliance:

    a. UL listings 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.

3. 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. Factory order acknowledgement numbers (for warranty and service)
d. Name, address, and phone number of local representative for each manufacturer.
e. Parts list for each product.
f. Final approved hardware schedule, edited to reflect conditions as-installed.
g. Final keying schedule
h. Copies of floor plans with keying nomenclature
i. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
j. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.04 QUALITY ASSURANCE

A. 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. Scheduling Responsibility: Preparation of door hardware and keying schedules.
2. 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.
3. Coordination Responsibility: Assist in coordinating 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.

B. 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.

C. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

D. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

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

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

G. Keying Conference

1. 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.

H. 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.

I. 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.
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.

1.05 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. Provide secure lock-up for door hardware delivered to Project. 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. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop 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. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.07 WARRANTY

A. 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: Beginning from date of Substantial Completion, for durations indicated.

a. Closers:
1) Mechanical: 25 years.
2) Electrified: 2 years.
b. Automatic Operators: 2 years.
c. Exit Devices:

1) Mechanical: 3 years.
2) Electrified: 1 year.

d. Locksets:
1) Mechanical: Falcon 3 years.
2) Electrified: 1 year.

e. Continuous Hinges: Lifetime warranty.
f. Key Blanks: Lifetime

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

1.08 MAINTENANCE

A. Maintenance Tools: Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PRODUCTS

2.01 MANUFACTURERS

A. 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.

B. 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.

C. 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.

2.02 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.

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.

1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 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, Stanley FBB Series.

B. Requirements:

1. Provide 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. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
    b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

3. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

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

4. 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

5. 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.
6. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
7. 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

8. 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.
9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component.
10. Provide mortar guard for each electrified hinge specified.
11. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches (2286 mm) or less in height. Provide one additional bearing hinge for each 30 inches (762 mm) of additional door height.

2.04 CONTINUOUS HINGES

A. Aluminum Geared

1. Manufacturers:

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

2. Requirements:

a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
f. Provide aluminum geared continuous hinges with electrified option 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.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:

a. Scheduled Manufacturer: Von Duprin EPT-10.
b. Acceptable Manufacturers: ABH PT1000, Securitron CEPT-10.

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.

2.06 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 LOCKSETS – INTERCONNECTED TYPE

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage CS210 series.
2. Acceptable Manufacturers and Products: Arrow J series, Falcon H2 series, Yale YH Collection™.

B. Requirements:

1. Provide interlocked locksets conforming to ANSI/BHMA A156.12 Series 5000, Grade 2 with simultaneous retraction of deadbolt and latch for single motion egress. Cylinders: Refer to "KEYING" article, herein.
2. Provide locks with 2-3/8 inches (60 mm) or 2-3/4 inches (70 mm) backset, based on door detail, with 1/2 inch (13 mm) latch throw latchbolt and 1 inch (25 mm) throw deadbolt.
3. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
4. Provide manufacturers standard T-strike, unless extended lip strike is necessary to protect trim, and deadbolt strike.
5. Lever Design: Schlage Accent

2.08 CYLINDRICAL LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Falcon B series.

2. Acceptable Manufacturers and Products: Best 73KC series, Sargent 7-Line.

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 2, and UL Listed for 3 hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

    a. Lever Design: Falcon Quantum.
    b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Falcon 24/25 series.
2. Acceptable Manufacturers and Products: Detex Apex series, Precision Apex series.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer's approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. 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.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.

13. Provide electrified options as scheduled.
14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

    a. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.10 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 6000 Series.
2. Acceptable Manufacturers and Products: Folger Adam 300 Series, HES 1006 Series.

B. Requirements:

1. Provide electric strikes designed for use with type of locks shown at each opening.
2. Provide electric strikes UL Listed as burglary-resistant.
3. Where required, provide electric strikes UL Listed for fire doors and frames.
4. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.11 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage/Von Duprin PS900 series.
2. Acceptable Manufacturers and Products: Precision ELR series, Sargent 3500 series, Dynalock 5000 series, Securitron BPS series, Security Door Controls 600 series.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
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. Provide power supplies with the following features:

    a. 12/24 VDC Output, field selectable.
    b. Class 2 Rated power limited output.
    c. Universal 120-240 VAC input.
    d. Low voltage DC, regulated and filtered.
    e. Polarized connector for distribution boards.
    f. Fused primary input.
    g. AC input and DC output monitoring circuit w/LED indicators.
    h. Cover mounted AC Input indication.

i. Tested and certified to meet UL294.
j. NEMA 1 enclosure.
k. Hinged cover w/lock down screws.
l. High voltage protective cover.

2.12 CYLINDERS

A. Manufacturers and Products: **[OPTION]**

1. Scheduled Manufacturer and Product: Schlage Everest 29 R.
2. Acceptable Manufacturers and Products: Arrow Flexcore, Best Preferred Patented, Sargent XC, Yale Keymark.

B. Requirements:

1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; 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. Conventional Patented Small Format: cylinder with small format interchangeable cores (SFIC) with open patented keyway.

3. Patent Protection: Cylinders/cores requiring patented keys, patent-protected
4. Nickel silver bottom pins.

C. Construction Keying:

1. Replaceable Construction Cores.

a. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
1) 3 construction control keys
2) 12 construction change (day) keys.

b. Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2.13 KEYING

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

B. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

C. 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 will 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)
   b. Patent Protection: Keys and blanks protected by one or more utility patent(s)

4. Identification:

   a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Do not provide blind code marks with 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 will 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.

5. Quantity: Furnish in the following quantities.

   a. Change (Day) Keys: 3 per cylinder/core.
   b. Permanent Control Keys: 3.
   c. Master Keys: 6.

2.14 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 1450 series.
2. Acceptable Manufacturers and Products: Falcon SC80A series, Norton 8000 series, Sargent 1331 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory.
2. Provide door closers with fully hydraulic, full rack and pinion action with cast aluminum cylinder.
3. Closer Body: 1-3/8 inch (35 mm) diameter with 5/8 inch (16 mm) diameter pinion journal diameter heat-treated pinion journal and full complement bearings.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and 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. Pressure Relief Valve (PRV) Technology: Not permitted.
7. Provide stick on and 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.

2.15 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
2. Provide push bars of solid bar stock, diameter and length as scheduled. Provide push bars of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
3. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
4. Provide flush pulls as scheduled. Where required, provide back-to-back mounted model.
5. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
6. Provide pull plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick, beveled 4 edges, and prepped for pull. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
7. Provide wire pulls of solid bar stock, diameter and length as scheduled.

2.16 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes of plates:

    a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
    b. Mop Plates: 4 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
    c. Armor Plates: 36 inches (914 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.17 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers: Glynn-Johnson.
2. Acceptable Manufacturers: Rixson, Sargent.

B. Requirements:

1. Provide heavy duty concealed mounted overhead stop or holder as specified for exterior and interior vestibule single acting doors.
2. Provide heavy duty concealed mounted overhead stop or holder as specified for double acting doors.
3. Provide heavy or medium duty and concealed or surface mounted overhead stop or holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking wall, open against equipment, casework, sidelights, and where conditions do not allow wall stop or floor stop presents tripping hazard.
4. Where overhead holders are specified provide friction type at doors without closer and positive type at doors with closer.

2.18 DOOR STOPS AND HOLDERS

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.

2.19 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International.
2. Acceptable Manufacturers: National Guard, Reese.

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. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Size of thresholds:

    a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width
    b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width

4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.20 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.

2.21 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer: Schlage.
2. Acceptable Manufacturers: GE-Interlogix, Sargent.

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.22 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Continuous Hinges: BHMA 630 (US32D)
3. Continuous Hinges: BHMA 628 (US28)
4. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
5. Protection Plates: BHMA 630 (US32D)
6. Overhead Stops and Holders: BHMA 630 (US32D)

7. Door Closers: Powder Coat to Match
8. Wall Stops: BHMA 630 (US32D)
9. Latch Protectors: BHMA 630 (US32D)
10. Weatherstripping: Clear Anodized Aluminum
11. Thresholds: Mill Finish Aluminum

EXECUTION

3.01 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. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. 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. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as indicated in keying section.

I. Wiring: Coordinate with ELECTRICAL 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.

J. Key Control System: Tag keys and deliver to Owner.

K. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

L. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

M. 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.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. 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.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 FIELD QUALITY CONTROL

A. Engage qualified manufacturer trained representative to perform inspections and to prepare inspection reports.

1. Representative 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.

3.04 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. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, Installer's Architectural Hardware Consultant must examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.05 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.

3.06 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

Hardware Set No. 05

For use on door #(s):
145 146 149

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	25-R-L-NL-QUA	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	LOCK GUARD	LG14	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door position switch connected to access control system for monitoring.

Hardware Set No. 09

For use on door #(s):
151 153

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	LOCK GUARD	LG14	630	IVE
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door position switch connected to access control system for monitoring.
2. Door 153: ¾ hour rated door and glazing.

Hardware Set No. 11

For use on door #(s):
144

Provide each PR door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr

6	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
2	EA	PANIC HARDWARE	25-R-EO	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
2	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
2	EA	ARMOR PLATE	8400 30" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	MEETING STILE	155AA	AA	ZER
2	EA	MEETING STILE	55AA	AA	ZER
2	EA	KICK STOP	FS452-5	626	IVE
1	EA	THRESHOLD	566A-223	A	ZER

NOTES:
1. VERIFY CORRECT REQUIRED SALTO ELECTRONIC EXIT DEVICE TRIM COMPATIBLE WITH ABOVE EXIT DEVICE. MATCH SERIES TO EXISTING ACCESS CONTROL SYSTEM.

Hardware Set No. 14

For use on door #(s):
143

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	PANIC HARDWARE	25-C-EO	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC MORTISE CYL.	80-132	626	SCH
2	EA	SURFACE CLOSER	1450 SHCUSH	689	LCN
2	EA	ARMOR PLATE	8400 30" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	MEETING STILE	155AA	AA	ZER
2	EA	MEETING STILE	55AA	AA	ZER
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	KICK STOP	FS452-5	626	IVE
2	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from secure side by valid credential or key override which will unlock electrified door.
3. Free egress from inside at all times.
4. Door position switch connected to access control system for monitoring.

Hardware Set No. 15

For use on door #(s):
141

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
2	EA	SURFACE BOLT	SB360 12" T	604	IVE
1	EA	PANIC HARDWARE	25-R-L-NL-QUA	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC MORTISE CYL.	80-132	626	SCH
2	EA	SURFACE CLOSER	1450 HCUSH	689	LCN
2	EA	KICK PLATE	8400 8" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	MEETING STILE	155AA	AA	ZER
2	EA	MEETING STILE	55AA	AA	ZER
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	KICK STOP	FS452-5	626	IVE
2	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from secure side by valid credential or key override which will unlock electrified door.
3. Free egress from inside at all times.
4. Door position switch connected to access control system for monitoring.

Hardware Set No. 16

For use on door #(s):
148

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	LOCK GUARD	LG14	630	IVE
2	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
2	EA	KICK PLATE	8400 8" X 1" LDW B-CS	630	IVE
2	EA	KICK STOP	FS452-5	626	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	MEETING STILE	155AA	AA	ZER
2	EA	MEETING STILE	55AA	AA	ZER

1	EA	THRESHOLD	566A-223	A	ZER

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from secure side by valid credential or key override which will unlock electrified door.
3. Free egress from inside at all times.

Hardware Set No. 17

For use on door #(s):
140A 140B

Provide each SL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
	EA	SLIDING DOOR OPENER	SEE BELOW*		

NOTES:
1. COORDINATE HARDWARE WITH AUTOMATIC DOOR SUPPLIER
2. DOOR140A: PROVIDE AUTOMATIC DOOR OPENER W/ MOTION SENSORS AIMED AT BOTH INBOUND AND OUTBOUND TRAFFIC.
3. DOOR140B: PROVIDE AUTOMATIC DOOR OPENER W/ MOTION SENSORS AIMED AT OUTBOUND TRAFFIC. INBOUND OPERATION TIED TO EXISTING ACCESS CONTROL SYSTEM.
4. PROVIDE NECESSARY WEATHERSTRIPPING AND THERMALLY BROKEN ADA THRESHOLD AND SILL SWEEP.

Hardware Set No. 18

For use on door #(s):
154

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	CD-25-C-C-718	626	FAL
1	EA	PANIC HARDWARE	CD-25-C-EO	626	FAL
2	EA	SFIC EVEREST CORE	80-037	626	SCH
2	EA	SFIC MORTISE CYL.	80-132	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O	630-316	IVE
2	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	DOOR CONTACT	679-05HM	BLK	SCE

NOTES:
1. ¾ hour rated door and glazing.

Hardware Set No. 20

For use on door #(s):
150A 150B

Provide each PR door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	CONT. HINGE	112HD EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	PANIC HARDWARE	CD-25-C-EO	626	FAL
1	EA	ELEC PANIC HARDWARE	EL-25-C-C-718-24VDC	626	FAL
2	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC MORTISE CYL.	80-132	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
2	EA	90 DEG OFFSET PULL	8190EZHD 10" O	630-316	IVE
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	SURF. AUTO OPERATOR	4642 CS WMS 120V AC	689	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-853T	630	LCN
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	DOOR CONTACT	679-05HM	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-2RS KL900 120/240 VAC	LGR	SCE
	EA	EXISTING CARD READER	TO REMAIN		

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from secure side by valid credential or key override which will unlock electrified door.
3. Valid credential will also allow ADA wall actuator to be used and signal ADA door opener to open door.
4. Safety Sensor prevents door from opening or closing when swing path is not clear.
5. Free egress from inside at all times.
6. Request to exit and door position switch connected to access control system for monitoring.
7. Exterior door actuator may be installed in a post/pedestal supplied by the actuator manufacturer to replicate the existing condition.

Hardware Set No. 21

For use on door #(s):
155 156 157

Provide each PR door(s) with the following:

Qty	Description	Catalog Number	Finish	Mfr

2	EA	CONT. HINGE	112HD	628	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC MORTISE CYL.	80-132	626	SCH
2	EA	MANUAL FLUSH BOLT	FB458	626	IVE
2	EA	SURFACE CLOSER	1450 SHCUSH	689	LCN
2	EA	ARMOR PLATE	8400 30" X 1" LDW B-CS	630	IVE
2	EA	KICK PLATE	8400 8" X 1" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	MEETING STILE	155AA	AA	ZER
2	EA	MEETING STILE	55AA	AA	ZER
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	KICK STOP	FS452-5	626	IVE
2	EA	DOOR CONTACT AT DOOR 155 ONLY	679-05HM	BLK	SCE

NOTES:

1. VERIFY CORRECT REQUIRED SALTO ELECTRONIC EXIT DEVICE TRIM COMPATIBLE WITH ABOVE EXIT DEVICE. MATCH SERIES TO EXISTING ACCESS CONTROL SYSTEM.
2. REMOVE ABANDONED REQUEST TO EXIT HARDWARE AT DOOR #155

Hardware Set No. 22

For use on door #(s):
122

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	ENTRANCE LOCK	CS210-B500HD ACC PLY 10-109	626	SCH
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER
2	EA	VIEWER	U698 (install 2nd viewer @ ADA height)	626	IVE

Hardware Set No. 24

For use on door #(s):
147

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
2	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	LOCK GUARD	LG14	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door position switch connected to access control system for monitoring.

Hardware Set No. 25

For use on door #(s):
152 158

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	PANIC HARDWARE	25-R-L-NL-QUA	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	LOCK GUARD	LG14	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER

DOOR OPERATION:
1. Door position switch connected to access control system for monitoring.

Hardware Set No. 26

For use on door #(s):
142B

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	SALTO ELECTRONIC LOC	MATCH EXISTING DESIGN AND SERIES	626	SAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SURFACE CLOSER	1450 SCUSH	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS (push side)	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	THRESHOLD	566A-223	A	ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE
	EA	EXISTING CARD READER	TO REMAIN		

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from secure side by valid credential or key override which will unlock electrified door.
3. Free egress from inside at all times.
4. Door position switch connected to access control system for monitoring.
5. Provide Electrical Hazard warning sign on pull side.

Hardware Set No. 27

For use on door #(s):
142A

Provide each SGL door(s) with the following:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	B581H QUA	626	FAL
1	EA	SFIC EVEREST CORE	80-037	626	SCH
1	EA	SURFACE CLOSER (PULL SIDE)	1450 REG OR PA AS REQ	689	LCN
1	EA	KICK PLATE	8400 8" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

DOOR OPERATION:
1. Door normally closed and secure.
2. Entry from push side.
3. Free egress from inside at all times.
4. Door position switch connected to access control system for monitoring.
5. Provide Electrical Hazard warning sign on push side

END OF SECTION

SECTION 088000

GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Glass for doors and storefront framing.
2. Glazing sealants and accessories.

B. Related products specified elsewhere:
1. Glass for vinyl and fiberglass windows.

1.2 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.4 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: [**10**] years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

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

C. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: [**10**] years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

B. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:

1. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F (W/sq. m x K).
2. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
3. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.2 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance

Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.3 GLASS PRODUCTS

A. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

B. Ceramic-Coated Vision Glass: ASTM C1048, Condition C, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3; and complying with Specification No. 95-1-31 in GANA's "Engineering Standards Manual."

1. Basis of Design: FireLite NT as manufactured by Technical Glass Products.

2.4 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E2190.

1. Sealing System: Dual seals.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.

2.5 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Sealant shall have a VOC content of 250 g/L or less.
4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 100/50, Use NT.

2.6 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks: Type recommended by sealant or glass manufacturer.

C. Spacers: Type recommended by sealant or glass manufacturer.

D. Edge Blocks: Type recommended by sealant or glass manufacturer.

E. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

3.2 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Apply heel bead of elastomeric sealant.

F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.3 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

3.6 INSULATING GLASS SCHEDULE

A. Glass Type (storefront doors and windows): Low-E-coated, clear insulating glass.
1. Overall Unit Thickness: [**1 inch (25 mm)**].
2. Minimum Thickness of Each Glass Lite: [**3 mm**].
3. Outdoor Lite: **Fully tempered** float glass.
4. Interspace Content: **Air**.
5. Indoor Lite: **Fully tempered** float glass.
6. Low-E Coating: P**yrolytic or sputtered on second or third** surface.
7. Storefront U-Factor: .030 maximum.
8. Entrance doors U-Factor: 0.70 maximum.
9. Solar Heat Gain Coefficient: NR maximum.
10. Safety glazing required.

B. Glass Type (hollow metal doors): Low-E-coated, clear insulating glass.
1. Overall Unit Thickness: [**5/8 inch (16 mm)**].
2. Minimum Thickness of Each Glass Lite: [**3 mm**].
3. Outdoor Lite: **Fully tempered** float glass. Provide fire rated glazing when indicated.
4. Interspace Content: A**ir**.
5. Indoor Lite: **Fully tempered** float glass.
6. Low-E Coating: **Pyrolytic or sputtered on second or third** surface.

7. Less or equal to half-lite U-Factor: 0.25 maximum.
8. Solar Heat Gain Coefficient: 0.25 maximum.
9. Safety glazing required.

END OF SECTION

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SECTION 099123

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior and exterior substrates.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Samples: For each type of paint system and in each color and gloss of topcoat.

1.3 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

1.4 CLOSEOUT SUBMITTALS

A. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.5 EXTRA MATERIALS

A. Provide one gallon of each color and sheen in unopened cans, sealed and labeled by Manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide products manufactured by Sherwin-Williams or approved equal.

2.2 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content: For field applications that are inside the weatherproofing system, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Flat Paints and Coatings: 50 g/L.
2. Nonflat Paints and Coatings: 150 g/L.
3. Dry-Fog Coatings: 400 g/L.
4. Primers, Sealers, and Undercoaters: 200 g/L.
5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
7. Pretreatment Wash Primers: 420 g/L.
8. Shellacs, Clear: 730 g/L.
9. Shellacs, Pigmented: 550 g/L.

D. Colors: To match existing.

1. **Twenty** percent of surface area will be painted with deep tones.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Correct minor defects and clean surfaces which affect work of this Section.

D. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

E. Gypsum Board Surfaces: Fill minor defects with latex compounds. Spot prime defects after repair.

F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

G. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to dry.

H. Uncoated Ferrous Surfaces: Remove scale by wire brushing, sandblasting; clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.

I. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust, hand power tool clean, clean surfaces with solvent. Prime bare steel surfaces.

J. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

K. Protect adjacent work from damage.

L. Prepare all surfaces in accordance with manufacturer’s requirements.

M. Do not paint over any code-required labels, equipment identification, performance rating, name or nomenclature plates.

3.2 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.3 EXTERIOR PAINTING SCHEDULE (Based on Sherwin-Williams)

A. Steel - ferrous metal: Exterior metal doors and miscellaneous pipe railing.

1. Touch-up with acrylic primer. Kem Bond HS Universal Primer B502 (spot or full prime any bare/properly prepared steel).
2. Two (2) coats of Alkyd Gloss. Pro Industrial Urethane Alkyd Enamel, B54-150 Series.

B. Steel - galvanized metal:

1. Prep: Solvent Wipe.
2. Touch-up with acrylic primer. Galvite HS B50WZ30 (spot or full prime any bare/properly prepared galvanized steel).
3. Two (2) coats ofAlkyd Gloss. Pro Industrial Urethane Alkyd Enamel, B54-150 Series.

C. Masonry and Concrete, previously coated:

1. Concrete

1 finish coat: SW Loxon XP at minimum DFT 6.4-8.3 mils

OR

2 finish coats: SW Loxon XP (10 year warranty) at minimum DFT 12.8 – 16.6 mils

BASF – 2-3 coat system = 10-16 mils DFT

2. Concrete

Primer: may be required depending on substrate condition

2 finish coats: BASF MasterProtect HB200 at minimum DFT 10-16 mils

D. Ferrous Metal – Doors, Frames and miscellaneous metals- semi gloss.

1. Primer: Pro-Industrial Pro-Cryl WB Universal Primer, 100 g/l., B66-310 (spot or full prime as required)
2. 1st Coat: Pro-Industrial Waterbased Alkyd Urethane
3. 2nd Coat: Pro-Industrial Waterbased Alkyd Urethane

E. Aluminum Metal – Existing

1. 1st Coat: Bond-Plex waterbased acrylic coating.
2. 2nd Coat: Bond-Plex waterbased acrylic coating.

F. Wood-Painted – New or Existing

1. Primer: Exterior Oil Wood Primer (spot or full prime as required)
2. 1st Coat: Resilience Exterior Acrylic Latex (flat, satin or gloss)
3. 2nd Coat: Resilience Exterior Acrylic Latex (flat, satin or gloss).

G. Fypon-Painted – New or Existing
1. 1st Coat: Resilience Exterior Acrylic Latex (flat, satin or gloss)
2. 2nd Coat: Resilience Exterior Acrylic Latex (flat, satin or gloss).
3. Note: Light sanding prior to painting to create profile.

3.4 INTERIOR PAINTING SCHEDULE

A. Ferrous Metal – Doors, Frames and miscellaneous metals- semi gloss.
1. Primer: Pro-Industrial Pro-Cryl WB Universal Primer, 100 g/l., B66-310 (spot or full prime as required)
2. 1st Coat: Pro-Industrial Waterbased Alkyd Urethane
3. 2nd Coat: Pro-Industrial Waterbased Alkyd Urethane

B. Gypsum – New or existing (flat or eggshell)
1. Primer: ProMar 200 Zero Latex Primer, 0 g/l., (spot or full prime as required)
2. 1st Coat: ProMar 200 Zero VOC, 0g/l., or Emerald Interior Latex, K38 series.
3. 2nd Coat: ProMar 200 Zero VOC, 0gl/., or Emerald Interior Latex, K38 series.

C. Wood-Painted – New or Existing (Semi-gloss Finish)
1. Primer: Premium Wall and Wood Primer (spot or full prime as required)
2. 1st Coat: Pro-Industrial Waterbased Alkyd Urethane
3. 2nd Coat: Pro-Industrial Waterbased Alkyd Urethane.

END OF SECTION

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SECTION 107113

SHUTTERS

PART 1 GENERAL

1.1 SECTION INCLUDES

1. Exterior shutters.

1.3 SUBMITTALS

A. Shop Drawings: Show materials, layout, dimensions, profiles, fasteners and anchors, hardware, finishes, and interface with adjacent construction.

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. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

1.4 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.

2. Store products in manufacturer's unopened packaging until ready for installation.

3. Store materials in a clean, dry area in accordance with manufacturer's instructions.

4. Protect materials during handling and installation to prevent damage.

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 absolute limits.

1.6 WARRANTY

A. Provide with a Limited Lifetime warranty against cracking, splitting or fading.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers include but are not limited to:
   1. Royal Corinthian
   2. Timberlane
   3. Fypon

2.2 SHUTTERS

A. Standard Open Louver Shutters: Shutters fabricated of maintenance-free, UV- stabilized polypropylene copolymer with molded-through color

   1. Width:
      1. 12 inch (305 mm).
   2. Length:
      1. Sized to match masonry opening.
   3. Colors:
      1. Match Owner’s Sample, or color as selected from manufacturer’s standard color chart.

2.3 SHUTTER ACCESSORIES

A. Fasteners:

   1. Painted Screws, 3 inches (76 mm) long, color coordinate to match adjacent shutter.

PART 3 EXECUTION

3.1 EXAMINATION

1. Do not begin installation until substrates have been properly prepared.
2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
3. Commencement of work will imply acceptance of substrate.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Prepare surface using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

1. Install in accordance with manufacturer's instructions.

2. Paint in accordance with manufacturer's recommended instructions. Contact manufacturer for recommended paint and shutter surface preparation.

3.4 PROTECTION

1. Protect installed products from damage by weather and other work until Date of Substantial Completion.

2. Touch-up and repair damaged products before Date of Substantial Completion.

END OF SECTION

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SECTION 265213

EMERGENCY AND EXIT LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Exit signs.
   2. Materials.
   3. Luminaire support components.

1.2 ACTION SUBMITTALS

A. Product Data:

   1. For each type of emergency lighting unit, exit sign, and emergency lighting support.

      a. Include data on features, accessories, and finishes.
      b. Include physical description of unit and dimensions.
      c. Battery and charger for light units.
      d. Include life, output of luminaire (lumens, CCT, and CRI), and energy-efficiency data.

B. Product Schedule:

   1. **Use same designations indicated on Drawings.**

1.3 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's **special** warranty.

1.4 WARRANTY

A. Special Installer Extended Warranty for Emergency and Exit Lighting: Installer warrants that fabricated and installed emergency luminaires and exit signs, including batteries, perform in accordance with specified requirements and agrees to repair or replace components and assemblies that fail to perform as specified within extended warranty period.

   1. Extended Warranty Period: [**Two**] year(s) from date of Substantial Completion; full coverage for labor, materials, and equipment.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR EMERGENCY LIGHTING

A. Electrical Components, Devices, and Accessories: Listed and labeled in accordance with NFPA 70 and UL 924, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Comply with NFPA 101.

C. Internal Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body **and compatible with ballast**.
   1. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
   2. Test Push-Button and Indicator Light: Visible and accessible without opening luminaire or entering ceiling space.

      a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
      b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.

   3. Battery: Sealed, maintenance-free, **nickel-cadmium** type.
   4. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
   5. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.2 EXIT SIGNS

A. General Characteristics: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.

B. Internally Lighted Sign: "X":
   1. As scheduled on the drawings.
      1) LEDs; 50,000 hours minimum rated lamp life.

      b. Self-Powered Exit Signs (Battery Type): Internal emergency power unit.

2.3 MATERIALS

A. Metal Parts:

   1. Free of burrs and sharp corners and edges.
   2. Sheet metal components must be steel unless otherwise indicated.

3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access:

1. Smooth operating, free of light leakage under operating conditions.
2. Designed to permit relamping without use of tools.
3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

C. Housings:

1. UL flame rated thermoplastic with UV protection.

D. Conduit: **EMT**, minimum metric designator 21 (trade size 3/4).

2.4 FINISHES

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

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.

B. Supports:

1. Sized and rated for **and emergency power unit** weight.
2. Able to maintain luminaire position when testing emergency power unit.
3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.
4. Luminaire-mounting devices must be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of luminaire weight.

C. Wall-Mounted Luminaire Support:

1. Direct attachment to existing masonry walls.
2. Do not attach luminaires directly to gypsum board.

3.2 FIELD QUALITY CONTROL

A. Field tests and inspections must be witnessed by **authorities having jurisdiction**.

B. Tests and Inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

C. Nonconforming Work:

1. Luminaire will be considered defective if it does not pass operation tests and inspections.
2. Remove and replace defective units and retest.

D. Prepare test and inspection reports.

E. Manufacturer Services:

1. Engage factory-authorized service representative to **support** field tests and inspections.

3.3 ADJUSTING

A. Adjustments: Within [**12**] months of date of Substantial Completion, provide on-site visit to do the following:

1. Inspect luminaires. Replace lamps, **batteries,** and **exit signs** that are defective.

a. Parts and supplies must be manufacturer's authorized replacement parts and supplies.

2. Conduct short-duration tests on all emergency lighting.

3.4 PROTECTION

A. Remove and replace exit signs that are damaged or caused to be unfit for use by construction activities.

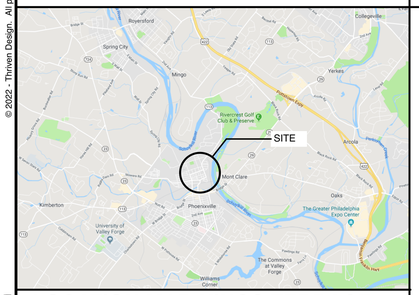
END OF SECTION

GENERAL CONSTRUCTION- MULTIPLE SITES IN OXFORD AND PHOENIXVILLE

CONSTRUCTION DOCUMENTS

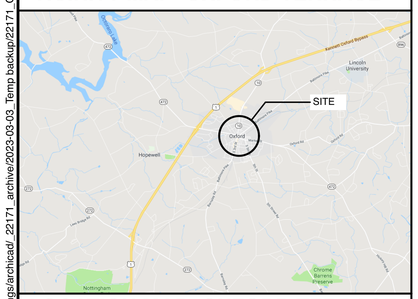
HOUSING AUTHORITY OF THE COUNTY OF CHESTER
30 W. BARNARD ST, SUITE 2
WEST CHESTER, PA 19382

VICINITY MAP- KINGS TERRACE

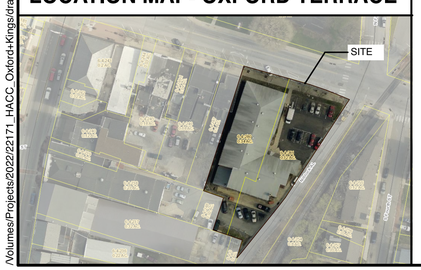


LOCATION MAP-KINGS TERRACE

VICINITY MAP- OXFORD TERRACE



LOCATION MAP- OXFORD TERRACE



PROJECT SCOPE

1

BUILDING CODE DATA

- INTERNATIONAL EXISTING BUILDING CODE-2018, AS AMENDED BY PENNSYLVANIA UNIFORM CONSTRUCTION CODE
- INTERNATIONAL BUILDING CODE-2018, AS AMENDED BY PENNSYLVANIA UNIFORM CONSTRUCTION CODE
- INTERNATIONAL ENERGY CONSERVATION CODE-2018
  - CLIMATE ZONE 4A
- NATIONAL ELECTRIC CODE, NFPA 70-2017
- INTERNATIONAL BUILDING CODE-2018, CHAPTER 11, AS AMENDED BY PENNSYLVANIA UNIFORM CONSTRUCTION CODE
  - ICC/ANSI A117.1-2009 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES STANDARD
  - UNIFORM FEDERAL ACCESSIBILITY STANDARDS
- THESE DRAWINGS AND THE ACCOMPANYING PROJECT MANUAL.

BASE BID:

PA46-04A KING'S TERRACE

EXISTING USE:	RESIDENTIAL (R-2)
PROPOSED USE:	RESIDENTIAL (R-2)
ZONING DISTRICT:	R1 -RESIDENTIAL INFILL
3-STORY APARTMENT BUILDING:	
CONSTRUCTION TYPE:	II-B (EXISTING)
MINIMUM ROOF COVERING CLASSIFICATION (T1505.1):	C
THERMAL ENVELOPE:	TABLE R402.1.2
AGE OF STRUCTURE:	CIRCA 1970
BUILDING HEIGHT:	28'-0" (EXISTING), 3 STORIES
NUMBER DWELLINGS:	50 (EXISTING);
REPAIR	

INCLUDES THE PATCHING OR RESTORATION OR REPLACEMENT OF DAMAGED MATERIALS, ELEMENTS, EQUIPMENT OR FIXTURES FOR THE PURPOSE OF MAINTAINING SUCH COMPONENTS IN A GOOD OR SOUND CONDITION WITH RESPECT TO EXISTING LOADS OR PERFORMANCE REQUIREMENTS. WORK ON NON-DAMAGED COMPONENTS THAT IS NECESSARY FOR THE REQUIRED REPAIR OF DAMAGED COMPONENTS SHALL BE CONSIDERED PART OF THE REPAIR.

- N/A.

ALTERATION – LEVEL 1

INCLUDES THE REMOVAL AND REPLACEMENT OR THE COVERING OF EXISTING MATERIALS, ELEMENTS, EQUIPMENT, OR FIXTURES USING NEW MATERIALS, ELEMENTS, EQUIPMENT, OR FIXTURES THAT SERVE THE SAME PURPOSE.

- Replace low-slope roofing system and downspouts.
- Replace exterior doors as scheduled.
- Replace entry vestibule storefront as scheduled.
- Add additional attic insulation.

ALTERATION – LEVEL 2

INCLUDES THE RECONFIGURATION OF SPACE, THE ADDITION OR ELIMINATION OF ANY DOOR OR WINDOW, THE RECONFIGURATION OR EXTENSION OF ANY SYSTEM, OR THE INSTALLATION OF ANY ADDITIONAL EQUIPMENT.

- N/A

ALTERATION – LEVEL 3

APPLIES WHERE THE WORK AREA EXCEEDS 50 PERCENT OF THE BUILDING AREA.

- N/A

CHANGE OF OCCUPANCY

A CHANGE IN THE USE OF THE BUILDING OR A PORTION OF A BUILDING. A CHANGE OF OCCUPANCY SHALL INCLUDE ANY CHANGE OF OCCUPANCY CLASSIFICATION, ANY CHANGE FROM ONE GROUP TO ANOTHER GROUP WITHIN AN OCCUPANCY CLASSIFICATION OR ANY CHANGE IN USE WITHIN A GROUP FOR A SPECIFIC OCCUPANCY CLASSIFICATION.

- N/A.

ADDITIONS

AN EXTENSION OR INCREASE IN FLOOR AREA, NUMBER OF STORIES, OR HEIGHT OF A BUILDING OR STRUCTURE.

- N/A.

SITEWORK

- Minor asphalt driveway repairs.

PA46-08 OXFORD TERRACE

EXISTING USE:	RESIDENTIAL (R-2)
PROPOSED USE:	RESIDENTIAL (R-2)
ZONING DISTRICT:	C-3, CENTRAL BUSINESS DISTRICT
4-STORY APARTMENT BUILDING:	
CONSTRUCTION TYPE:	II-A (EXISTING)
MINIMUM ROOF COVERING CLASSIFICATION (T1505.1):	C
THERMAL ENVELOPE:	TABLE C402.1.3
AGE OF STRUCTURE:	CIRCA 1983
BUILDING HEIGHT:	36'-0" (EXISTING AT EAVE), 4 STORIES
NUMBER DWELLINGS:	48 (EXISTING);
REPAIR	

INCLUDES THE PATCHING OR RESTORATION OR REPLACEMENT OF DAMAGED MATERIALS, ELEMENTS, EQUIPMENT OR FIXTURES FOR THE PURPOSE OF MAINTAINING SUCH COMPONENTS IN A GOOD OR SOUND CONDITION WITH RESPECT TO EXISTING LOADS OR PERFORMANCE REQUIREMENTS. WORK ON NON-DAMAGED COMPONENTS THAT IS NECESSARY FOR THE REQUIRED REPAIR OF DAMAGED COMPONENTS SHALL BE CONSIDERED PART OF THE REPAIR.

- N/A

ALTERATION – LEVEL 1

INCLUDES THE REMOVAL AND REPLACEMENT OR THE COVERING OF EXISTING MATERIALS, ELEMENTS, EQUIPMENT, OR FIXTURES USING NEW MATERIALS, ELEMENTS, EQUIPMENT, OR FIXTURES THAT SERVE THE SAME PURPOSE.

- Replace asphalt shingle roofs, gutters and downspouts.
- Add additional attic insulation.
- Replace exterior doors as scheduled.
- Replace entry vestibule and community room storefront as scheduled.
- Replace exterior windows as scheduled.

ALTERATION – LEVEL 2

INCLUDES THE RECONFIGURATION OF SPACE, THE ADDITION OR ELIMINATION OF ANY DOOR OR WINDOW, THE RECONFIGURATION OR EXTENSION OF ANY SYSTEM, OR THE INSTALLATION OF ANY ADDITIONAL EQUIPMENT.

- N/A.

ALTERATION – LEVEL 3

APPLIES WHERE THE WORK AREA EXCEEDS 50 PERCENT OF THE BUILDING AREA.

- N/A

CHANGE OF OCCUPANCY

A CHANGE IN THE USE OF THE BUILDING OR A PORTION OF A BUILDING. A CHANGE OF OCCUPANCY SHALL INCLUDE ANY CHANGE OF OCCUPANCY CLASSIFICATION, ANY CHANGE FROM ONE GROUP TO ANOTHER GROUP WITHIN AN OCCUPANCY CLASSIFICATION OR ANY CHANGE IN USE WITHIN A GROUP FOR A SPECIFIC OCCUPANCY CLASSIFICATION.

- N/A.

ADDITIONS

AN EXTENSION OR INCREASE IN FLOOR AREA, NUMBER OF STORIES, OR HEIGHT OF A BUILDING OR STRUCTURE.

- N/A.

1

SITEWORK

- Minor sidewalk replacement.

ALTERNATES:

DEDUCT ALTERNATE 1:

- **KING'S TERRACE:** PROVIDE STANDARD DOUBLE-GLAZED STOREFRONT DOOR FOR THERMALLY BROKEN DOUBLE-GLAZED STOREFRONT DOOR SYSTEM.

DEDUCT ALTERNATE 2:

- **OXFORD TERRACE:** PROVIDE STANDARD DOUBLE-GLAZED STOREFRONT DOOR FOR THERMALLY BROKEN DOUBLE-GLAZED STOREFRONT DOOR SYSTEM.

DEDUCT ALTERNATE 3:

- **OXFORD TERRACE:** PROVIDE VINYL WINDOWS IN LIEU OF FIBERGLASS WINDOWS.

ADD ALTERNATE 4:

- **KINGS TERRACE:** PROVIDE FOUR EXIT SIGNS AND POWER AS INDICATED (LIGHT FIXTURE 'X')

ADD ALTERNATE 5:

- **KINGS TERRACE:** REPLACE WINDOWS, LOUVERS AND SCREENS PER KEYNOTE 8.4 AND WINDOW SCHEDULE.

ADD ALTERNATE 6:

- **KINGS TERRACE:** CLEAN AND PAINT MANSARD METAL PANELS PER KEYNOTE 7.5.

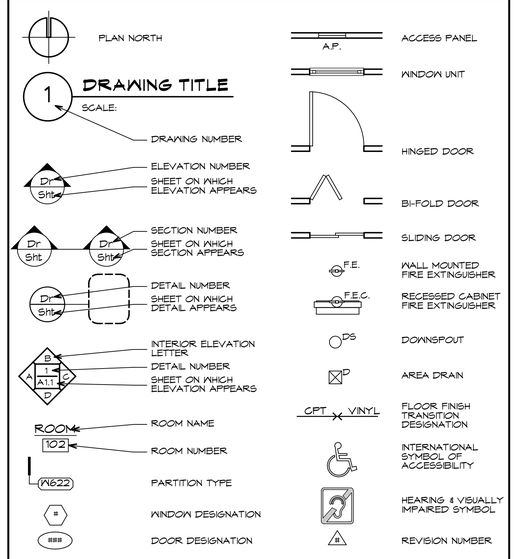
ADD ALTERNATE 7:

- **OXFORD TERRACE:** REPLACE DAMAGED FRONT PORCH COLUMNS AND SOFFIT PER KEYNOTES 6.1 AND 6.2.

ADD ALTERNATE 8:

- **OXFORD TERRACE:** REPLACE DECORATIVE WINDOW SHUTTERS PER KEYNOTE 10.2.

ARCHITECTURAL LEGEND



ABBREVIATION LIST

@	- AT
A/C	- AIR CONDITIONING
ABV.	- ABOVE
A.F.F.	- ABOVE FINISHED FLOOR
ALT.	- ALTERNATE
ADJ.	- ADJUSTABLE
ALUM.	- ALUMINUM
A.P.	- ACCESS PANEL
AUX	- AUXILIARY
BLDG	- BUILDING
BR	- BEDROOM
℄	- CENTERLINE
CAB	- CABINET
CFM	- CUBIC FEET PER MINUTE
C.J.	- CONTROL JOINT
CLG	- CEILING
C.M.U.	- CONCRETE MASONRY UNIT
C.O.	- CLEANOUT
COL.	- COLUMN
CONC.	- CONCRETE
CONT.	- CONTINUOUS
COORD	- COORDINATE
CPT	- CARPET
C.T.	- CERAMIC TILE
D	- DRYER
D.F.	- DRINKING FOUNTAIN
DIA	- DIAMETER
DH	- DOUBLE HUNG
DN	- DOWN
DNG	- DRAWING
DR	- DOOR
EA	- EACH
E.F.	- EXHAUST FAN
E.J.	- EXPANSION JOINT
ELEV	- ELEVATION
ELEC	- ELECTRICAL
EQ	- EQUAL
ETC.	- ET CETERA
EXIST	- EXISTING
EXP	- EXPOSED
EXT	- EXTINGUISHER, EXTERIOR
F	- FAN
FACP	- FIRE ALARM CONTROL PANEL
F.C.	- FOOT CANDLE
FNDN	- FOUNDATION
F.D.	- FLOOR DRAIN, FIRE DAMPER
F.F.	- FINISHED FLOOR
F.E.	- FIRE EXTINGUISHER
FIN	- FINISHED
FLEX.	- FLEXIBLE
FL.	- FLOOR
FTG	- FOOTING
GALV.	- GALVANIZED
G.D.	- GARBAGE DISPOSAL
GFCI	- GROUND FAULT CIRCUIT INTERRUPTER
GFI	- GROUND FAULT INTERRUPTER
GSF	- GROSS SQUARE FOOTAGE
GWB	- GYPSUM WALL BOARD
H	- HIGH
HB	- HOSE BIBB
HC	- HANDICAPPED
HD	- HEADER
HDW	- HARD WOOD
HORIZ	- HORIZONTAL
HR	- HOUR
HT	- HEIGHT
HWH	- HOT WATER HEATER
INC.	- INCLUDING
JAN.	- JANITOR
JB	- JUNCTION BOX
J.C.	- JANITOR CLOSET
JST	- JOIST
JT	- JOINT
LAV	- LAVATORY
LIN.	- LINOLEUM
MATL	- MATERIAL
MAX	- MAXIMUM
MED. CAB.	- MEDICINE CABINET
MFR	- MANUFACTURER
MECH	- MECHANICAL
MIN.	- MINIMUM
MISC.	- MISCELLANEOUS
M.O.	- MASONRY OPENING
MTD.	- MOUNTED
MTL.	- METAL
N.I.C.	- NOT IN CONTRACT
N.T.S.	- NOT TO SCALE
O.C.	- ON CENTER
O.H.	- OVERHANG
OPT.	- OPTIONAL
OSB	- ORIENTED STRAND BOARD
P	- PROPERTY LINE
PLAM.	- PLASTIC LAMINATE
PLWD	- PLYWOOD
P.M.	- POLE MOUNTED
P.T.	- PRESSURE TREATED
PTD	- PAINTED
QTY.	- QUANTITY
R	- RADIUS, RISER
R.A.	- RETURN AIR
R.C.P.	- REFLECTED CEILING PLAN
RD	- ROOF DRAIN
REF	- REFRIGERATOR
REINF	- REINFORCED
RM.	- ROOM
R.O.	- ROUGH OPENING
RWC	- RAINWATER COLLECTOR
SAN	- SANITARY
S.C.	- SEALED CONCRETE
S.F.	- SQUARE FEET
SH	- SINGLE HUNG
SPEC	- SPECIFICATIONS
STOR.	- STORAGE
SVC	- SERVICE
SYM	- SYMBOLS
TEMP	- TEMPERATURE, TEMPORARY
T.O.P.	- TOP OF PLATE
TYP.	- TYPICAL
U.N.O.	- UNLESS NOTED OTHERWISE
VERT	- VERTICAL
VCT	- VINYL COMPOSITION TILE
V.I.F.	- VERIFY IN FIELD
VTR	- VENT THROUGH ROOF
W	- WATER, WASHER
WC	- WATER CLOSET
WD	- WOOD
WH	- WATER HEATER
W.I.C.	- WALK IN CLOSET
W.M.	- WALL MOUNTED
W.P.	- WATER PROOF
W.W.F.	- WELDED WIRE FABRIC

DRAWING LIST

PROJECT TEAM

OWNER IN FEE
Housing Authority of the County of Chester
30 West Barnard St, Suite 2
West Chester, PA 19382
Tel: (610) 436-9200
Fax: (610) 436-9203
Verna Lindsay, Head of Public Housing

OWNER'S REPRESENTATIVE
Harrison Street Advisors
6041 Goshen Rd
Newtown Square, PA 19073
Tel: (610) 649-5400
Jackie Sweeney, President

ARCHITECT
Thriven Design
756 Haddon Ave.
Collingswood, NJ 08108
Tel: (856) 854-1880
FAX: (856) 854-3842
Eugene Schiavo, AIA, PP, LEED® AP

ADDRESSES OF PROPERTIES

KINGS TERRACE (PA46-04A)
300 HIGH STREET
PHOENIXVILLE, PA 19460

OXFORD TERRACE (PA46-08)
326 MARKET STREET
OXFORD, PA 19363

thriven design

756 Haddon Avenue
Collingswood, NJ 08108

P: 856.854.1880
thriven.design

Date:	03-03-2023
Job #:	22171
Drawn:	MJR
Mngr:	MDS

Rev. No.	Name	Date
1	SCOPE REVIEW	8/21

22171_Oxford_King_comp.pln

BID SET
GENERAL CONSTRUCTION- MULTIPLE SITES IN OXFORD AND PHOENIXVILLE
HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

CS001
COVER SHEET

GENERAL NOTES

GN 1 THE BUILDING CODES OUTLINED IN THE "PROJECT DATA" SECTION SHALL APPLY TO THE CONSTRUCTION OF THIS PROJECT. GENERAL CONTRACTOR SHALL VERIFY ALL CODE REQUIREMENTS BEFORE COMMENCEMENT OF CONSTRUCTION AND BRING ANY DISCREPANCIES BETWEEN CODE REQUIREMENTS AND THE CONSTRUCTION DOCUMENTS TO THE ATTENTION OF THE ARCHITECT. ALL TRADES, I.E. MECHANICAL, ELECTRICAL AND PLUMBING, SHALL PERFORM ALL WORK IN ACCORDANCE WITH ANY AND ALL APPLICABLE CODES CURRENTLY IN EFFECT AT THE TIME OF CONSTRUCTION.

GN 2 OSHA REGULATIONS SHALL APPLY WHERE REQUIRED DURING THE COURSE OF THE WORK AS IT APPLIES TO WORKMEN'S SAFETY. GENERAL CONTRACTOR SHALL DESIGNATE A "SAFETY DIRECTOR" WHO SHALL BE RESPONSIBLE FOR ALL OSHA SAFETY REQUIREMENTS.

GN 3 ALL WORK SHALL BE IN CONFORMANCE WITH ALL FEDERAL, STATE AND LOCAL CODE AND ACTS, MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY STANDARDS OF GOOD PRACTICE.

GN 4 THE GENERAL CONTRACTOR SHALL BRING ERRORS AND OMISSIONS WHICH MAY OCCUR IN CONTRACT DOCUMENTS TO THE ATTENTION OF THE ARCHITECT AND INSTRUCTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH AFFECTED WORK. THE GENERAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR THEIR REMEDIATION OF ANY ERRORS, DISCREPANCIES, OR OMISSIONS IN THE CONTRACT DOCUMENTS WHICH CAN READILY OR REASONABLY BE DETERMINED AND FOR WHICH THE CONTRACTOR FAILED TO NOTIFY THE OWNER BEFORE CONSTRUCTION AND/OR FABRICATION OF SUBJECT WORK.

GN 5 ENLARGED DRAWINGS/DETAILS SHALL TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS.

GN 6 DETAILS AND SECTIONS ON THE DRAWINGS ARE TAKEN AT SPECIFIC LOCATIONS AND ARE INTENDED TO SERVE AS TYPICAL CONSTRUCTION FOR ALL SIMILAR CONDITIONS. MODIFICATIONS SHALL BE MADE BY THE CONTRACTORS TO ACCOMMODATE MINOR VARIATIONS.

GN 7 DO NOT SCALE DRAWINGS. MATERIALS, FENESTRATIONS AND DISTANCES SHOWN SHALL BE SUPERSEDED BY WRITTEN TEXT AND DIMENSIONS.

GN 8 DIMENSIONS ARE TO STUD AND/OR FACE OF MASONRY, UNLESS NOTED OTHERWISE

GN 9 CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DIMENSIONS SHOWN ON DRAWINGS ARE BASED ON SURVEY DIMENSIONS, AND THEREFORE ARE APPROXIMATE IN NATURE.

GN 10 ALL MATERIALS SHALL BE AS SPECIFIED AND/OR DETAILED, AND INSTALLED IN A WORKMANLIKE MANNER, IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

GN 11 GENERAL CONTRACTOR TO INSURE STABILITY AND SAFETY OF STRUCTURE AT ALL TIMES DURING THE CONSTRUCTION PERIOD.

GN 12 GENERAL CONTRACTOR'S STORAGE OF MATERIALS WILL BE ALLOWED ON SITE AT DISCRETION OF OWNER.

GN 13 GENERAL CONTRACTOR SHALL INSURE THAT ALL ROOFS, DOORS AND WINDOWS ARE MADE WATERTIGHT AT THE END OF EACH DAYS WORK.

GN 14 GENERAL CONTRACTOR SHALL MAINTAIN THE PREMISES CLEAN AND FREE OF ALL TRASH, DEBRIS AND SHALL PROTECT ALL ADJACENT WORK FROM DAMAGE, SOILING, PAINT OVERSPRAY, ETC. ALL FIXTURES, EQUIPMENT, GLAZING, FLOORS, ETC., SHALL BE LEFT CLEAN AND READY FOR OCCUPANCY UPON COMPLETION OF THE PROJECT.

GN 15 GENERAL CONTRACTOR SHALL MAKE NO STRUCTURAL CHANGES WITHOUT WRITTEN APPROVAL OF THE ARCHITECT.

GN 16 NOT USED.

GN 17 GENERAL CONTRACTOR AND SUBCONTRACTORS TO PAY ALL PERMIT FEES.

GN 18 THE GENERAL CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS WITHIN THE CONTRACT LIMITS. DEVIATIONS FROM THE CONTRACT DOCUMENTS NECESSITATED BY FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF AND REVIEWED BY THE ARCHITECT.

GN 19 GENERAL CONTRACTOR SHALL UTILIZE WORKMEN PROFICIENT IN THE RESPECTIVE TRADES FOR WHICH THEY ARE USED. FOR EXAMPLE: ROOFERS, SHEET METAL WORKERS, PLUMBERS, ELECTRICIANS, CAULKERS, ETC. WORK DONE IN UNSKILLED MANNER WILL BE REJECTED. ROOFERS AND SIDING INSTALLERS ARE TO BE LICENSED TO PRACTICE IN COMMONWEALTH OF PENNSYLVANIA.

GN 20 GENERAL CONTRACTOR TO COORDINATE ALL DIMENSIONS ON PREFABRICATED ITEMS WITH MANUFACTURER'S INSTRUCTIONS.

GN 21 GENERAL CONTRACTOR IS EXPECTED TO PROVIDE AN ENTIRELY FINISHED PRODUCT UPON COMPLETION OF CONSTRUCTION WITHIN THE ESTABLISHED SCOPE OF WORK.

GN 22 GENERAL CONTRACTOR RESPONSIBLE FOR SUPPLYING ALL RELATED ITEMS REQUIRED FOR CONSTRUCTION, UNLESS OTHER ARRANGEMENTS ARE MADE WITH OWNER.

GN 23 ALL NUMERICAL QUANTITIES SHOWN ARE APPROXIMATE AND ARE GIVEN TO ASSIST THE GENERAL CONTRACTOR FOR ESTIMATING PURPOSES ONLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FINAL QUANTITIES.

GN 24 GENERAL CONTRACTOR RESPONSIBLE TO VISIT SITE(S) PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS.

GN 25 CONTRACTOR SHALL KEEP A FULL SET OF CONSTRUCTION DOCUMENTS ON SITE AT ALL TIMES. ADDITIONS AND DEVIATIONS FROM DRAWINGS SHALL BE NOTED, EXPLAINED AND DATED ON SAID FIELD SET. FIELD SET SHALL BE AVAILABLE TO ARCHITECT UPON REQUEST.

GN 26 THE OWNER WILL REMOVE ALL LOOSE FURNISHINGS IN THE AREA FOR RENOVATION WORK.

GN 27 WHERE NEW WORK CONNECTS TO, DISTURBS, IMPACTS OR ALTERS THE EXISTING AND/OR ADJACENT BUILDING IN ANY WAY, THE GENERAL CONTRACTOR SHALL FINISH EXISTING AS NECESSARY TO PROVIDE CONTINUOUS TRANSITION.

GN 28 GENERAL CONTRACTOR SHALL REPLACE AND REPAIR TO ORIGINAL STATE, ANY AND ALL EXISTING CONDITIONS WHICH ARE TO REMAIN, THAT WERE DAMAGED BY CONSTRUCTION (INCLUDING WALLS, FLOORS, CEILINGS, ETC.). THESE REPAIRS WILL BE AT NO COST TO THE OWNER.

GN 29 WHERE NEW WORK MEETS OR CONNECTS TO EXISTING STRUCTURES, THEN THE PROJECT SCOPE INCLUDES MODIFICATIONS TO EXISTING AS REQUIRED TO COMPLETE AND FINISH THE RENOVATION AS INDICATED.

GN 30 PROVIDE TEMPORARY DUST BARRIERS, BARRICADES, ETC., TO PROTECT PERSONNEL, LANDSCAPING AND ADJACENT BUILDINGS AS REQUIRED.

GN 31 REMOVAL OF UTILITIES SHOWN ON DEMOLITION DRAWINGS SHALL BE ACCOMPLISHED BY APPROPRIATE CONTRACTOR (I.E., FIXTURE REMOVAL, CAPPING, ETC.), TO BE PLUMBING CONTRACTOR AND ARE INDICATED HERE FOR PURPOSES OF SCOPE. SEE HEATING, PLUMBING AND ELECTRICAL DRAWINGS FOR REMOVAL WITHIN THE APPROPRIATE CONTRACT.

GN 32 ALL HEATING, ELECTRICAL EQUIPMENT CONDUIT, PIPING AND MISC. ITEMS TO BE REMOVED SHALL BE REMOVED TO ABOVE CEILING, BELOW FLOOR, OR BEHIND WALL, CAPPED AND MADE SAFE.

GN 33 ALL PATCHING AND REPAIRING SHALL BE DONE BY THE CONTRACTOR WITH MATERIALS THAT MATCH EXISTING ADJACENT MATERIALS (IN FINISH, TEXTURE AND MATERIAL).

GN 34 ON EXISTING WALLS NOTED TO REMAIN, EXISTING INTERIOR FINISHES ARE TO BE REMOVED OR REPLACED AS NECESSARY TO PROVIDE CONSISTENT APPEARANCE AND TO THE QUALITY OF NEW FINISHES.

GN 35 INSPECT FLOORS FOR HIGH AND LOW AREAS. CONTRACTOR TO PROPERLY PREPARE SUBSTRATE AS REQUIRED BY FINISH FLOORING MANUFACTURER TO RECEIVE ALL NEW FINISHES.

GN 36 GENERAL CONTRACTOR SHALL NOT CONSIDER NEW CONSTRUCTION AND DEMOLITION NOTES AND DETAILS TO BE ALL INCLUSIVE. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO INSPECT AND ASSESS EACH AREA AND TO FULFILL THE INTENT OF THE WORK INDICATED BY THE CONTRACT DOCUMENTS.

GENERAL NOTES (CONTINUED)

GN 37 GENERAL CONTRACTOR TO TAKE ALL NECESSARY PRECAUTIONS TO SHUT DOWN EXISTING UTILITIES (WATER, GAS AND ELECTRIC) TO AVOID DANGER TO EMPLOYEES AND STRUCTURE DURING DEMOLITION. VERIFY LOCATION OF EXISTING UTILITIES PRIOR TO DEMOLITION.

GN 38 GENERAL CONTRACTOR SHALL TAKE CARE IN DEMOLISHING BEARING WALLS AND OTHER STRUCTURAL ELEMENTS WITHOUT FIRST PROVIDING PROPER TEMPORARY SUPPORT. DO NOT REMOVE TEMPORARY SUPPORT UNTIL PERMANENT BEARING WALLS AND STRUCTURAL ELEMENTS ARE CONSTRUCTED AND SECURED.

GN 39 NOT APPLICABLE: GENERAL CONTRACTOR TO OBTAIN PROFESSIONALLY-CERTIFIED LEAD AND ASBESTOS ABATEMENT SUBCONTRACTORS. ALL HAZARDOUS MATERIAL MUST BE HANDLED WITH A MANIFEST SIGNED BY GENERAL CONTRACTOR, HAULER AND DISPOSAL HANDLER. ABATEMENT OF HAZARDOUS MATERIALS MUST BE PERFORMED AND VERIFIED IN ITS ENTIRETY PRIOR TO COMMENCEMENT OF ANY NEW WORK. GENERAL CONTRACTOR TO SUBMIT PLAN FOR SEQUENCING WORK AT PRE-CONSTRUCTION MEETING. SCOPE AND METHOD OF ANY ABATEMENT WORK SHALL BE COORDINATED WITH OWNER AND THE REQUIREMENTS OF HUD. GENERAL CONTRACTOR TO PERFORM TESTING OF LEAD AT END OF PROJECT AND PERFORM REQUIRED ABATEMENT AT NO CHARGE TO OWNER. OWNER SHALL PROVIDE TEST REPORTS AND CONSTRUCTION METHODOLOGY.

GN 40 THE WORK "PROVIDE" MEANS THE GENERAL CONTRACTOR TO BUY NEW, FURNISH AND INSTALL THE GIVEN PRODUCT OR SYSTEM.

GN 41 ALL BUILDINGS ARE OCCUPIED RESIDENTIAL BUILDINGS. GENERAL CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH OWNER.

GN 42 NOT APPLICABLE: PROVIDE ADEQUATE BLOCKING FOR ALL WALL MOUNTED ACCESSORIES AND CABINETS IN NEW WORK, INCLUDING FOR GRAB BARS IN ALL TOILET ROOMS / BATHROOMS.

GN 43 DIMENSIONS INDICATED ON INTERIOR ELEVATIONS ARE FINISH DIMENSIONS.

GN 44 ANNULAR SPACE PROTECTION: ANNULAR SPACE BETWEEN PENETRATING ITEM AND FIRE RATED ASSEMBLY PENETRATED SHALL BE FILLED THE FULL THICKNESS OF WALL WITH AN APPROVED MATERIAL / SYSTEM MAINTAINING THE INTEGRITY OF THE FIRE RATED ASSEMBLY.

thriven design

756 Haddon Avenue
Collingswood, NJ 08108

P: 856.854.1880
thriven.design

Date:	03-03-2023
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Drawn:	MJR
Mngr:	MDS

Rev. No.	Name	Date
1	SCOPE REVIEW	8/21

22171_Oxford_King_comp.pln

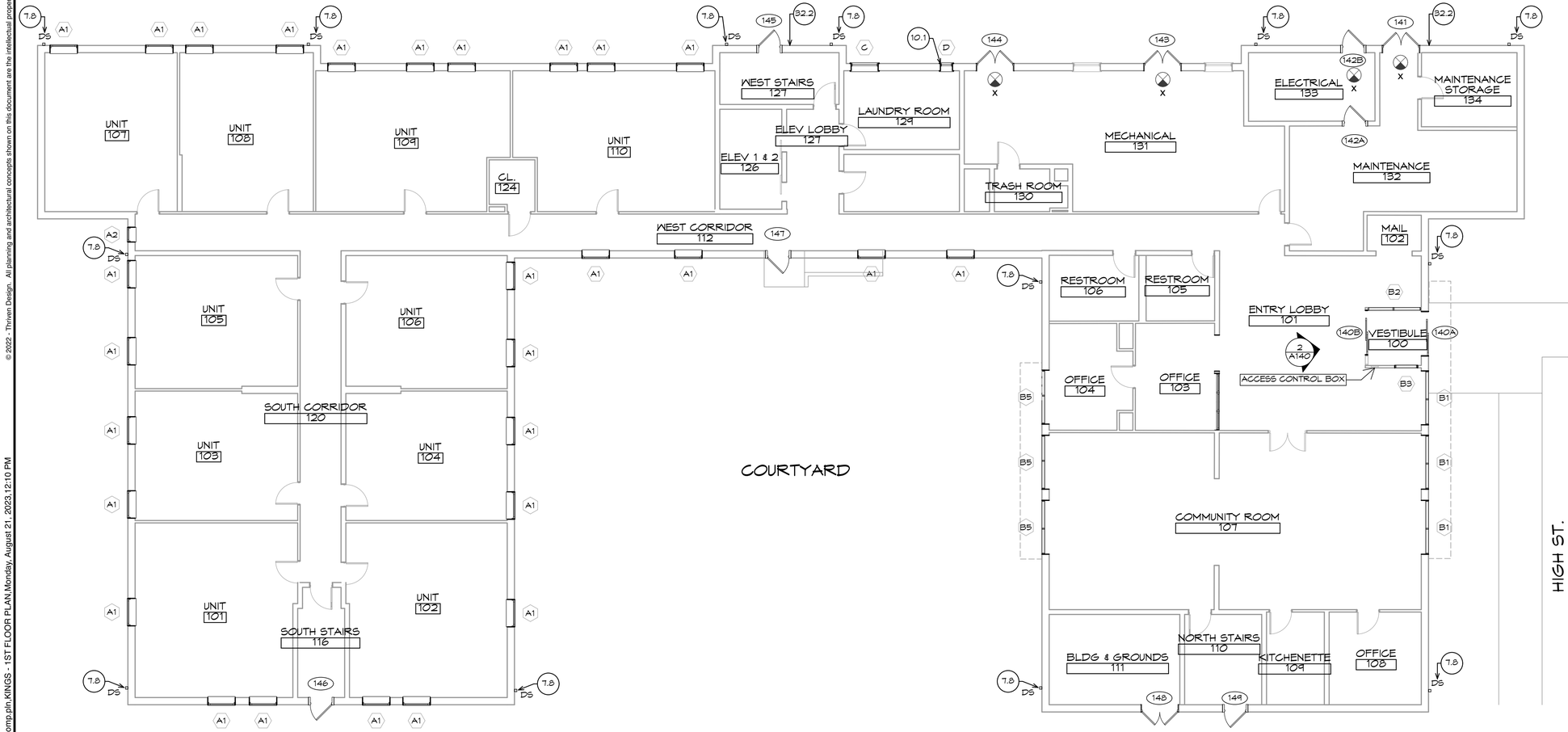
BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

CS002

GENERAL NOTES



1 KINGS TERRACE TOWER - 1ST FLOOR

SCALE: 1/8" = 1'-0"

2 ENTRY VESTIBULE

NOT TO SCALE

CONSTRUCTION KEYNOTES 1

NOTE: ALL KEYNOTES DO NOT APPLY TO THIS DRAWING.

2.1 NOT USED.

3.1 NOT USED.

4.1 EXISTING MASONRY VENEER TO REMAIN.

5.1 EXISTING ROOF ACCESS LADDER TO REMAIN.

6.1 REPLACE DAMAGED WOOD COLUMNS IN KIND. PREP AND PAINT ALL COLUMNS.
6.2 REPLACE WOOD SOFFIT IN KIND AND PAINT.
6.3 REFRAME ROOF RAFTERS AND CEILING JOISTS AS REQUIRED FOR NEW ROOF HATCH.
6.4 REPLACE ATTIC HATCH, INSULATE AND AIR SEAL. SEE DETAIL.

7.1 PROVIDE BLOWN-IN INSULATION TO ACHIEVE R-38 AT OXFORD TERRACE AND R-49 AT KINGS TERRACE IN ALL ATTIC SPACES FROM R-30. PROVIDE INSULATION DEPTH GAUGES SECURED TO EVERY 4TH TRUSS VISIBLE FROM POINT OF ENTRY. PROVIDE EAVE DAMS.
7.2 REPLACE LOW-SLOPE MEMBRANE ROOFING SYSTEM IN ITS ENTIRETY. INCLUDE 10% SHEATHING REPLACEMENT ALLOWANCE.
7.3 PROVIDE CRICKET/TAPERED INSULATION TO ENSURE POSITIVE WATER DRAINAGE. SEE DETAIL.
7.4 PROVIDE FLEXIBLE WALKWAY PADS COMPATIBLE WITH ROOF SYSTEM.
7.5 EXISTING METAL MANSARD PANELS TO REMAIN. CLEAN AND RECOAT.
7.6 REPLACE STEEP SLOPE ASPHALT ROOFING SYSTEM IN ITS ENTIRETY. INCLUDE 10% SHEATHING REPLACEMENT ALLOWANCE.
7.7 REPLACE DOWNSPOUT IN KIND AND CONNECT TO 3' VERT EXTENDED PVC BOOT. SEE DETAIL.
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7.9 EXISTING DOWNSPOUTS AND BOOTS TO REMAIN.
7.10 REPLACE GUTTERS IN KIND.
7.11 EXISTING ROOF HATCH.
7.12 NOT USED.
7.13 REMOVE EXISTING METAL COPING. PROVIDE CONCEALED FASTENER METAL COPING. COLOR: TBD

8.1 REPLACE DOOR SYSTEM WITH ENERGY CODE COMPLIANT DOORS AND HARDWARE AND TRIM. SEE SCHEDULE AND DETAILS.
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9.1 REPAIR SILL, JAMB AND HEAD AS REQUIRED BY WINDOW INSTALLATION.

10.1 REPLACE LOUVER IN KIND.
10.2 REPLACE ALL SHUTTERS, ALL WINDOWS. SIZE TO MATCH MASONRY OPENING HEIGHT. COLOR TO MATCH EXISTING.

22.1 NOT USED.

23.1 EXISTING MECHANICAL PENETRATION AND EQUIPMENT TO REMAIN. TYP.

26.1 NOT USED

32.1 REMOVE EXIST CONCRETE. PROVIDE 4000PSI CONCRETE LANDING AND 5% MAX RAMP WITH WWF OVER COMPACTED DRAINAGE BASE TO ADJACENT DRIVEWAY. 2% MAX CROSS SLOPE. PROVIDE ½" PREMOLDED EXPANSION JOINT AGAINST EXIST BLDG AND CHANGES IN SLOPE.
32.2 MILL ASPHALT PAVEMENT AT DOOR SWING TO ALLOW FOR FREE-SWINGING OF DOOR.
32.3 EXISTING RETAINING WALL.

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Date:	03-03-2023
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Mngr:	MDS

Rev. No.	Name	Date
1	SCOPE REVIEW	8/21

22171_Oxford_King_comp.pln

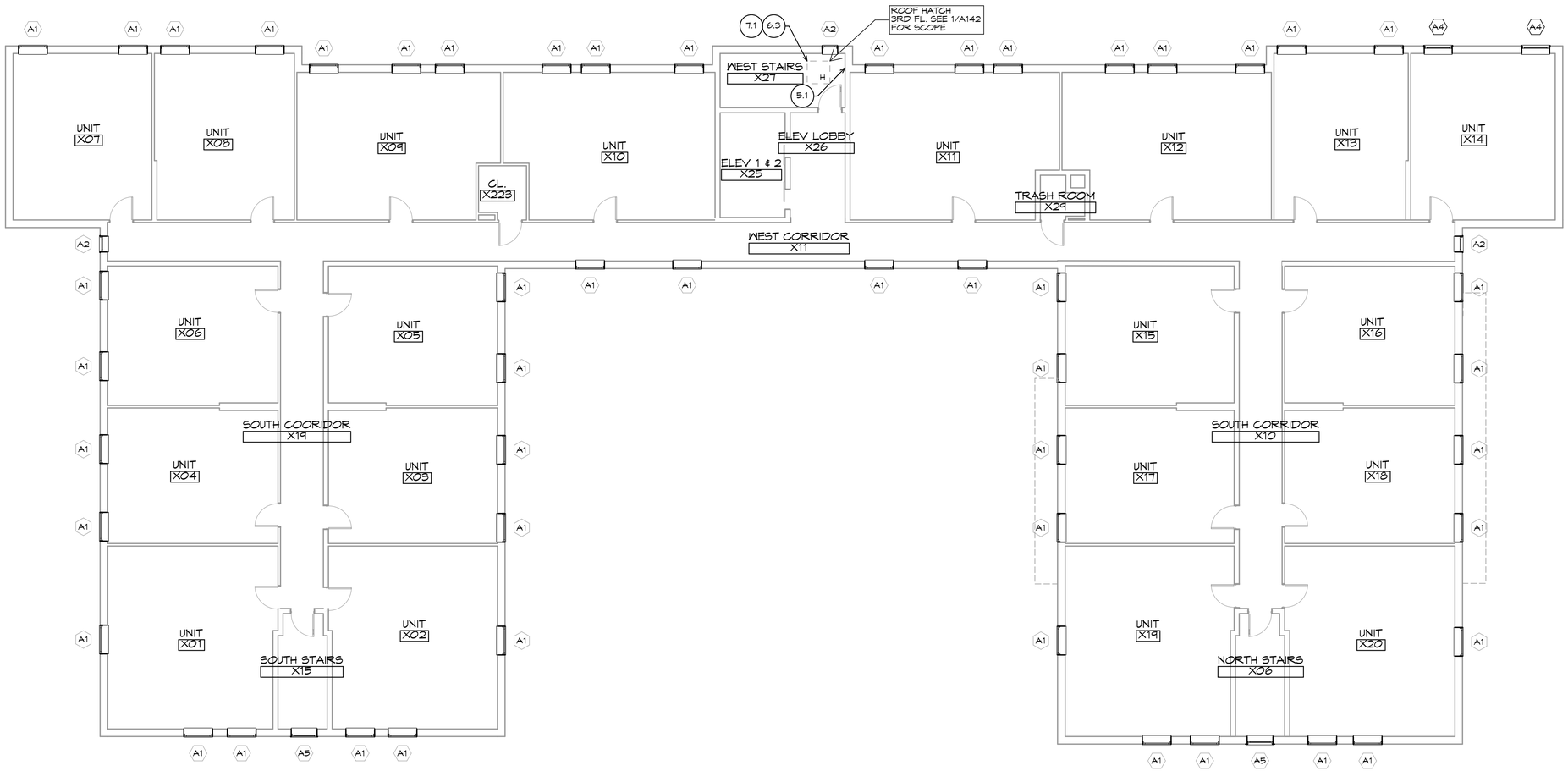
BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES
IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

A140

KINGS - 1ST FLOOR PLAN



N 1 KINGS TERRACE - TYPICAL FLOOR 2-3

SCALE: 1/8" = 1'-0"

CONSTRUCTION KEYNOTES 1

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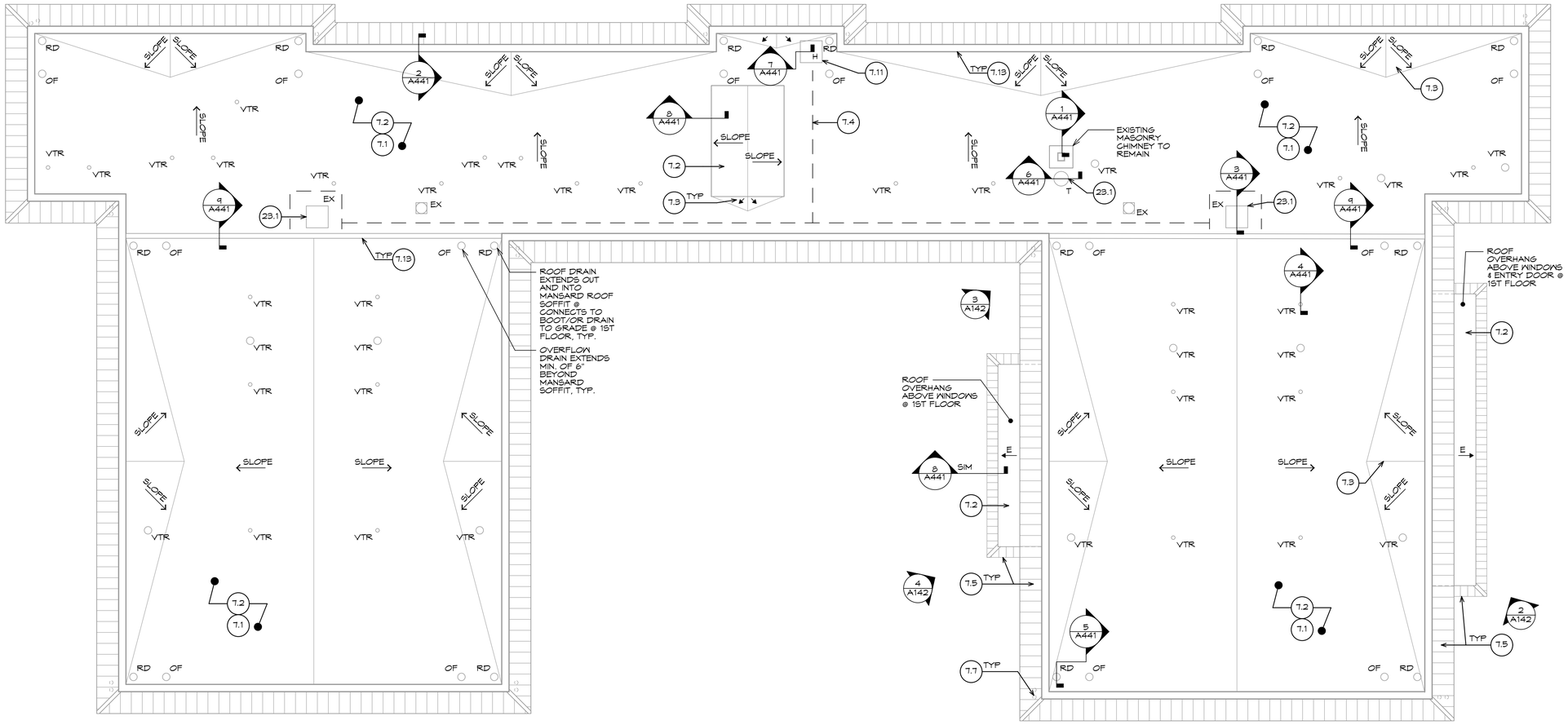
BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES
IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

A141

KINGS - TYPICAL FLOOR PLAN



N

1 KINGS TERRACE - ROOF PLAN

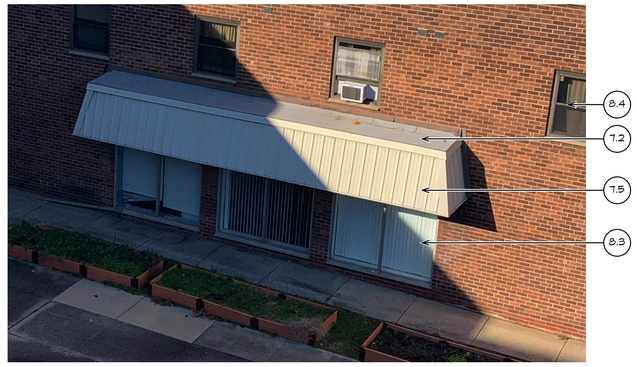
SCALE: 1/8" = 1'-0"

2 MAIN ENTRY ROOF SYSTEM

NOT TO SCALE

3 TYPICAL MANSARD ROOF CONDITION

NOT TO SCALE



4 ROOF SYSTEM @ COMMUNITY ROOM

NOT TO SCALE

1 A143

CONSTRUCTION KEYNOTES 1

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BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

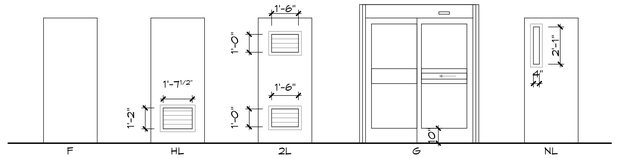
A142

KINGS - ROOF FLOOR PLAN

DOOR AND FRAME SCHEDULE (KINGS TERRACE)

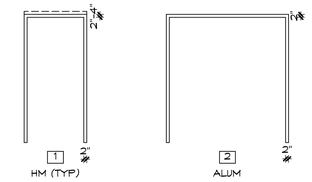
ID	LOCATION	SIZE			TYP	MAT'L	FIN'H	FRAME			DETAIL		RATING	HDWE	NOTES
		W	HT	THK				TYP	MAT'L	FIN'H	H	J			
140A	VESTIBULE	6'-0"	6'-8"	1 3/4"	ALUM	IS	MFR	2	ALUM	MFR	-	-	---	17	
140B	VESTIBULE	6'-0"	6'-8"	1 3/4"	ALUM	IS	MFR	2	ALUM	MFR	-	-	---	17	
141	MAINTENACE	5'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H	J1	---	15	
142A	ELECTRICAL	3'-0"	6'-8"	1 3/4"	HL	IS	PTD	1A	HM	PTD	H1	J1	90 MIN	27	
142B	ELECTRICAL	3'-0"	7'-0"	1 3/4"	HL	IS	PTD	1A	HM	PTD	H1	J1	---	26	
143	MECHANICAL	5'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	14	
144	MECHANICAL	5'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	11	
145	STAIR	3'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	5	
146	STAIR	3'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	5	
147	COURTYARD	3'-0"	7'-0"	1 3/4"	NL	IS	PTD	1A	HM	PTD	H1	J1	---	24	
148	B & G	5'-0"	7'-0"	1 3/4"	2L	IS	PTD	1A	HM	PTD	H1	J1	---	16	
149	STAIR	3'-0"	7'-0"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	5	

DOOR TYPES



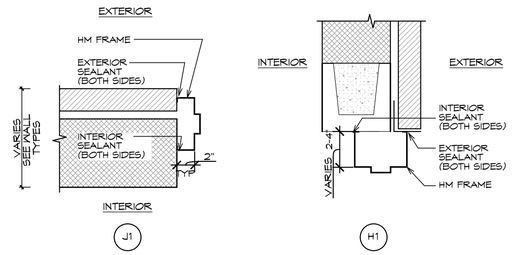
1. ALL DOOR GLAZING SHALL BE TEMPERED DOUBLE GLAZED.
2. ALL LOUVERS SHALL BE SIGHT PROOF AND DRAINABLE.
3. INTERNAL VESTIBULE GLAZING SHALL BE SINGLE GLAZED.

FRAME TYPES



FRAME TYPE 1: HM 2" HEAD
FRAME TYPE 1A: HM 4" HEAD

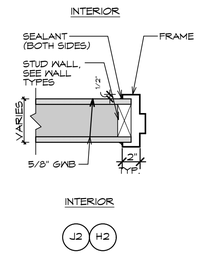
MASONRY DOOR JAMB/HEAD DETAILS



TYPICAL EXTERIOR @ MASONRY JAMB

TYPICAL EXTERIOR @ MASONRY HEADER

METAL STUD DOOR JAMB/HEAD DETAIL

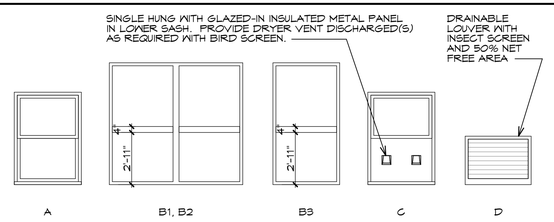


TYPICAL INTERIOR JAMB/HEAD

WINDOW SCHEDULE

ID	SIZE		TEMPERED	FIRE	WDW MAT	OPERATION	HEAD	JAMB	SILL	NOTES
	WIDTH	HEIGHT								
A1	3'-9"	5'-2"	NO	-	FIBERGL	SH	FH1	LJ1/UJ1	S1	SEE 1/A144
A2	2'-0"	5'-2"	NO	-	FIBERGL	SH	FH1	LJ1/UJ1	S1	SEE 1/A144
A3	3'-9"	4'-6"	NO	-	FIBERGL	SH	FH1	LJ1/UJ1	S1	SEE 1/A144
A4	3'-7 3/4"	4'-4"	NO	-	FIBERGL	SH	FH1	LJ1/UJ1	S1	SEE 1/A144
A5	3'-4 1/2"	4'-4"	NO	-	FIBERGL	SH	FH1	LJ1/UJ1	S1	SEE 1/A144
B1	7'-5"	8'-3"	YES	-	ALUM	F	FH2	LJ2/UJ2	S2	SEE 2/A144
B2	7'-5 1/2"	6'-9 3/4"	YES	-	ALUM	F	FH2	LJ2/UJ2	S2	SEE 2/A144
B3	2'-11 1/4"	8'-2"	YES	-	ALUM	F	FH2	LJ2/UJ2	S2	SEE 2/A144
B5	7'-5"	6'-8"	YES	-	ALUM	F	FH2	LJ2/UJ2	S2	SEE 2/A144
C	3'-8 1/4"	2'-8 1/2"	NO	-	ALUM	L	FH1	LJ1/UJ1	S1	SEE 1/A144
D	1-7 1/2"	1'-11"	-	-	FIBERGL	SH	-	-	-	-

WINDOW TYPES



1. FIRST FLOOR OPERABLE WINDOWS TO RECEIVE SECURITY SCREEN.
2. REPLACE ROOM DARKENING MINI BLINDS ALL APARTMENT WINDOWS.
3. REPLACE VERTICAL BLINDS (OFFICE, LOBBY, AND COMMUNITY ROOM).

LEGEND

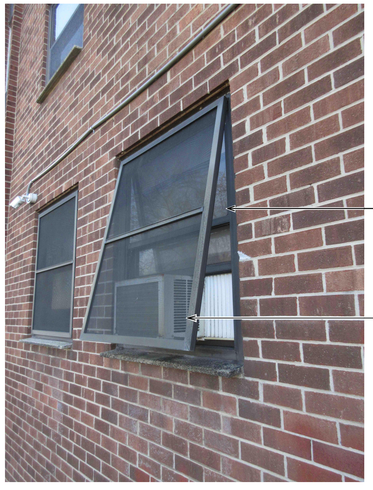
ALUM - ALUMINUM
MFR - MANUFACTURER
IS - INSULATED STEEL
HM - HOLLOW METAL
PTD - PAINTED
SH - SINGLE HUNG
F - FLUSH
L - LOUVERED

LIGHTING SCHEDULE

X EXIT SIGN BASIS OF DESIGN: COMPASS CER, 1.5W LED, 120V, SINGLE FACE, WHITE THERMOPLASTIC HOUSING, SEALED NI-CAD BATTERY, RED LETTERS. WALL MOUNT 6" ABOVE DOOR HEAD. CONNECT TO LIGHTING CIRCUIT.

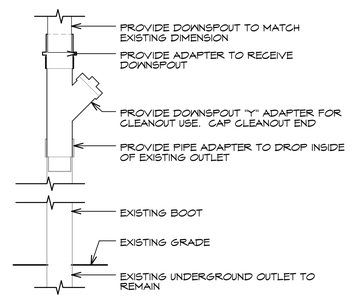
EXISTING PHOTOS

1 NE VIEW OF BUILDING
NOT TO SCALE



2 WINDOW SCREEN & A/C UNIT
NOT TO SCALE

DETAILS



3 DOWNSPOUT MODIFICATION
NOT TO SCALE

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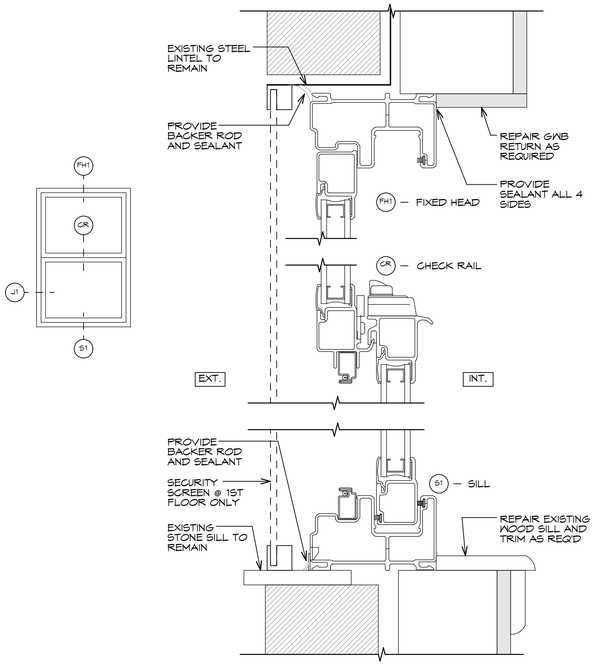
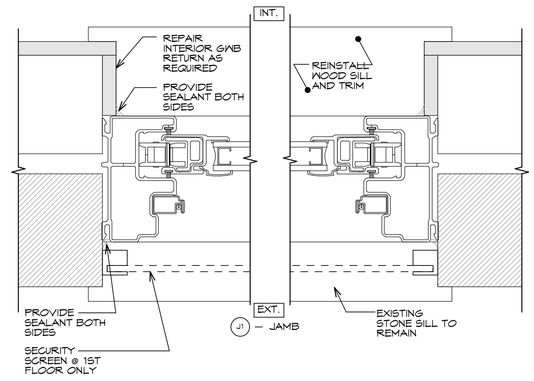
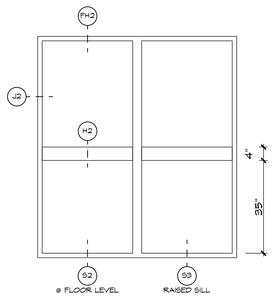
EXISTING PHOTOS & SCHEDULES

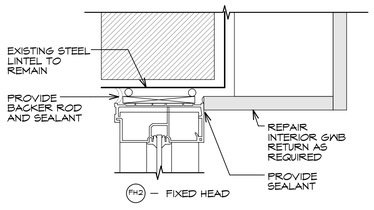


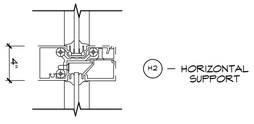


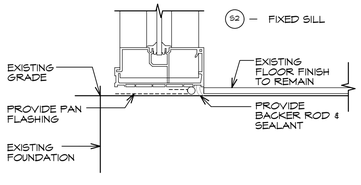
1 WINDOW INSTALL DETAIL - SINGLE HUNG

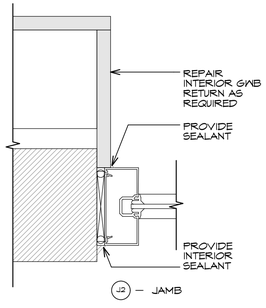
NOT TO SCALE

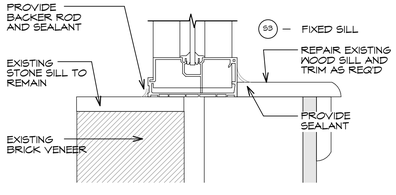












2 WINDOW INSTALL DETAIL - ENTRY

NOT TO SCALE

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1	SCOPE REVIEW	8/21

22171_Oxford_King_comp.pln

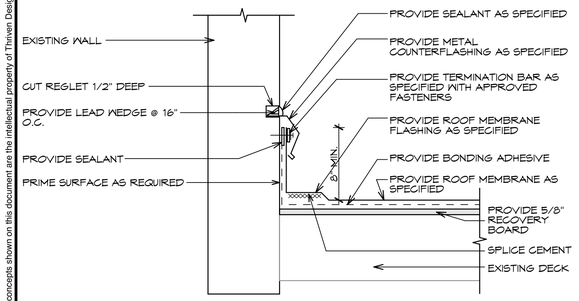
BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES
IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

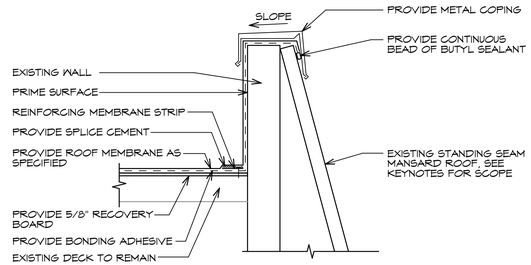
A144

KINGS - WINDOW INSTALL DETAILS



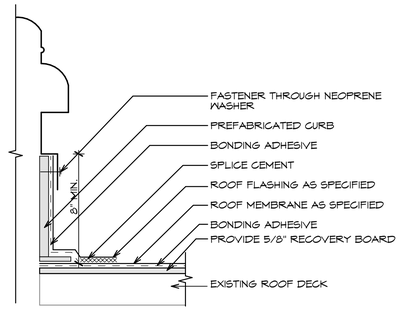
1 WALL FLASHING AT BRICK

SCALE: 1 1/2"= 1'-0"



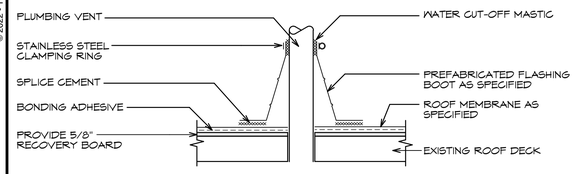
2 PARAPET WALL @ METAL COPING

SCALE: 3/4" = 1'-0"



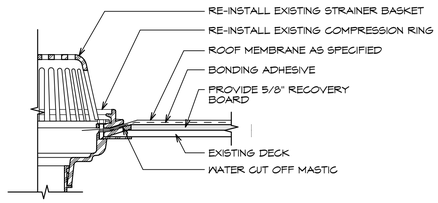
3 EXHAUST FAN DETAIL

SCALE: 1 1/2"= 1'-0"



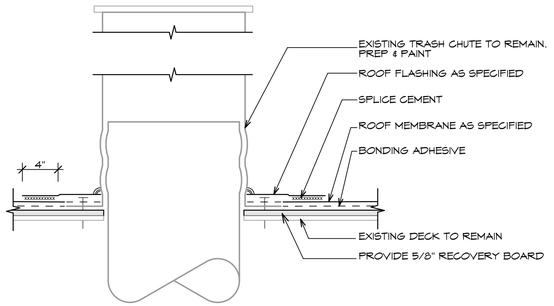
4 PLUMBING VENT FLASHING DETAIL

SCALE: 1" = 1'-0"



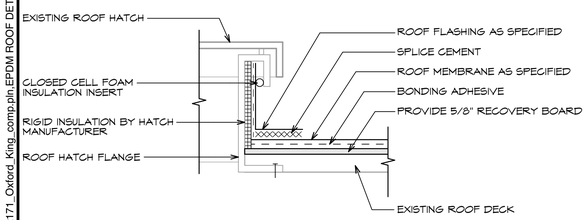
5 ROOF DRAIN DETAIL

SCALE: 1 1/2"= 1'-0"



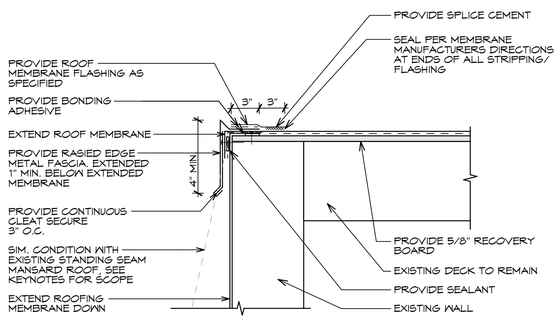
6 TRASH CHUTE DETAIL

SCALE: 1 1/2"= 1'-0"



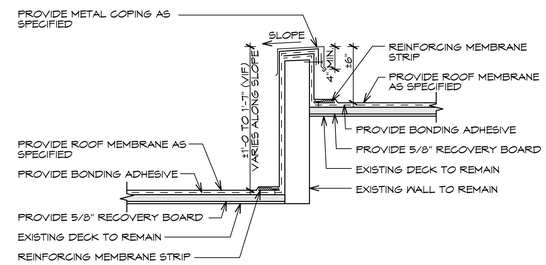
7 ROOF HATCH DETAIL

SCALE: 1 1/2"= 1'-0"



8 ROOF EDGE FLASHING DETAIL

SCALE: 1 1/2"= 1'-0"



9 INTERNAL PARAPET DETAIL

SCALE: 3/4" = 1'-0"

ROOF GENERAL NOTES

1. REFER TO PROJECT GENERAL NOTES PRINTED ON ANOTHER SHEET.
2. PROJECT SCOPE IS TO REMOVE EXISTING ROOF SYSTEM TO DECK, REPLACE DAMAGED SHEATHING OR RE-SECURE AS REQUIRED, AND PROVIDE ROOF SYSTEM WITH ALL REQUIRED ACCESSORIES.
3. ALL AREAS WHERE REMOVALS HAVE BEEN MADE SHALL BE WATERTIGHT IN THE SAME DAY.
4. CONTRACTOR SHALL UTILIZE WORKMEN PROFICIENT IN THE RESPECTIVE TRADES FOR WHICH THEY ARE USED: FOR EXAMPLE: ROOFERS, SHEET METAL WORKERS, CAULKERS AND SHALL BE APPROVED BY ROOFING MANUFACTURER IT INSTALL THE ROOFING SYSTEM AND ATTAIN ALL MANUFACTURER WARRANTIES.
5. CONTRACTOR SHALL CLEAN RAINWATER CONDUCTORS TO FIRST HORIZONTAL BREAK FROM BOOT UPON COMPLETION OF WORK. DRAINS SHALL BE KEPT CLEAN, FLOWING, AND WATERTIGHT DURING ALL STAGES OF WORK.
6. CONTRACTOR SHALL COORDINATE ALL AREAS OF WORK WITH OWNER AND PROVIDE A PROPOSED WORK SCHEDULE PRIOR TO WORK COMMENCING SO MANAGEMENT CAN COORDINATE WITH RESIDENCES.
7. ALL DETAILS ARE MEANT TO SHOW MINIMUM REQUIREMENTS. ANY REQUIREMENTS OF THE MANUFACTURER, WHICH EXCEEDS THAT INDICATED, SHALL ALSO BE SATISFIED.
8. ALL ACCESS AND EGRESS ROUTES TO AND FROM THE BUILDING SHALL BE MAINTAINED AND PROTECTED TO THE GENERAL PUBLIC THROUGHOUT THE DURATION OF THE CONTRACT. PROVIDE SAFETY BUFFER AROUND WORK AREAS AT ALL TIMES TO PROTECT GENERAL PUBLIC.
9. ALL VERTICAL SURFACES WHICH ARE TO RECEIVE NEW FLASHING SHALL BE PREPARED IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS WITHOUT ADDITIONAL COST TO THE CONTRACT.
10. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND CONFIRM LENGTH OF FASTENERS REQUIRED.
11. CLEAN ALL DEBRIS FROM ALL ROOF AREAS AND GRADE EACH DAY.
12. ALL DIMENSIONS INDICATED IN CONTRACT DOCUMENTS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY.
13. ALTHOUGH DETAIL REFERENCES MAY BE SHOWN IN ONLY ONE PLACE ON ROOF PLAN DRAWINGS, EACH SHALL BE CONSIDERED TYPICAL AND APPLICABLE TO ALL LOCATIONS AND CONDITIONS SIMILAR TO THOSE WHERE THE DETAIL IS INDICATED FOR THAT ROOF AREA.
14. REPLACE AND REPAIR TO ORIGINAL STATE, ANY AND ALL EXISTING CONDITIONS WHICH ARE TO REMAIN THAT WERE DAMAGED BY CONSTRUCTION (INCLUDING WALK, CURBS, WALLS, FLOORS, CEILINGS, ROOF STRUCTURE, ETC.).
15. THE CONTRACTOR SHALL MAKE NO STRUCTURAL CHANGES WITHOUT WRITTEN APPROVAL OF THE OWNER & ARCHITECT.
16. NO HAZARDOUS MATERIALS, SOLVENTS AND FUELS, ARE TO BE STORED ON THE ROOF (OVERNIGHT IS NOT ACCEPTABLE) INCLUDING EQUIPMENT OPERATED BY COMBUSTIBLE FUELS. ALL HAZARDOUS MATERIALS SHALL BE STORED IN LOCATIONS DIRECTED BY THE OWNER. THE STORAGE AREA WILL BE WITHIN A REASONABLE DISTANCE FROM THE MAIN ROOF AREA.
17. STAGING AREA SHALL BE COORDINATED WITH THE OWNER.
18. THE CONTRACTOR SHALL PROVIDE A FIRE WATCH WHEN OPERATIONS ARE CONDUCTED WHICH INVOLVE OPEN FLAME WORK. A MINIMUM OF TWO (2) FIRE EXTINGUISHERS SHALL BE ON THE ROOF AT ALL TIMES.
19. NO STORAGE (OTHER THAN FOR FLAMMABLE LIQUIDS) WILL BE PROVIDED BY THE OWNER EITHER ON THE GROUND OR IN THE BUILDING. ALL STORAGE WILL BE ON THE ROOF, WITHIN STRUCTURAL LIMITATIONS.
20. PROVIDE CRICKETS AT HIGH SIDE OF ALL SQUARE AND RECTANGULAR PENETRATIONS. PROVIDE ADDITIONAL BLOCKERS UNDER CURBS, WHERE REQUIRED, IN ORDER TO MAINTAIN 8" FLASHING HEIGHT
21. ALL OPEN ENDS OF FLASHING SHALL HAVE VERTICAL TERMINATION BARS.
22. ALL INFILL MATERIALS SHALL MATCH EXISTING ROOFING SYSTEM UNLESS STATED OTHERWISE.
23. CONTRACTOR RESPONSIBLE TO MEET ALL MANUFACTURER REQUIRED INSTALLATION TEMPERATURES FOR ROOF MEMBRANE, ADHESIVES, SEALANTS, ETC.
24. ALL ROOF DRAINS, EXHAUST AND PLUMBING VENTS ARE TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION.

thriven design

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Mngr:	MDS

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22171_Oxford_King_comp.pln

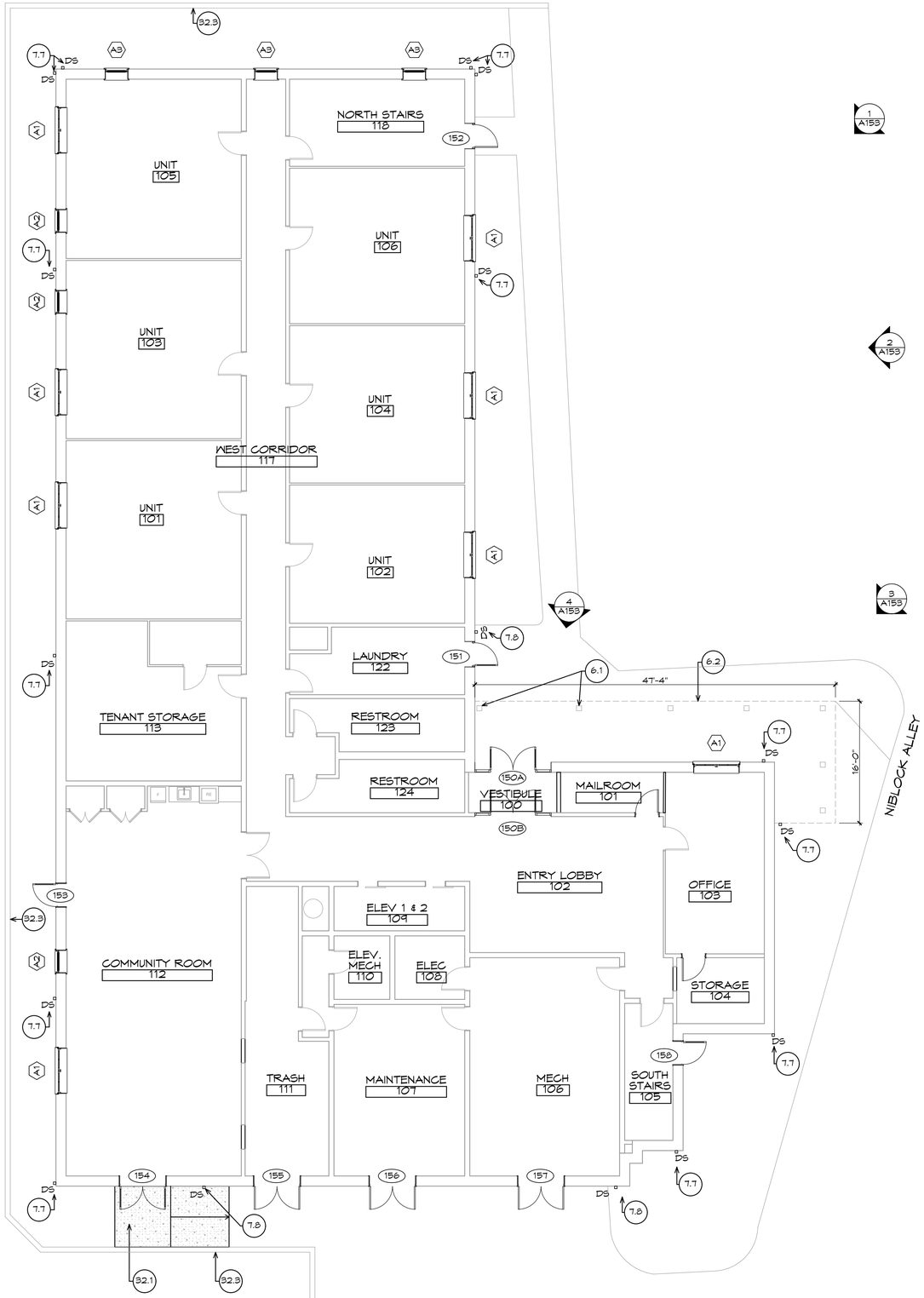
BID SET

GENERAL CONSTRUCTION- MULTIPLE SITES
IN OXFORD AND PHOENIXVILLE

HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

A441

EPDM ROOF DETAILS



N

1 OXFORD TERRACE - FIRST FLOOR PLAN

SCALE: 1/8" = 1'-0"

CONSTRUCTION KEYNOTES 1

NOTE: ALL KEYNOTES DO NOT APPLY TO THIS DRAWING.

2.1 NOT USED.

3.1 NOT USED.

4.1 EXISTING MASONRY VENEER TO REMAIN.

5.1 EXISTING ROOF ACCESS LADDER TO REMAIN.

6.1 REPLACE DAMAGED WOOD COLUMNS IN KIND. PREP AND PAINT ALL COLUMNS.
6.2 REPLACE WOOD SOFFIT IN KIND AND PAINT.
6.3 REFRAME ROOF RAFTERS AND CEILING JOISTS AS REQUIRED FOR NEW ROOF HATCH.
6.4 REPLACE ATTIC HATCH, INSULATE AND AIR SEAL. SEE DETAIL.

7.1 PROVIDE BLOWN-IN INSULATION TO ACHIEVE R-38 AT OXFORD TERRACE AND R-49 AT KINGS TERRACE IN ALL ATTIC SPACES FROM R-30. PROVIDE INSULATION DEPTH GAUGES SECURED TO EVERY 4TH TRUSS VISIBLE FROM POINT OF ENTRY. PROVIDE EAVE DAMS.
7.2 REPLACE LOW-SLOPE MEMBRANE ROOFING SYSTEM IN ITS ENTIRETY. INCLUDE 10% SHEATHING REPLACEMENT ALLOWANCE.
7.3 PROVIDE CRICKET/TAPERED INSULATION TO ENSURE POSITIVE WATER DRAINAGE. SEE DETAIL.
7.4 PROVIDE FLEXIBLE WALKWAY PADS COMPATIBLE WITH ROOF SYSTEM.
7.5 EXISTING METAL MANSARD PANELS TO REMAIN. CLEAN AND RECOAT.
7.6 REPLACE STEEP SLOPE ASPHALT ROOFING SYSTEM IN ITS ENTIRETY. INCLUDE 10% SHEATHING REPLACEMENT ALLOWANCE.
7.7 REPLACE DOWNSPOUT IN KIND AND CONNECT TO 3' VERT EXTENDED PVC BOOT. SEE DETAIL.
7.8 REPLACE DOWNSPOUT IN KIND WITH ADDED CLEAN-OUT TEE AND CONNECT TO EXISTING BOOT.
7.9 EXISTING DOWNSPOUTS AND BOOTS TO REMAIN.
7.10 REPLACE GUTTERS IN KIND.
7.11 EXISTING ROOF HATCH.
7.12 NOT USED.
7.13 REMOVE EXISTING METAL COPING. PROVIDE CONCEALED FASTENER METAL COPING. COLOR: TBD

8.1 REPLACE DOOR SYSTEM WITH ENERGY CODE COMPLIANT DOORS AND HARDWARE AND TRIM. SEE SCHEDULE AND DETAILS.
8.2 REPLACE STOREFRONT DOOR SYSTEM. SEE SCHEDULE AND DETAILS.
8.3 REPLACE STOREFRONT SYSTEM. REPLACE BLINDS. SEE SCHEDULE AND DETAILS
8.4 REPLACE EXISTING WINDOWS. REPAIR INTERIOR TRIM AS REQUIRED. SEE SCHEDULE AND DETAILS. WINDOW TREATMENTS BY OWNER.

9.1 REPAIR SILL, JAMB AND HEAD AS REQUIRED BY WINDOW INSTALLATION.

10.1 REPLACE LOUVER IN KIND.
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22.1 NOT USED.

23.1 EXISTING MECHANICAL PENETRATION AND EQUIPMENT TO REMAIN. TYP.

26.1 NOT USED

32.1 REMOVE EXIST CONCRETE. PROVIDE 4000PSI CONCRETE LANDING AND 5% MAX RAMP WITH WWF OVER COMPACTED DRAINAGE BASE TO ADJACENT DRIVEWAY. 2% MAX CROSS SLOPE. PROVIDE ½" PREMOLDED EXPANSION JOINT AGAINST EXIST BLDG AND CHANGES IN SLOPE.
32.2 MILL ASPHALT PAVEMENT AT DOOR SWING TO ALLOW FOR FREE-SWINGING OF DOOR.
32.3 EXISTING RETAINING WALL.

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GENERAL CONSTRUCTION- MULTIPLE SITES
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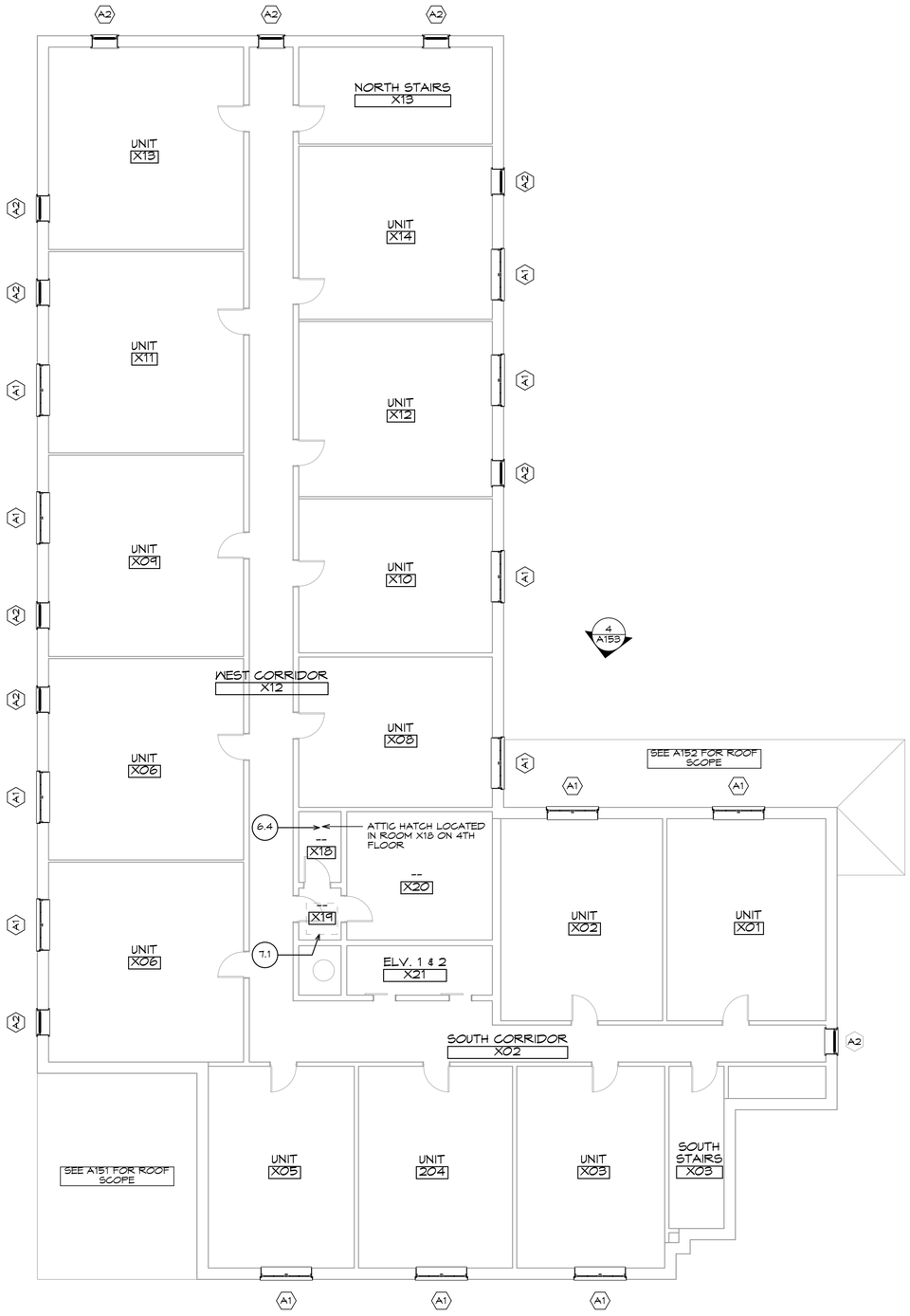
HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

A150

OXFORD - FIRST FLOOR PLAN



N

1 OXFORD TERRACE - TYPICAL FLOOR (2-4)

SCALE: 1/8" = 1'-0"

CONSTRUCTION KEYNOTES 1

NOTE: ALL KEYNOTES DO NOT APPLY TO THIS DRAWING.

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7.11 EXISTING ROOF HATCH.
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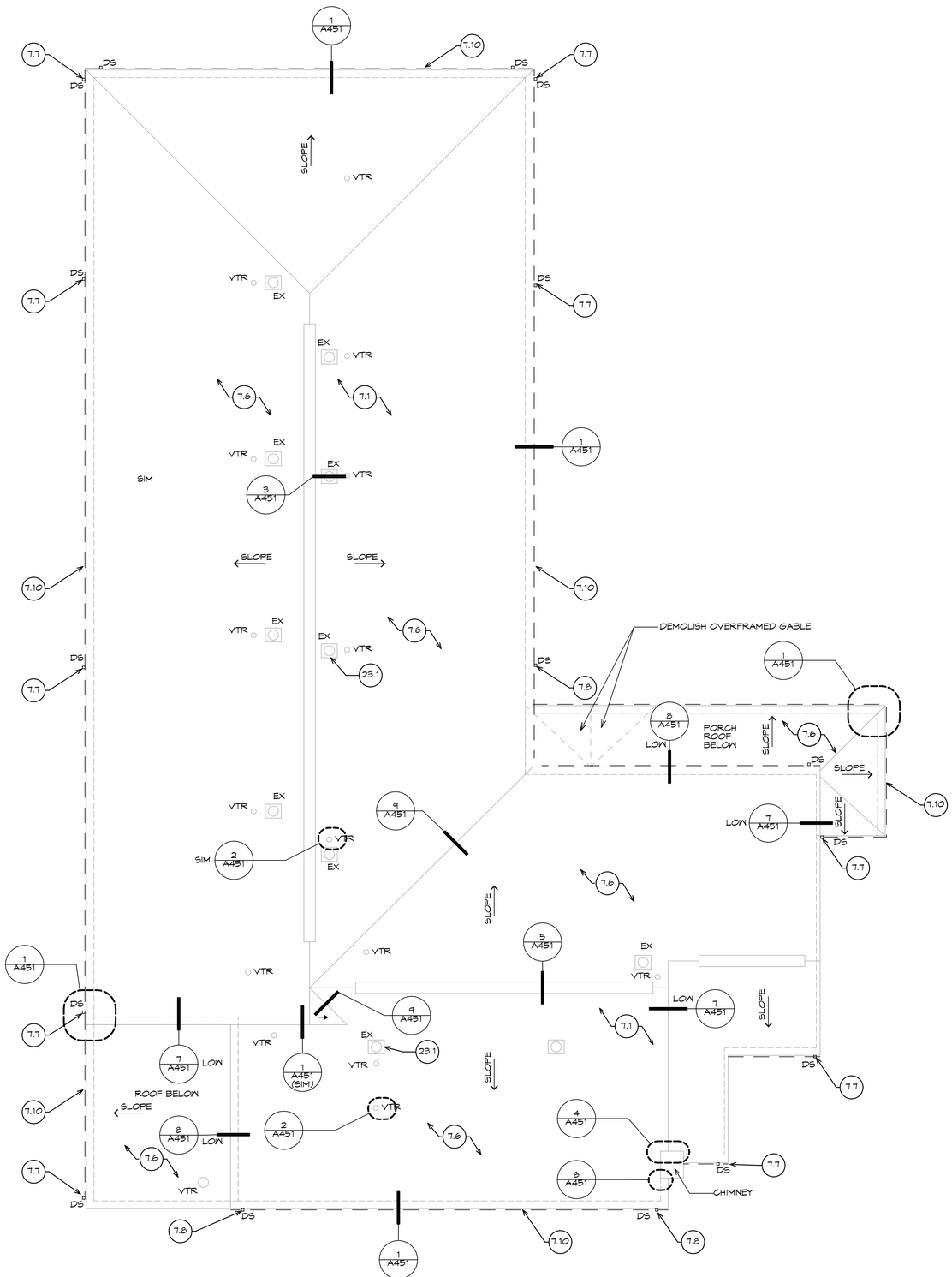
HOUSING AUTHORITY OF THE COUNTY OF CHESTER
WEST CHESTER, PA 19382

A151

OXFORD - TYPICAL FLOOR PLAN



N

1 OXFORD TERRACE ROOF PLAN

SCALE: 1/8" = 1'-0"

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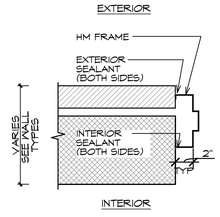
A152

OXFORD - ROOF PLAN

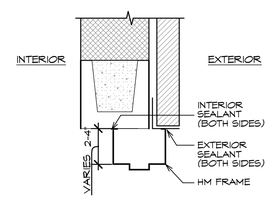
KA Door and Frame Schedule (OXFORD TERRACE)

ID	LOCATION	SIZE			TYP	MAT'L	FIN'H	FRAME			DETAIL		RATING	HDWE	NOTES
		W	HT	THK				TYP	MAT'L	FIN'H	H	J			
150A	VESTIBULE	6'-0"	6'-8"	1 3/4"	GL-1	ALUM	MFR	2	ALUM	MFR	H1	J1	---	20	
150B	VESTIBULE	6'-0"	6'-8"	1 3/4"	GL-1	ALUM	MFR	2	ALUM	MFR	H2	J2	---	20	ENSURE DOOR CLEARS FLOOR FINISHES
151	LAUNDRY	3'-0"	6'-8"	1 3/4"	HG	IS	PTD	1A	HM	PTD	H1	J1	---	9	
152	STAIRS	3'-0"	6'-8"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	25	
153	COMMUNITY ROOM	3'-0"	6'-8"	1 3/4"	HG	IS	PTD	1A	HM	PTD	H1	J1	90 MIN	9	
154	COMMUNITY ROOM	6'-0"	6'-8"	1 3/4"	G-2	ALUM	MFR	1A	ALUM	MFR	H1	J1	---	18	
155	TRASH	6'-0"	6'-8"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	21	
156	MECH	6'-0"	6'-8"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	21	
157	MECH	6'-0"	6'-8"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	---	21	
158	STAIRS	3'-0"	6'-8"	1 3/4"	F	IS	PTD	1A	HM	PTD	H1	J1	45 MIN	25	

MASONRY DOOR JAMB/HEAD DETAILS

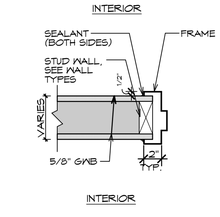


TYPICAL EXTERIOR @ MASONRY JAMB



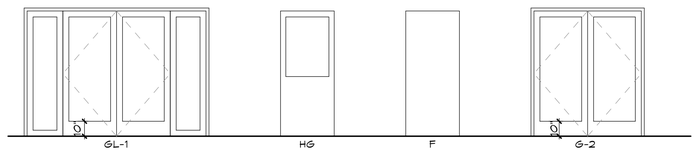
TYPICAL EXTERIOR @ MASONRY HEADER

METAL STUD DOOR JAMB/HEAD DETAIL



TYPICAL INTERIOR JAMB/HEAD

DOOR TYPES

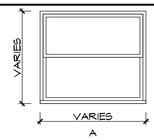


1. ALL DOOR AND SIDELIGHT GLAZING SHALL BE TEMPERED DOUBLE GLAZED
2. INTERIOR VESTIBULE GLAZING SHALL BE TEMPERED SINGLE GLAZED.

LEGEND

ALUM - ALUMINUM
MFR - MANUFACTURER
IS - INSULATED STEEL
HM - HOLLOW METAL
PTD - PAINTED
SH - SINGLE HUNG
F - FLUSH
L - LOUVERED

WINDOW TYPES

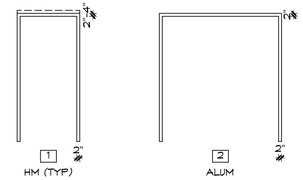


1. AT STAIR TOWER, RESECURE WINDOW GAURD TO WALL.
2. REPLACE ROOM DARKENING MINI BLINDS ALL APARTMENT WINDOWS.
3. PROVIDE MINI BLINDS AT OFFICE AND COMMUNITY ROOM WINDOWS.

WINDOW SCHEDULE

ID	SIZE		TEMPERED	FIRE	MAT	OPERATION	HEAD	JAMB	SILL	NOTES
	WIDTH	HEIGHT								
A1	5'-11"	5'-9"	NO	-	ALUM	SH	FH	LJ/UJ	S	SEE 1/A154
A2	2'-11"	5'-9"	NO	-	ALUM	SH	FH	LJ/UJ	S	SEE 1/A154
A3	2'-11"	3'-5"	YES	-	ALUM	SH	FH	LJ/UJ	S	SEE 1/A154

FRAME TYPES



FRAME TYPE 1: HM 2" HEAD
FRAME TYPE 1A: HM 4" HEAD

EXISTING PHOTOS

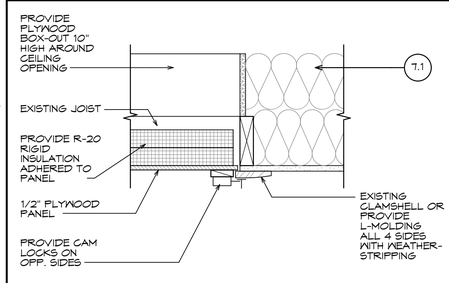
1 ENTRY FACADE
NOT TO SCALE

2 EAST FACADE
NOT TO SCALE

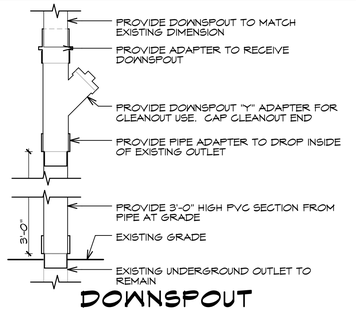
3 ENTRY PORCH
NOT TO SCALE

4 FRONT ENTRANCE
NOT TO SCALE

DETAILS



5 ATTIC HATCH (INTERIOR)
NOT TO SCALE



6 DOWNSPOUT MODIFICATION
NOT TO SCALE

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Job #:	22171
Drawn:	MJR
Mngr:	MDS

Rev. No.	Name	Date
1	SCOPE REVIEW	8/21

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IN OXFORD AND PHOENIXVILLE

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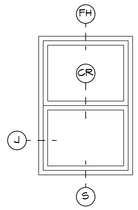
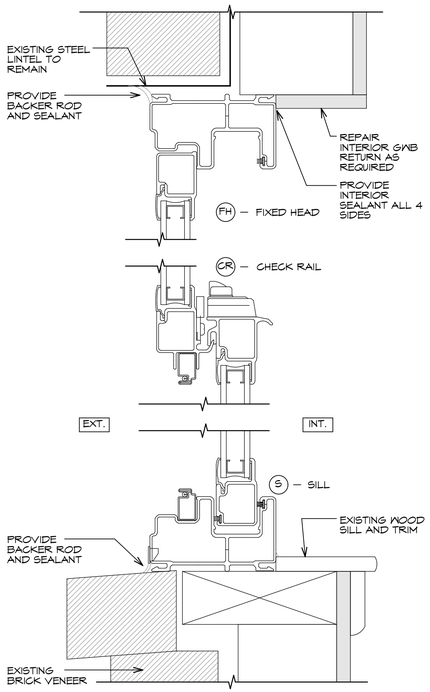
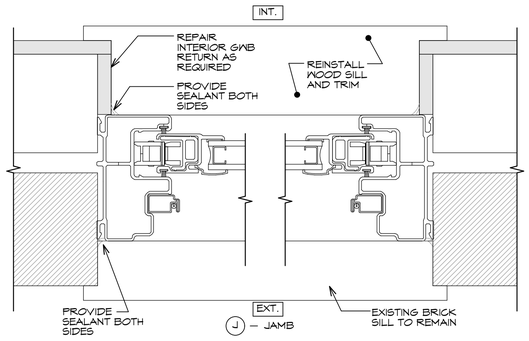
EXISTING PHOTOS & SCHEDULES







1 WINDOW INSTALL DETAIL - SINGLE HUNG

NOT TO SCALE

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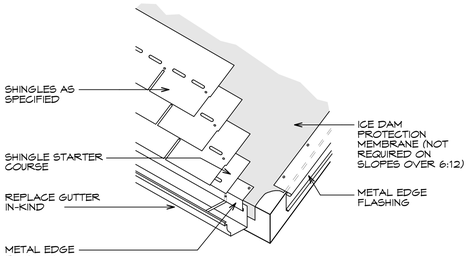
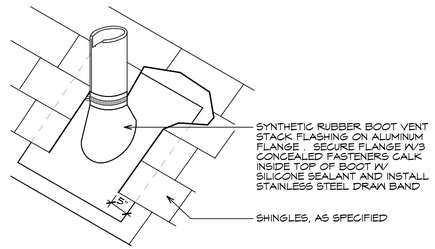
OXFORD - WINDOW INSTALL DETAILS



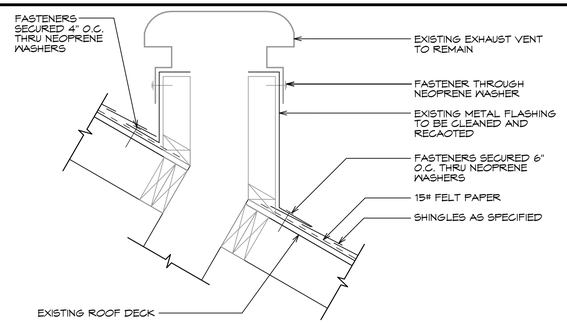
1 EAVE AND RAKE GUTTER DETAIL

NOT TO SCALE



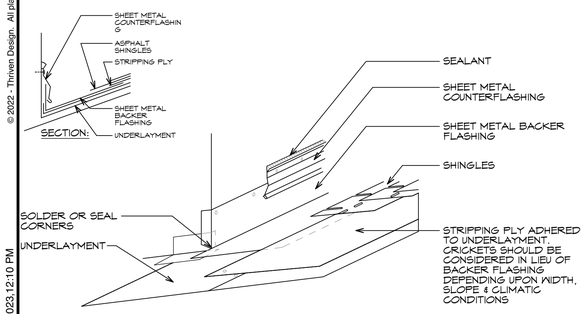
2 ROOF PENTRATION DETAIL

NOT TO SCALE



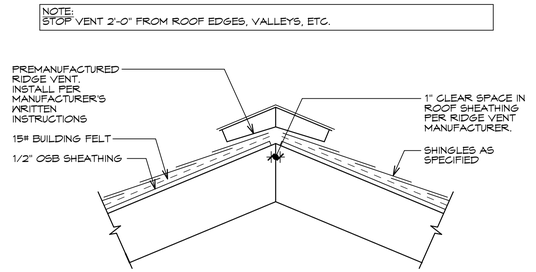
3 ROOF EXHAUST VENT DETAIL

NOT TO SCALE



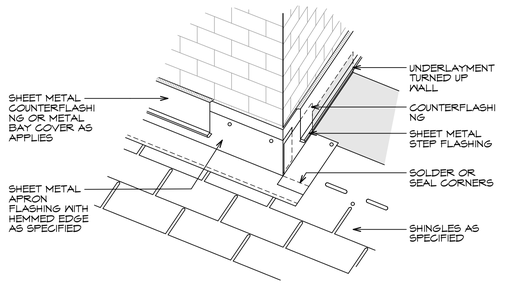
4 BACKER FLASHING DETAIL

NOT TO SCALE



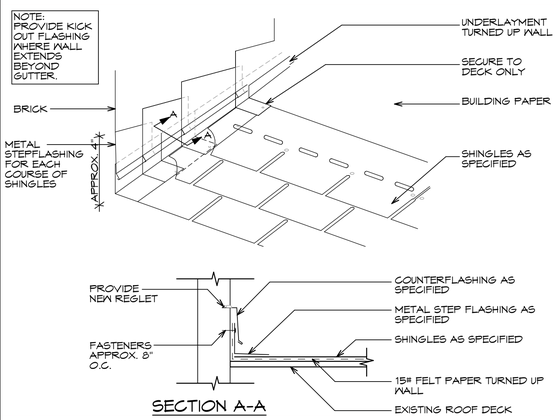
5 RIDGE VENT DETAIL

NOT TO SCALE



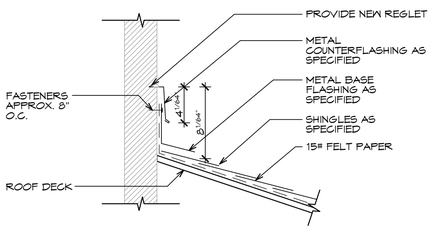
6 SHINGLE APRON FLASHING @ BRICK

NOT TO SCALE



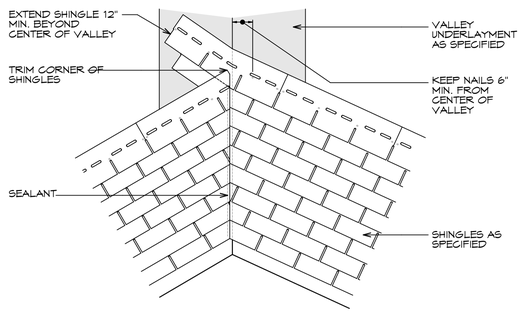
7 STEP FLASHING DETAIL

NOT TO SCALE



8 HEADWALL FLASHING @ BRICK

NOT TO SCALE



9 CLOSED VALLEY FLASHING DETAIL

NOT TO SCALE

ROOF GENERAL NOTES

1. REFER TO PROJECT GENERAL NOTES PRINTED ON ANOTHER SHEET.
2. PROJECT SCOPE IS TO REMOVE EXISTING ROOF SYSTEM TO DECK, REPLACE DAMAGED SHEATHING OR RE-SECURE AS REQUIRED, AND PROVIDE ROOF SYSTEM WITH ALL REQUIRED ACCESSORIES.
3. ALL AREAS WHERE REMOVALS HAVE BEEN MADE SHALL BE WATERTIGHT IN THE SAME DAY.
4. CONTRACTOR SHALL UTILIZE WORKMEN PROFICIENT IN THE RESPECTIVE TRADES FOR WHICH THEY ARE USED: FOR EXAMPLE: ROOFERS, SHEET METAL WORKERS, CAULKERS AND SHALL BE APPROVED BY ROOFING MANUFACTURER IT INSTALL THE ROOFING SYSTEM AND ATTAIN ALL MANUFACTURER WARRANTIES.
5. CONTRACTOR SHALL CLEAN RAINWATER CONDUCTORS TO FIRST HORIZONTAL BREAK FROM BOOT UPON COMPLETION OF WORK. DRAINS SHALL BE KEPT CLEAN, FLOWING, AND WATERTIGHT DURING ALL STAGES OF WORK.
6. CONTRACTOR SHALL COORDINATE ALL AREAS OF WORK WITH OWNER AND PROVIDE A PROPOSED WORK SCHEDULE PRIOR TO WORK COMMENCING SO MANAGEMENT CAN COORDINATE WITH RESIDENCES.
7. ALL DETAILS ARE MEANT TO SHOW MINIMUM REQUIREMENTS. ANY REQUIREMENTS OF THE MANUFACTURER, WHICH EXCEEDS THAT INDICATED, SHALL ALSO BE SATISFIED.
8. ALL ACCESS AND EGRESS ROUTES TO AND FROM THE BUILDING SHALL BE MAINTAINED AND PROTECTED TO THE GENERAL PUBLIC THROUGHOUT THE DURATION OF THE CONTRACT. PROVIDE SAFETY BUFFER AROUND WORK AREAS AT ALL TIMES TO PROTECT GENERAL PUBLIC.
9. ALL VERTICAL SURFACES WHICH ARE TO RECEIVE NEW FLASHING SHALL BE PREPARED IN ACCORDANCE WITH MANUFACTURER'S DIRECTIONS WITHOUT ADDITIONAL COST TO THE CONTRACT.
10. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND CONFIRM LENGTH OF FASTENERS REQUIRED.
11. CLEAN ALL DEBRIS FROM ALL ROOF AREAS AND GRADE EACH DAY.
12. ALL DIMENSIONS INDICATED IN CONTRACT DOCUMENTS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY.
13. ALTHOUGH DETAIL REFERENCES MAY BE SHOWN IN ONLY ONE PLACE ON ROOF PLAN DRAWINGS, EACH SHALL BE CONSIDERED TYPICAL AND APPLICABLE TO ALL LOCATIONS AND CONDITIONS SIMILAR TO THOSE WHERE THE DETAIL IS INDICATED FOR THAT ROOF AREA.
14. REPLACE AND REPAIR TO ORIGINAL STATE, ANY AND ALL EXISTING CONDITIONS WHICH ARE TO REMAIN THAT WERE DAMAGED BY CONSTRUCTION (INCLUDING WALK, CURBS, WALLS, FLOORS, CEILINGS, ROOF STRUCTURE, ETC.).
15. THE CONTRACTOR SHALL MAKE NO STRUCTURAL CHANGES WITHOUT WRITTEN APPROVAL OF THE OWNER & ARCHITECT.
16. NO HAZARDOUS MATERIALS, SOLVENTS AND FUELS, ARE TO BE STORED ON THE ROOF (OVERNIGHT IS NOT ACCEPTABLE) INCLUDING EQUIPMENT OPERATED BY COMBUSTIBLE FUELS. ALL HAZARDOUS MATERIALS SHALL BE STORED IN LOCATIONS DIRECTED BY THE OWNER. THE STORAGE AREA WILL BE WITHIN A REASONABLE DISTANCE FROM THE MAIN ROOF AREA.
17. STAGING AREA SHALL BE COORDINATED WITH THE OWNER.
18. THE CONTRACTOR SHALL PROVIDE A FIRE WATCH WHEN OPERATIONS ARE CONDUCTED WHICH INVOLVE OPEN FLAME WORK. A MINIMUM OF TWO (2) FIRE EXTINGUISHERS SHALL BE ON THE ROOF AT ALL TIMES.
19. NO STORAGE (OTHER THAN FOR FLAMMABLE LIQUIDS) WILL BE PROVIDED BY THE OWNER EITHER ON THE GROUND OR IN THE BUILDING. ALL STORAGE WILL BE ON THE ROOF, WITHIN STRUCTURAL LIMITATIONS.
20. PROVIDE CRICKETS AT HIGH SIDE OF ALL SQUARE AND RECTANGULAR PENETRATIONS. PROVIDE ADDITIONAL BLOCKERS UNDER CURBS, WHERE REQUIRED, IN ORDER TO MAINTAIN 8" FLASHING HEIGHT
21. ALL OPEN ENDS OF FLASHING SHALL HAVE VERTICAL TERMINATION BARS.
22. ALL INFILL MATERIALS SHALL MATCH EXISTING ROOFING SYSTEM UNLESS STATED OTHERWISE.
23. CONTRACTOR RESPONSIBLE TO MEET ALL MANUFACTURER REQUIRED INSTALLATION TEMPERATURES FOR ROOF MEMBRANE, ADHESIVES, SEALANTS, ETC.
24. ALL ROOF DRAINS, EXHAUST AND PLUMBING VENTS ARE TO BE MAINTAINED AND PROTECTED DURING CONSTRUCTION.

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ASPHALT ROOF DETAILS