

Addendum No. 01

Issued: 06/03/2025

Project Name:	J E Cosgriff Memorial Catholic School Alterations	
Project No.:	2023579.01	
Bid Date:	June 6, 2025	
Owner Name:	J E Cosgriff Memorial Catholic School	
	2335 Redondo Avenue	
	Salt Lake City, Utah 84108	
	Attn: Lori Davis	

This addendum is issued to all bidders for the Construction Contract for the above referenced project.

This addendum serves to clarify, revise or supersede information in the Project Manual, the Drawings and if applicable, previously issued Addenda. All bidders submitting proposals on the above project shall be governed by the following changes and shall acknowledge receipt of this Addendum on the Bid form.

The date for receipt of the bids is changed by this Addendum to June 6, 2026.

A. Changes to the Project Manual

Changes to attached specification sections are indicated in red text with deleted text, if applicable, removed from the section. Where articles, paragraphs, or subparagraphs are inserted or deleted, renumber successive articles, paragraphs, or subparagraphs accordingly.

DIVISIONS 00 through 12

- A1.1 Document 000107 Seals Page:
 - Add Electrical Engineer's stamp as indicated.
- A1.2 Document 001116 Invitation to Bid
 - Subparagraph 1.2 A 1: Revise Bid Date as indicated.
 - Mis-numbered Paragraph 1.4 A: Renumber paragraph as indicated re: Bidder's Questions.
- A1.3 Section 011000 Summary:
 - Paragraph 1.01 B: Update paragraph as indicated re: Owner's address..
 - Paragraph 1.03 A: Updated paragraph as indicated re: Specification section numbering.
- A1.4 Section 013100 Project Management and Coordination:
 - Mis-numbered Paragraph 1.6 A: Renumber paragraph as indicated re: Coordination Drawing Organization.
- A1.5 Section 033000 Cast-in Place Concrete:
 - Mis-numbered Subparagraph 3.8 A 3 a 2): Renumber subparagraph as indicated re: Project

name.

- Mis-numbered Subparagraph 3.8 C 12 b 16): Renumber subparagraph as indicated re: Acceptance criteria.
- A1.6 Section 042000 Unit Masonry:
 - Subparagraph 1.4 C 2: Revise subparagraph as indicated re: Clay face brick sample.
 - Subparagraph 1.4 D 2: Revise subparagraph as indicated re: Clay face brick sample.
- A1.7 Section 064023 Interior Architectural Woodwork:
 - Subparagraph 2.1 A 9: Add subparagraph as indicated re: woodwork fabricators.
- A1.8 Section 084113 Aluminum-Framed Entrances and Storefronts:
 - Paragraph 1.4 B: Delete paragraph re: Energy Performance Certificates.
- A1.9 Section 087100 Door Hardware
 - Hardware Group AL02: Insert electric strike hardware as indicated.
- A1.10 Section 095113 Acoustical Panel Ceilings:
 - Subparagraph 2.5 A 1: Delete subparagraph re: Anchors in Concrete.
- A1.11 Section 097260 Tackable Wallcovering:
 - Mis-numbered Paragraph 1.2: Renumber paragraph as indicated re: Drawings and general provisions of the Contract.
- A1.12 Section 099300 Staining and Transparent Finishing:
 - Mis-numbered Paragraph 3.2 A: Renumber paragraph as indicated re: Interior Wood Substrates.
 - Renumbered Subparagraph 3.2 C 1: Revise subparagraph as indicated re: application of wood filler paste.
 - Renumbered Subparagraph 3.2 C 2: Add subparagraph as indicated re: sanding surfaces exposed to view.
- A1.13 Section 102800 Toilet, Bath, and Laundry Accessories:
 - Mis-numbered Paragraph 3.1 A: renumber paragraph as indicated re: Grab Bars.
 - Renumbered Paragraph 3.1 B: Revise paragraph as indicated re installation of grab bars.
- A1.14 Section 122413 Roller Window Shades:
 - Paragraph 2.3 C: Delete paragraph re: Light Blocking Fabric.

B. Changes to the Drawings

Changes to the attached drawings are indicated with clouds around the revised areas and a revision number. Changes to the entire sheet are indicated with a cloud around the sheet number and a revision number.

ARCHITECTURAL

- B1.1 Sheet AD101 Demolition Plan
 - Add existing windows to room A118 in demolition plans. Revise cut plane of rooms A117 & A118 to read correctly.
- B1.2 Sheet A101 First Floor Plan

- Add existing windows to room A118 in new plans. Add roller shades to existing windows.
- B1.3 Sheet A410 Interior Elevations
 - Adjust detail B1 to incorporate existing windows. Rearrange coat hooks and backing. Reconfigure tackable wall board as shown. Remove white board.

ELECTRICAL

- B1.4 Sheet E002 Schedule & Notes
 - See attached sheet for clouded changes
- B1.5 Sheet E101
 - See attached sheet for clouded changes
- **C.** Prior Approval of manufacturers of electrical equipment
- C1.1 The following items, trade names, products and manufacturers are approved for bidding. Approval does not relieve the bidder from satisfying the intent of the requirements of the drawings, specifications and addenda in every respect. Failure to conform to the design quality and standards specified, established and required may result in later disapproval. If equipment must be disapproved after bidding, supplier shall supply specified equipment at no extra cost to the owner.

Items are listed generally and specific model number, etc. shall be as submitted. Items submitted but not approved, either did not satisfy the requirements, or showed insufficient data, or arrived after the 8-day deadline established for submittals.

<u>TYPE</u>	SPECIFIED	<u>JRC</u> <u>APPROVED</u>	<u>SSCO</u> <u>APPROVED</u>
A4H	ILP	LITHONIA	DAYBRITE
A4HE	ILP	LITHONIA	DAYBRITE
A4M	ILP	LITHONIA	DAYBRITE
A4ME	ILP	LITHONIA	DAYBRITE
B2M	ILP	LITHONIA	DAYBRITE
B2ME	ILP	LITHONIA	DAYBRITE
L4HPE	ALEO LIGHTING	MARK LIGHTING	DAYBRITE
L8MPE	ALEO LIGHTING	MARK LIGHTING	SLG LIGHTING
S8RDE	PRESCOLITE	JUNO	SLG LIGHTING
VL	TRANSGLOBE LIGHTING	LITHONIA	PRIMA
X1	BEGHELLI	LITHONIA	BARRON

END OF ADDENDUM

DOCUMENT 000107 - SEALS PAGE

DESIGN PROFESSIONALS OF RECORD



All professional seals (stamps) to be signed and dated; Architect Licensing Act Rules R156-3a, Utah Administrative Code, paragraph 601 and Professional Engineers Licensing Act Rules R156-22, Utah Administrative Code, paragraph 601.

DOCUMENT 001116 - INVITATION TO BID

1.1 PROJECT INFORMATION

- A. Notice to Bidders: **General Contractors** are invited to submit bids for the Project as described in this Document according to the Instructions to Bidders.
- B. Project Identification: J E Cosgriff Memorial Catholic School Alterations.
 - 1. Project Location: 2335 Redondo Avenue, Salt Lake City Utah, 84108.
- C. Owner: J E Cosgriff Memorial Catholic School, 2335 Redondo Avenue, Salt Lake City Utah, 84108.
 - 1. Owner's Representative: Lori Davis, Idavis@cisgriff.org.
- D. Architect: MHTN Architects, 280 South 400 West, Suite 250, Salt Lake City, Utah 84101.
 - 1. Architect's Representative: Tyson Stevens, tyson.stevens@mhtn.com.
- E. Project Description: The Project consists of the alteration of the existing school administration area as indicated in the Contract Documents.
- F. Construction Contract: Bids will be received for the following Work:
 - 1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

- A. Bid Submittal, Printed: Owner will receive sealed Bids until the bid time and date at the location indicated below. Owner will consider Bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
 - 1. Bid Date: 6 June 2025.
 - 2. Bid Time: 2:00 p.m., local time.
 - 3. Location: J E Cosgriff Memorial Catholic School, 2335 Redondo Avenue, Salt Lake City Utah, 84108.
 - 4. Bids will be thereafter privately opened.

1.3 BID SECURITY

A. Submit bid security with each Bid in the stipulated form and in the amount identified in the Instructions to Bidders.

1.4 PREBID MEETINGS

A. Prebid Meeting, In Person: A prebid meeting for all Bidders will be held at the Project site on 27 May 2025 at 2:00 p.m., local time. Prospective prime Bidders are requested to attend.

- B. Bidders' Questions: Architect will provide responses at Prebid conference to Bidders' questions received up to two business days prior to conference. Submit requests for clarification and interpretation using method indicated in Instructions to Bidders.
 - 1. Deadline for Submitting Questions to the Architect After Pre-Bid Conference: 30 May 2025, 5 PM.
- 1.5 BIDDING DOCUMENTS
 - A. Bidding Documents, Electronic: Obtain access after 20 May 2025 by contacting the Architect. Online access will only be provided to prime Bidders registering as plan holders with the Architect.
- 1.6 TIME OF COMPLETION
 - A. By submitting a Bid, Bidder represents that Bidder will begin the Work on receipt of the Notice to Proceed and will complete the Work within the Contract Time indicated in the Bidding Documents.
- 1.7 LIQUIDATED DAMAGES
 - A. Work is subject to liquidated damages as indicated on the Bid Form.
- 1.8 BIDDER'S QUALIFICATIONS
 - A. Licenses: Bidders must be properly licensed under the laws governing their respective trades.
 - B. Insurance and Bonds: A Performance Bond, separate Labor and Material Payment Bond, and insurance in a form acceptable to Owner will be required of the successful Bidder.
 - C. Contractor's Qualification Statement: Upon request, Bidders to whom award of a Contract is under consideration shall submit to the Architect AIA Document A305, "Contractor's Qualification Statement," with all exhibits, as indicated in the Instructions to Bidders.
 - D. The Owner reserves the right to reject any or all Bids or to waive any formality or technicality deemed in its best interest. Additional qualifications may be requested before or after the bid date, of any Bidder.

END OF DOCUMENT 001116

SECTION 011000 - SUMMARY

PART 1 GENERAL

1.01PROJECT

- A. Project Name: J E Cosgriff Memorial Catholic School Alterations
- B. Project Address: 2335 Redondo Avenue, Salt Lake City, Utah 84108
- C. Owner's Name: J E Cosgriff Memorial Catholic School.
- D. Architect's Name: MHTN Architects, Inc..
- E. The Project consists of the alteration of the existing school administration area.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in the Procurement Documents
- 1.03 DESCRIPTION OF ALTERATIONS WORK
 - A. Scope of demolition and removal work is indicated on drawings and specified in Section 024119.
 - B. Renovate the following areas, complete including operational mechanical and electrical work and finishes:
 - 1. Administration area.
 - C. Plumbing: Alter existing system and add new construction, keeping existing in operation.
 - D. HVAC: Alter existing system and add new construction, keeping existing in operation.
 - E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
 - F. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
 - G. Telephone: Alter existing system and add new construction, keeping existing in operation.
 - H. Security System: Alter existing system and add new construction , keeping existing in operation.
 - I. Owner will remove the following items before start of work:
 - 1. Items stored in the area of the Work, including furnishings, wall mounted artwork and visual display units, furnishings and accessories.
- 1.04 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS
 - A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:
 - 1. Provide for delivery of Owner-furnished products to Project site.
 - 2. Upon delivery, inspect, with Contractor present, delivered items.
 - a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
 - b. Obtain manufacturer's warranties.
 - c. Inform Contractor of earliest available delivery date for Owner-furnished products.
 - B. Contractor's Responsibilities: The Work includes the following, as applicable:
 - 1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
 - 2. Receive, unload, handle, store, protect, and install Owner-furnished products.
 - 3. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
 - C. Owner-Furnished/Contractor-Installed (OFCI) Products:
 - 1. Visual display units.

1.05 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
- B. Owner intends to occupy the Project upon Substantial Completion.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- D. Schedule the Work to accommodate Owner occupancy.

1.06 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Existing building spaces may not be used for storage.
- E. Time Restrictions:
 - 1. Limit conduct of especially noisy exterior work to the hours of 8 AM 5 PM..
- F. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

END OF SECTION

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. Coordination drawings.
 - 3. RFIs.
 - 4. Digital project management procedures.
 - 5. Web-based project management software package.
 - 6. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. Section 013200 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

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.

- 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 5 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location inbuilt facility. Keep list current at all times.

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. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.

1.6 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

- 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

- 1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
- 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
- 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
- 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
- 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
- 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
- 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches (32 mm) in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.

- c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
- d. Location of pull boxes and junction boxes, dimensioned from column center lines.
- 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
- 9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
- C. Coordination Drawing Process: Prepare coordination drawings in the following manner:
 - 1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
 - 2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
 - 3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
 - 4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
 - 5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
 - 6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
 - 7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.
- D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
 - 1. File Preparation Format: Use one of the following two options:
 - a. Same digital data software program, version, and operating system as original Drawings.
 - b. DWG, Version 2022, operating in Microsoft Windows operating system.
 - 2. File Submittal Format: Submit or post coordination drawing files using PDF format.
 - 3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in Revit, 2020.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement included in this Project Manual .

1.7 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 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. Owner name.
 - 3. Owner's Project number.
 - 4. Name of Architect.
 - 5. Architect's Project number.
 - 6. Date.
 - 7. Name of Contractor.
 - 8. RFI number, numbered sequentially.
 - 9. RFI subject.
 - 10. Specification Section number and title and related paragraphs, as appropriate.
 - 11. Drawing number and detail references, as appropriate.
 - 12. Field dimensions and conditions, as appropriate.
 - 13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 14. Contractor's signature.
 - 15. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716 or Software-generated form with substantially the same content as indicated above, acceptable to Architect.
 - 1. Attachments shall be electronic files in PDF format.
- 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.

- h. Requests for Information answered in ASIs or previous RFIs.
- 2. Excessive RFIs: RFIs that ask for clarification of the same thing in multiple areas will be considered excessive and returned with a request to combine the RFIs into a single RFI, at no additional cost to the Owner.
 - a. Excessive RFIs include, but are not limited to:
 - 1) Separate RFIs that request dimensions in more than one area on a Drawing.
 - 2) Separate RFIs that request material, dimension, or other connection information for similar structural details.
 - 3) Separate RFIs that request information for different details of the same area.
 - b. Where a need for clarification is discovered, review relevant and related drawing content including dimensions, and field conditions and dimensions, and submit a single RFI that asks for clarification of all drawings applicable to the initial or prime object of the clarification request.
- 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.
- 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 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly . 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.
 - 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.
- 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 three days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model will be provided by Architect for Contractor's use during construction.

- 1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
- 2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
- 3. Digital Drawing Software Program: Contract Drawings are available in Revit, 2024.
- 4. Contractor shall execute a data licensing agreement in the form of Agreement included in Project Manual .
 - a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement included in this Project Manual.
- 5. BIM models provided by the Architect's Consultants will require execution of separate data licensing agreements, provided by each Consultant from which the model has been requested.
- B. Project Management Software: Use Bluebeam Studio to host and manage Project communication and documentation. Coordinate with Architect on the setup, procedures and management of the system. Or provide web-based project management software as indicated below.
- C. Web-Based Project Management Software Package: Provide, administer, and use web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.
 - 1. Web-based Project management software includes, at a minimum, the following features:
 - a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
 - b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
 - c. Document workflow planning, allowing customization of workflow between project entities.
 - d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
 - e. Track status of each Project communication in real time, and log time and date when responses are provided.
 - f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
 - g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - I. Mobile device compatibility, including smartphones and tablets.
 - 2. Provide up to seven Project management software user licenses for use of Owner, Architect, and Architect's consultants. Provide four hours of software training at Architect's office for web-based Project software users.
 - 3. Provide one of the following Project management software packages under their current published licensing agreements:

- a. Bluebeam, Inc.
- D. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
- E. 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.

1.9 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Contractor and Architect, within seven days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Contractor, 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. Use of web-based Project software.
 - h. Procedures for processing field decisions and Change Orders.
 - i. Procedures for RFIs.
 - j. Procedures for testing and inspecting.
 - k. Procedures for processing Applications for Payment.
 - I. Distribution of the Contract Documents.
 - m. Submittal procedures.
 - n. Preparation of Record Documents.
 - o. Use of the premises and existing building.

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- p. Work restrictions.
- q. Working hours.
- r. Owner's occupancy requirements.
- s. Responsibility for temporary facilities and controls.
- t. Procedures for moisture and mold control.
- u. Procedures for disruptions and shutdowns.
- v. Construction waste management and recycling.
- w. Parking availability.
- x. Office, work, and storage areas.
- y. Equipment deliveries and priorities.
- z. First aid.
- aa. Security.
- bb. 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 of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - I. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.

- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
- 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Architect will conduct progress meetings at intervals required by progress of the Work, typically weekly.
 - 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.
 - 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) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Progress cleaning.
 - 11) Quality and work standards.
 - 12) Status of correction of deficient items.
 - 13) Field observations.
 - 14) Status of RFIs.
 - 15) Status of Proposal Requests.
 - 16) Pending changes.
 - 17) Status of Change Orders.
 - 18) Pending claims and disputes.
 - 19) 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.
- E. Coordination Meetings: Conduct Project coordination meetings at intervals required by progress of the Work. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
 - 1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined 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.
 - b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Resolution of BIM component conflicts.
 - 4) Status of submittals.
 - 5) Deliveries.
 - 6) Off-site fabrication.
 - 7) Access.
 - 8) Site use.
 - 9) Temporary facilities and controls.
 - 10) Work hours.
 - 11) Hazards and risks.
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Status of RFIs.
 - 15) Proposal Requests.
 - 16) Change Orders.
 - 17) Pending changes.
 - 3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- F. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.

- 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
- 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
- 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for preparing operations and maintenance data.
 - f. Requirements for delivery of material samples, attic stock, and spare parts.
 - g. Requirements for demonstration and training.
 - h. Preparation of Contractor's punch list.
 - i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - j. Submittal procedures.
 - k. Coordination of separate contracts.
 - I. Owner's partial occupancy requirements.
 - m. Installation of Owner's furniture, fixtures, and equipment.
 - n. Responsibility for removing temporary facilities and controls.
- 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Cast-in-place concrete materials and mixture design.
 - 2. Reinforcement.
 - 3. Placement procedure.
 - 4. Finishes.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for drainage course under slabs-on-ground.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

- A. Product Data:
 - 1. Each type of steel reinforcement.
 - 2. Bar supports.
 - 3. Portland cement.
 - 4. Fly ash.
 - 5. Aggregates.
 - 6. Admixtures:
 - a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
 - 7. Curing materials.
 - 8. Repair materials.

- B. Design Mixtures: For each concrete mixture, including the following:
 - 1. Mixture identification.
 - 2. Minimum 28-day compressive strength.
 - 3. Durability exposure class.
 - 4. Maximum w/cm.
 - 5. Slump limit.
 - 6. Nominal maximum aggregate size.
 - 7. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
 - 8. Intended placement method.
 - 9. Dry shrinkage test results.
- C. Shop Drawings:
 - 1. Construction and Control Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction and control joints is subject to approval of the Architect.
 - 2. Steel Reinforcement Shop Drawings:
 - a. Include placing drawings that detail fabrication, bending, and placement.
 - b. Include bar sizes, lengths, materials, grades, and supports for concrete reinforcement.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and ready-mixed concrete manufacturer.
- B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Steel reinforcement and accessories.
 - 4. Repair materials.
- C. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Aggregates: Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - 2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Wire: ASTM A 1064/A 1064M, as drawn.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

- A. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, Type I/II, gray.
 - 2. Fly Ash: ASTM C 618, Class F.
- B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10

years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.

- 1. Maximum Coarse-Aggregate Size: 1 inch or 3/4 inch nominal.
- 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- D. Water: ASTM C 94/C 94M and potable.

2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. BASF Corp. Construction Chemicals.
 - b. Dayton Superior.
 - c. Euclid Chemical Company (The); an RPM company.

2.6 RELATED MATERIALS

- A. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- B. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - 1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

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2.7 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150/C 150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 - 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.8 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - 1. Fly Ash: 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.9 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Minimum Compressive Strength at 28 days: 3,000 psi.
- B. Maximum W/C Ratio: 0.45.
- C. Slump Limit: 4 inches maximum for concrete prior to the addition of plasticizers and water-reducing admixtures.

2.10 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.2 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

3.3 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Place concrete to result in thickness indicated on Drawings.
 - 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 3. Maintain reinforcement in position on chairs during concrete placement.
 - 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 5. Slope surfaces uniformly to drains where required.
 - 6. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.4 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish:
 - 1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
 - 2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
 - 3. Apply float finish to surfaces to receive trowel finish.
- C. Trowel Finish:
 - 1. After applying float finish, apply first troweling and consolidate concrete by hand or powerdriven trowel.
 - 1. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
 - 2. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 3. Do not add water to concrete surface. Use of an approved finishing aid is acceptable.
 - 4. Do not apply troweled finish to concrete, which has a total air content greater than 3 percent.

- 5. Apply a trowel finish to surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
- 6. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Specified overall values of flatness, FF 25; and of levelness, FL 20; with minimum local values of flatness, FF 17; and of levelness, FL 15.

3.5 MISCELLANEOUS CONCRETE ITEM INSTALLATION

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

3.6 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.
- B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall

within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

3.7 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 - 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 - 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- E. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform field tests and prepare test reports.
 - 1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
 - 2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
 - 3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.
 - a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:
 - 1) Project name.
 - 2) Name of testing agency.
 - 3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
 - 4) Name of concrete manufacturer.
 - 5) Date and time of inspection, sampling, and field testing.
 - 6) Date and time of concrete placement.
 - 7) Location in Work of concrete represented by samples.
 - 8) Date and time sample was obtained.
 - 9) Truck and batch ticket numbers.
 - 10) Design compressive strength at 28 days.
 - 11) Concrete mixture designation, proportions, and materials.
 - 12) Field test results.
 - 13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
 - 14) Type of fracture and compressive break strengths at seven days and 28 days.
- B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture.
 - 2. Slump: ASTM C 143/C 143M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests when concrete consistency appears to change.
 - 3. Slump Flow: ASTM C1611/C1611M:
 - a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - c. Perform additional tests when concrete consistency appears to change.

- 4. Concrete Temperature: ASTM C 1064/C 1064M:
 - a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
- 5. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast, initial cure, and field cure two sets of three standard cylinder specimens for each composite sample.
- 6. Compressive-Strength Tests: ASTM C 39/C 39M:
 - a. Test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
- 7. When strength of field-cured cylinders is less than 85 percent of companion laboratorycured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- 8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- 9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- 10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- 11. Drying Shrinkage Tests: ASTM C157.
 - a. One test for each interior slab-on-grade mix design to be submitted with mix design.
- 12. Additional Tests:
 - a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
 - 1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.

- 13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
- 14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

END OF SECTION 033000

J E Cosgriff Memorial Catholic School

SECTION 042000 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Decorative concrete masonry units.
 - 2. Structural Brick.
 - 3. Mortar and grout materials.
 - 4. Reinforcement.
 - 5. Mortar and grout mixes.
- B. Products Installed but not Furnished under This Section:
 - 1. Steel lintels in unit masonry.
- C. Related Requirements:
 - 1. Section 055000 "Metal Fabrications" for steel lintels used in conjunction with unit masonry.

1.2 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- 1.3 PREINSTALLATION MEETINGS
 - A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Indicate bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315R. Indicate elevations of reinforced walls.
- C. Samples for Initial Selection:
 - 1. Decorative CMUs, in the form of small-scale units.
 - 2. Clay face brick, in the form of small scale unit.
 - 3. Colored mortar.
- D. Samples for Verification: For each type and color of the following:

- 1. Decorative CMUs.
- 2. Clay face brick, in the form of small scale unit.
- 3. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project.

1.5 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Qualification Data: For testing agency.
- C. Material Certificates: For each type of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
 - c. For exposed brick, include test report for efflorescence in accordance with ASTM C67/C67M.
 - d. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 3. Mortar admixtures.
 - 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 5. Grout mixes. Include description of type and proportions of ingredients.
 - 6. Reinforcing bars.
- D. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 - 2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 602.
- F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain exposed masonry units from single producer or manufacturer.
- B. For exposed masonry units and cementitious mortar components, obtain each color and grade from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days, as indicated in General Structural Notes, per one of the following:

- 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with TMS 602.
- 2. Determine net-area compressive strength of masonry by testing masonry prisms in accordance with ASTM C1314.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners of exterior masonry, provide bullnose units for outside corners of interior walls, unless otherwise indicated.
- B. CMUs: ASTM C90, medium weight.
 - 1. <u>Basis-of-Design Product:</u> Subject to compliance with requirements, provide <u>Sunroc Masonry</u> <u>Products</u> or comparable product by one of the following:
 - a. Amcor.
 - 2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength as indicated in General Structural Notes.
 - 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions indicated on Drawings.

2.5 STRUCTURAL BRICK

- A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
 - 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
 - 2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Clay Face Brick: Facing brick complying with ASTM C216, Grade SW, Type HBS.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
- a. Interstate Brick; Atlas Brick.
- 2. Unit Compressive Strength: Provide units with minimum average net-area compressive strength as indicated in General Structural Notes.
- 3. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
- 4. Size (Actual Dimensions): 7-5/8 inches wide by 2-1/4 inches high by 15-5/8 inches long, field verified to match existing units before ordering.
- 5. Application: Use where brick is exposed unless otherwise indicated.
- 6. Where shown to "match existing," provide face brick matching color range, texture, and size of existing adjacent brickwork.
- 7. Color and Texture: Match Architect's sample.
- 8. Texture: Matte.
- 9. Exterior Pattern: Center reveal.

2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Alkali content will not be more than 0.1 percent when tested in accordance with ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Davis Colors.
 - b. Euclid Chemical Company (The); an RPM company.
 - c. Solomon Colors, Inc.
- D. Colored Cement Products: Packaged blend made from portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Colored Portland Cement-Lime Mix:
 - a. <u>Manufacturers:</u> 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) Holcim (US) Inc.
 - 2) Lehigh Hanson; HeidelbergCement Group.

- 2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
- 3. Pigments shall not exceed 10 percent of portland cement by weight.
- E. Preblended Dry Mortar Mix: Packaged blend made from portland cement and hydrated lime, sand, mortar pigments, and admixtures and complying with ASTM C1714/C1714M.
 - 1. Preblended Dry Portland Cement Mortar Mix:
 - a. <u>Manufacturers:</u> 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) Amerimix.
 - 2) QUIKRETE.
 - 3) SAKRETE of North America LLC.
 - 4) Spec Mix, LLC.
- F. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
- G. Aggregate for Grout: ASTM C404.
- H. Water: Potable.

2.7 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
 - 1. <u>Manufacturers:</u> Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Heckmann Building Products, Inc.
 - b. Hohmann & Barnard, Inc.
 - c. Wire-Bond.

2.8 ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.

B. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.9 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Diedrich Technologies, Inc.; a division of Sandell Construction Solutions.
 - b. PROSOCO, Inc.

2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, waterrepellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For reinforced masonry, use Type S.
- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.
 - 1. Pigments shall not exceed 10 percent of portland cement by weight.
 - 2. Mix to match Architect's sample.
 - 3. Application: Use pigmented mortar for exposed mortar joints with the following units: All plain and decorative concrete masonry units, except where a painted finish is scheduled.
- E. Grout for Unit Masonry: Comply with ASTM C476.
 - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602 for dimensions of grout spaces and pour height.
 - 2. Proportion: Refer to General Structural Notes.
 - 3. Slump: Refer to General Structural Notes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 - 2. Verify that foundations are within tolerances specified.
 - 3. Verify that reinforcing dowels are properly placed.
 - 4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
 - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:

- 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
- 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
- 3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
- 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
- 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
- 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
- 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

- 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
- 2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
- 3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
- 4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Brace top of non-load bearing masonry walls to structure as indicated in Drawings.
 - 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
 - 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Joints:
 - 1. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
 - 2. Cut joints flush for masonry walls to receive direct-applied finishes (other than paint) unless otherwise indicated.
 - 3. Cut joints flush where indicated to receive air barriers unless otherwise indicated.

3.6 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

- B. Placing Reinforcement: Comply with requirements in TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 60 inches.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements will be at Contractor's expense.
- B. Inspections: Special inspections in accordance with Level 2 in TMS 402.
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140/C140M for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, in accordance with ASTM C1019.
- I. Prism Test: For each type of construction provided, in accordance with ASTM C1314 at 7 days and at 28 days.

3.8 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
 - 6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.9 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Plastic-laminate-clad architectural cabinets.
 - 2. Standing and running wood trim
 - 3. Plastic-laminate countertops
 - 4. Solid surface countertops.
 - 5. Wall mounted adjustable shelving.
 - 6. Countertop supports.
 - 7. Cabinet hardware.
- B. Related Sections include the following:
 - 1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, required for installing woodwork.
 - 2. Section 097260 "Tackable Wallcovering" for tackable surface material.
 - 3. Section 099300 "Staining and Transparent Finishing" for interior lumber finishing material and installation requirements.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 DEFINITIONS

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

1.5 SUBMITTALS

- A. Product Data: For composite core panel products, plywood, high-pressure decorative laminate, adhesive for bonding plastic laminate, thermoset decorative overlay, cabinet hardware and accessories.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

- 1. Show details full size.
- 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
- 3. Show locations and sizes of cutouts and holes for fixtures and other items installed in architectural woodwork.
- C. Samples for Verification: For the following:
 - 1. Plastic-laminate-clad panel products, 8 by 10 inches, for each type, color, pattern, and surface finish, with separate samples of unfaced panel product used for core.
 - 2. Thermally fused laminate (TFL) Panels, 8 by 10 inches, for each color, pattern, and surface finish.
 - 3. Lumber with or for transparent finish, 5 inches wide by 24 inches long, for each species and cut, finished on 1 side and 1 edge.
 - 4. Exposed cabinet hardware and accessories, one unit for each type and finish.
 - 5. Adjustable shelving standards.
 - 6. Solid surface, 6 by 6 inches.
- D. Product Certificates: For the following:
 - 1. Composite wood products.
 - 2. Thermally fused laminate panels.
 - 3. High-pressure decorative laminate.
 - 4. Adhesives.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed architectural woodwork similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Fabricator Qualifications: A firm experienced in producing architectural woodwork similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production and installation of interior architectural woodwork
- D. Quality Standard: Unless otherwise indicated, comply with NAAWS 4.0 "North American Woodwork Standards" for grades of interior architectural woodwork, construction, finishes, and other requirements.
- E. Mockups: Before fabricating and installing interior architectural woodwork, build mockups for each form of construction and finish required to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

- 1. Build mockups in the location and of the size directed by the Architect and coordinated with sequence of the Work.
- 2. Notify Architect seven days in advance of dates and times when mockups will be fabricated and installed.
- 3. Demonstrate the proposed range of aesthetic effects and workmanship.
- 4. Obtain Architect's approval of mockups before starting interior architectural woodwork fabrication.
- 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
- 6. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
 - 2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.
- B. Hardware Coordination: Distribute copies of approved hardware schedule Scheduled by Describing Products to fabricator of architectural woodwork; coordinate Shop Drawings and fabrication with hardware requirements.

PART 2 - PRODUCTS

2.1 WOODWORK FABRICATORS

- A. Fabricators: Subject to compliance with requirements, provide interior architectural woodwork by one of the following:
 - 1. Artistic Mill.
 - 2. Advanced Cabinets, LLC.
 - 3. Granite Mill and Fixture Company.
 - 4. Huetter Mill and Cabinet Company.
 - 5. Johnson Brothers, Inc.
 - 6. MapleLeaf Cabinets.
 - 7. Swainston Mill, Preston, ID.
 - 8. TMI Systems.
 - 9. Woodland Inspirations.
- B. Other Fabricators: Submit request for approval prior to bid.

2.2 MATERIALS

- A. General: Provide materials that comply with requirements of the NAAWS quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
 - 1. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - 1. Hardboard: AHA A135.4.
 - 2. Medium-Density Fiberboard: ANSI A208.2, Grade MD-Exterior Glue.
 - 3. Softwood Plywood: DOC PS 1.
 - 4. Hardwood Plywood: DOC PS 1.
- C. Core Material at Laminate Clad Exposed and Semi-Exposed Surfaces: Provide the following at cabinet body tops, bottoms, shelves, end panels, drawer fronts, drawer box sides, drawer box backs and sub-fronts, doors and other exposed and semi exposed surfaces unless indicated otherwise (particle board cores are not acceptable):
 - 1. Combination softwood plywood veneer core interior laminated with MDF crossbands front and back.
 - 2. Available Products: Subject to compliance with requirements, combination veneer core plywood products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Columbia Forest Products, "Classic Core."
 - b. Roseburg, "Skyply CFC Core".
 - c. States Industries, "Armorcore."
 - d. Timber Products Company, "Pro-Core MDF".

- D. Core Material at Laminate Clad Exposed and Semi-Exposed Surfaces: Provide the following at laminate clad drawer box bottoms, (particle board cores are not acceptable):
 - 1. Hardwood plywood veneer core.
 - 2. Available Products: Subject to compliance with requirements, hardwood plywood veneer core products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Columbia Forest Products, "Europly".
 - b. States Industries, "ApplePly".
- E. Lumber Trim for Clear Finish:
 - 1. Species and Grade: White Maple, Firsts and Seconds.
 - 2. Maximum Moisture Content: Air dried.
 - 3. Finger Jointing: Not allowed
 - 4. Face Surface: Sanded.
 - 5. Thickness: Nominal 1-inch (5/8 inch to 1 inch actual).
 - 6. Width: Nominal 8 inches (minus $0 \frac{3}{4}$ inch from actual).
 - 7. Length: 6 feet to 16 feet.
- F. Finish: Field finish.
- G. High-Pressure Decorative Laminate PL1: ISO 4586-3, grades as indicated, or if not indicated, as required by woodwork quality standard.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering high-pressure decorative laminates that may be incorporated into the Work include, but are not limited to, the following:
 - a. Abet Laminati Inc.
 - b. Formica Corporation.
 - c. Lamin-Art, Inc.
 - d. Pionite: a Panolam Industries International, Inc.brand.
 - e. Wilsonart.
 - 2. Colors, Patterns, and Finishes: Provide materials and products that result in colors of HPDL material complying with the following requirements:
 - a. Match product indicated in the Finish Schedule Legend.
- H. Thermally Fused Laminate (TFL) Panels: Specified core material, finished with thermally fused, melamineimpregnated decorative paper and complying with requirements of ISO 4586, Grade VGL.
 - 1. Finish: Fine Velvet Texture.
 - 2. Color and Pattern: As selected from manufacturer's full range.
 - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering laminate claddings that may be incorporated into the Work include, but are not limited to, the following:
 - a. Abet Laminati Inc.
 - b. Arborite
 - c. Formica Corporation.

- d. Lamin-Art, Inc.
- e. Pionite, a Panolam Industries International, Inc.brand.
- f. Wilsonart.
- I. Solid-Surfacing Material **SS1**: Homogeneous solid sheets of filled plastic resin complying with material and performance requirements in ANSI Z124.3, for Type 5 or Type 6, without a precoated finish.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering solid surfacing materials that may be incorporated into the Work include, but are not limited to, the following:
 - a. Avonite Surfaces.
 - b. E.I. Du Pont De Nemours and Company.
 - c. Formica Corporation.
 - d. LG chemical, LTD.
 - e. Samsung Chemical USA, Inc.
 - 2. Solid-Surfacing-Material Thickness: 1/2-inch.
 - 3. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
 - a. Match product indicated in the Finish Schedule Legend.
 - 4. Fabricate sills in one piece with shop-applied edges, unless otherwise indicated. Comply with solidsurfacing-material manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.3 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
- B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. Finish Unless Otherwise Indicated: Satin stainless steel; BHMA 630.
- C. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.
- D. Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.

2.4 MISCELLANEOUS MATERIALS

- A. Fasteners for Interior Lumber Trim and Faux Framing: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate, unless otherwise indicated.
 - 1. For face-fastening lumber, provide hot-dipped galvanized siding nails.

- B. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.
 - 1. Wood Lath: Softwood lumber, 5/16 x 1 ¹/₂-inch.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.
- D. Adhesive for Bonding Plastic Laminate: Type I, waterproof type as selected by fabricator to comply with requirements.
- E. Adhesive for Bonding Edges: Hot-melt adhesive
- 2.5 FABRICATION, GENERAL
 - A. Interior Woodwork Grade: Provide Premium grade interior woodwork complying with the referenced quality standard.
 - B. Panel Thickness:
 - 1. Cabinet Bodies: 3/4 inch minimum, unless indicated otherwise.
 - 2. Tops and Bottoms at Tall Cabinets Not Less Than 36 ¹/₂ Inches Wide: 1 inch minimum.
 - 3. Cabinet Backs at Bodies Installed at Walls, Unexposed: ¹/₄ inch.
 - 4. Doors and Drawer Fronts: 3/4 inch for all hinged and sliding doors.
 - 5. Drawer Box Sides, Back and Sub-fronts: 3/4 inch.
 - 6. Drawer Bottom: ¼ inch minimum thick 5 ply veneer core plywood with no inner voids, except that core material thickness shall be ½ inch minimum at drawer boxes wider than 30 inches.
 - 7. Shelves: 1-inch for shelves up to 35 inches in width, and 1-1/4 inches thick for shelves over 35 inches in width.
 - 8. Horizontal and Vertical Dividers: ¹/₄ inch tempered hardboard, smooth both sides, or ³/₄ inch panel product.
 - 9. Dust Panels at Drawers: ¹/₄ inch tempered hardboard or panel product.
 - C. Component Construction:
 - 1. Toe Kicks: Fixed cabinet bases constructed of 3/4 inch, moisture resistant MDF with 2x fir stringers, ripped to provide 4 inch high base. Level bases and anchor to the floor in continuing lengths to ensure straight and true lines of casework. Scheduled resilient or tile base shall be provided as indicated at respective Division 9 sections.
 - 2. Adjustable Shelves:
 - a. All shelves to be adjustable on 2 inch centers.
 - b. Provide a center, fixed shelf at cabinets taller than 72 inches.
 - 3. Drawers:
 - a. Paper storage drawers shall be fitted with a hood at back for paper retainage, and shall have a 1/2inch thick reinforced bottom.
 - b. Drawer fronts shall be mounted with an adjusting mechanism to allow full adjustability and alignment in the field.

- c. Drawer bottom shall be recessed into box sides, back and front.
- d. Provide dust panels at drawers unless located directly under tops.
- 4. Vertical and Horizontal Dividers:
 - a. Vertical and horizontal dividers shall be 1/4-inch tempered hardboard smooth both sides or 3/4-inch TFL panels.
- D. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- E. Complete fabrication, including assembly, application of high pressure laminate finish, and hardware application, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.
- F. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 1. Seal edges of openings in countertops with a coat of varnish.

2.6 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Comply with NAAWS 4.0, Section 10 requirements for laminate cabinets.
- B. Grade: Premium.
- C. Type of Construction: Frameless.
- D. Door and Drawer-Front Style: Flush overlay.
- E. Laminate Cladding for Exposed Exterior and Interior Surfaces: Laminate cladding complying with the following requirements:
 - 1. Horizontal Surfaces Other Than Tops Unless Indicated Otherwise: HPDL, Grade HGS.
 - 2. Vertical Surfaces: HPDL, Grade HGS.
 - 3. Color and Pattern: As indicated in the Finish Schedule Legend.
 - 4. Cabinet Tops: Thermally Fused Laminate where cabinet top is 7'-0" above finished floor or higher. HPDL, Grade HGS at other cabinets not covered with a countertop.
 - 5. Edges: PVC edge banding, 3.0 mm thick, matching laminate in color, pattern, and finish.
 - 6. Doors and Drawer Fronts: Provide indicated laminate cladding on both faces.
- F. Laminate Cladding for Semi Exposed Surfaces: Laminate cladding complying with the following requirements:

- 1. Interior Cabinet Body Surfaces and Shelves (unless indicated otherwise): Thermally fused laminate panels.
- Edges of Thermally Fused Laminate Panel Shelves: PVC or polyester edge banding, 3.0 mm thick minimum.
- 3. Cabinet Body Back and end Panels With Exposed HPDL Surfaces: HPDL, Grade VGS.
- 4. Drawer Box Sides, Back and Sub-Fronts: Thermally fused laminate panels with 1.0 mm thick PVC edge banding.
- 5. Drawer Bottom: Thermally fused laminate panel.
- G. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. Match Architect's samples selected from full range of Manufacturers products. Selections may be considered above standard grade for manufacturers with multi-tiered pricing.
 - 2. Colors may not be standard with some manufacturers.
 - 3. Edge Banding: Match laminate color unless other colors are approved by Architect.

2.7 PLASTIC-LAMINATE COUNTERTOPS – PL2

- A. Quality Standard: Comply with NAAWS 4.0, Section 11 requirements for high-pressure decorative laminate countertops.
 - 1. The Contract Documents contain requirements that are more stringent than that of the referenced quality standard. Comply with requirements of the Contract Documents in addition to those of referenced quality standard.
- B. Grade: Premium.
- C. High-Pressure Decorative Laminate: ISO 4586-3, Grade HGS, scratch resistant.
- D. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures similar to requirements for laminate casework.
 - 1. Colors may not be standard with some manufacturers.
 - 2. As indicated by manufacturer' in the Finish Schedule Legend.
- E. Core Material: MDF made with exterior glue.
- F. Core Thickness: ³/₄ inch.
 - 1. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top.
 - 2. Provide drip groove 1/8 by 1/8 inch set back 3/8 inch from front edge of countertop.
- G. Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner, 4-inches high.
 - 3. End Splash: Matching backsplash.
- H. Edge Treatment: PVC edging, full width of edge, 3 mm thick minimum.
 - 1. Edge Style: Square, no bullnose waterfall edges.

I. Backer Sheet: Provide plastic-laminate backer sheet, ISO 4586-3, Grade BKH, on underside of countertop substrate.

2.8 SOLID SURFACING FABRICATION – SS1

- A. Locations: Provide solid surface material at countertops and window sills where indicated on Drawings.
- B. Quality Standard: Comply with NAAWS 4.0, Section 11 requirements for countertops.
 - 1. Grade: Premium.
- C. Products: Subject to compliance with requirements, including color and pattern, provide products manufactured by one of the following:
 - 1. Avonite Surfaces.
 - 2. E.I. Du Pont De Nemours and Company.
 - 3. Formica Corporation.
 - 4. Hanex Solid Surfaces.
 - 5. LG chemical, LTD.
 - 6. Samsung Chemical USA, Inc.
 - 7. Wilsonart.
- D. Solid-Surfacing-Material Thickness: 1/2-inch.
- E. Colors, Patterns, and Finishes: Provide materials and products that result in colors of solid-surfacing material complying with the following requirements:
 - 1. Match product indicated in the Finish Schedule Legend.
- F. Countertop Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner, 4-inches high.
 - 3. End Splash: Matching backsplash.
- G. Fabricate sills in one piece with shop-applied edges, unless otherwise indicated. Comply with solid-surfacingmaterial manufacturer's written recommendations for adhesives, sealers, fabrication, and finishing.

2.9 ADJUSTABLE WALL MOUNTED SHELVING

- A. Exposed Shelving: Made from specified core material, ³/₄ inch thick, with Thermally Fused Laminate on both faces and continuous 3 mm thick PVC edging.
 - 1. Core: Indicated.
 - 2. Shelf Brackets: Double slot brackets.
 - 3. Standards: Powder-coat-finished steel.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.
- C. Remove adhered inventory control labels from adjustable wall shelving standards if present, including adhesive residue, to completely expose factory finish.

3.2 GENERAL INSTALLATION

- A. Quality Standard: Install woodwork to comply with NAAWS 4.0 Section 14 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- D. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish, toggle bolts through backing or framing behind wall finish.
- E. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.
 - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
- F. Countertop Installation:
 - 1. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 - 2. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

- 3. Anchor wall cleating and brackets necessary for proper setting for countertops not supported by casework.
- 4. Install countertops level and true in line. Use concealed shims as required to maintain not more than 1/8inch-in-96-inch variation from a straight, level plane.
- 5. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.
- 6. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.
- 7. Provide required holes and cutouts for service fittings.

3.3 INSTALLATION OF STANDING AND RUNNING TRIM

- A. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.
 - 1. Use scarf joints for end-to-end joints.
 - 2. Stagger end joints in adjacent and related members.
- B. Face fasten lumber. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
- C. Provide joint sealant at edge joints of lumber where contacting dissimilar materials.

3.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces.

3.5 HARDWARE AND ACCESSORY SCHEDULE

- A. The following items are identified by manufacturer in order to establish quality standards and functional intent. Other manufacturers are acceptable provided their products are comparable (as judged by the Architect) to those specified.
- B. Keying: All locks keyed alike in each classroom, with no classrooms keyed the same, and with a master key matching the existing master key for the building.
- C. Schedule:
 - 1. Wall Mount Countertop Floating Support Bracket: Centerline Brackets CSA-0004 with 8 inch base leg and projection as indicated on Drawings.
 - 2. Cabinet Door Hinges: Blum 170 with mounting plate
 - a. Location: Swing doors.

- 3. Catches:
 - a. All Cabinets except Locking: Roller catch, ANSI/BHMA A156.9, B03071.
 - b. Locking Cabinets: Elbow catch, ANSI/BHMA A156.9, B33023.
- 4. Drawer Slides: Side-mounted, full-extension, zinc-plated steel drawer slides with steel ball bearings, BHMA A156.9, B05091, and rated for the following loads.
 - a. Box Drawer Slides: 100 lbf.
 - b. File Drawer Slides: 150 lbf.
 - c. Pencil Drawer Slides: 45 lbf.
 - d. Keyboard Slide: 75 lbf.
- 5. Drawer Hanging File System: Hafele Hanging File System.
 - a. Location: File Drawers.
- 6. Pulls: 3-1/2 inch center to center wire pulls; EPCO, Futaba or Rockford Process Control (RPC).
 - a. Location: Drawers and swinging doors.
- 7. Grommets for Cable Passage through Countertops: 2-1/2, molded-plastic grommets and matching plastic caps with slot for wire passage.
 - a. Product: "OG series" by Doug Mockett and Co., Inc.
 - b. Location: Countertops and work surfaces where indicated on Drawings.
- 8. Door and Drawer Locks: Olympus Lock, Inc. or comparable.
 - a. 5-pin tumbler, complying with ANSI/BHMA A156.11, Grade 1.
 - b. Finish: Satin Chrome: 26D
 - c. Drawer Locks: 200W.
 - d. Door Locks: 100DR.
 - e. Provide at all swing doors and drawers. All cabinet locks keyed to one master, each room keyed separately.
- 9. Adjustable Cabinet Shelf Support Rests: KV 346, 5 mm.
 - a. Location: Shelves in casework.
- 10. Shelf Standards and Brackets: Knape & Vogt Double Slot 85/185 Extra-Duty Adjustable Standard and Bracket System.
 - a. Finish: White.
 - b. Location: Wall mounted adjustable shelving.
- 11. Classroom Coat Hooks: Grainger 1XNF5 two points per hook.
 - a. Finish: Nickel
 - b. Capacity: 35 lbs.
 - c. Projection: 1 ¼ inches.

- 12. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - a. Finish Unless Otherwise Indicated: Satin stainless steel; BHMA 630.
- 13. Concealed Hardware Finishes: Provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

END OF SECTION 064023

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aluminum-framed storefront systems.
 - 2. Aluminum-framed entrance door systems.
- B. Related Requirements:
 - 1. Section 088000 "Glazing" for glazing material requirements.
 - 2. Section 089100 "Louvers" for louver product used in conjunction with storefront framing system.

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. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
 - 1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
 - 2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
 - a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Glazing.
 - e. Flashing and drainage.
 - 3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
 - 4. Include point-to-point wiring diagrams showing the following:
 - a. Power requirements for each electrically operated door hardware.
 - b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

- C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- D. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12inch lengths of full-size components and showing details of the following:
 - 1. Joinery, including concealed welds.
 - 2. Anchorage.
 - 3. Expansion provisions.
 - 4. Glazing.
 - 5. Flashing and drainage.
- E. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.
- F. Delegated Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data:
 - 1. For Installer.
 - 2. For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.
- B. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Quality-Control Program: Developed specifically for Project, including fabrication and installation, in accordance with recommendations in ASTM C1401. Include periodic quality-control reports.
- D. Source quality-control reports.
- E. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

- 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 MOCKUPS

- A. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical wall area in the location and of the size directed by the Architect, coordinated with sequence of the Work.
 - 2. Testing shall be performed on mockups in accordance with requirements in "Field Quality Control" Article.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including, but not limited to, excessive deflection.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Deterioration of metals and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
 - 2. Warranty Periods From Date of Substantial Completion:
 - a. Material and Workmanship: 3 years.
 - b. Door Corner Construction: Limited Lifetime.
- B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D 2244.

- b. Chalking in excess of a No.8 rating when tested in accordance with ASTM D 4214.
- c. Cracking, peeling, or chipping.
- 2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing, and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall 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.
- C. Structural Loads:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- D. 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 and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.
 - 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.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.

- 3. Cantilever Deflection: Limited to 2L/175 at unsupported cantilevers.
- E. 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.
- F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:
 - 1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft..
- G. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7.
 - 1. Seismic Drift Causing Glass Fallout: Complying with criteria for passing based on building occupancy type when tested in accordance with AAMA 501.6 at design displacement and 1.5 times the design displacement.
 - 2. Air Leakage:
 - a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft. when tested in accordance with ASTM E283.
 - b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - 3. Condensation Resistance Factor (CRF):
 - a. Fixed Glazing and Framing Areas: CRF for the system of not less than 70 as determined in accordance with AAMA 1503.
- H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STOREFRONT SYSTEMS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America, an Arconic company; Trifab Versaglaze 450 Framing System 1 ³/₄" Sightline or comparable product by one of the following:
 - 1. Arcadia, Inc.
 - 2. EFCO Corporation.
 - 3. Manko Window Systems, Inc.
 - 4. Oldcastle BuildingEnvelope (OBE); CRH Americas.

- 5. Tubelite Inc.
- 6. YKK AP America Inc.
- B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
 - 1. Section Profile Size: 1 ³/₄ inches by 4 ¹/₂ inches.
 - 2. Interior Vestibule Framing Construction: Nonthermal.
 - 3. Glazing System: Retained mechanically with gaskets on four sides.
 - 4. Glazing Plane: Center.
 - 5. Finish: Clear anodic 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.
 - 9. Receivers: Provide manufacturer's standard receiver or receptor, as shown in drawings, or if not shown, as required at head conditions to accommodate drift.
- 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.

2.4 ENTRANCE DOOR SYSTEMS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America, an Arconic company; 500 Heavy Wall or comparable product by one of the following:
 - 1. Arcadia, Inc.
 - 2. EFCO Corporation.
 - 3. Manko Window Systems, Inc.
 - 4. Oldcastle BuildingEnvelope (OBE); CRH Americas.
 - 5. Tubelite Inc.
 - 6. YKK AP America Inc.
- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
 - 1. Door Construction: 2-inch overall thickness, with minimum 0.188-inch- 2- to 2-1/4-inch overall thickness, with minimum 0.125-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: Wide stile; 5-inch nominal width.
 - 3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.
 - 4. Finish: Match adjacent storefront framing finish.

2.5 ENTRANCE DOOR HARDWARE

- A. General: Provide heavy-duty entrance door hardware as specified in Section 087100 "Door Hardware" for each entrance door, with the exception of cylinders and card readers:.
 - 1. Cylinders shall be provided under Section 087100 for keying into the building system.
 - 2. Card readers at security doors shall be provided under Division 28.
- B. The aluminum entrances sub-contractor shall be responsible for providing complete, functional and code-compliant hardware as scheduled in Section 087100.

2.6 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.

2.7 MATERIALS

- A. Sheet and Plate: ASTM B209.
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.
- C. Extruded Structural Pipe and Tubes: ASTM B429/B429M.
- D. Structural Profiles: ASTM B308/B308M.
- E. 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.
- F. 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.

2.8 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
 - 3. Use exposed fasteners with countersunk Phillips screw heads, fabricated from 300 series stainless steel.

- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
 - 1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.
- C. Concealed Flashing: Dead-soft, 0.018-inch- thick stainless steel, complying with ASTM A240/A240M, of type recommended by manufacturer.
- D. Miscellaneous Trim: Provide interior sills, exterior sills, closures, flashings, trim and other elements in conjunction with or adjacent to storefront system. Fabricate from aluminum finished to match framing.
 - 1. Material Thickness Unless Otherwise Indicated: 0.060 inch minimum.
 - 2. Sill Material Thickness: 0.125 inch minimum.
- E. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30mil thickness per coat.

2.9 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.

1. Reinforce all frames with glazing above the door.

- 2. At interior and exterior doors, provide compression weather stripping at fixed stops.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
 - 1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 - 2. At exterior doors, provide weather sweeps applied to door bottoms.
 - 3. For doors scheduled to receive exit devices, provide factory preps. No universal preps.

- 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.
- 2.10 ALUMINUM FINISHES
 - A. Clear Anodic Finish: AAMA 611, AA-M10C21A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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."

3.3 ERECTION TOLERANCES

- A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
 - 1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
 - 2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
 - 3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
 - c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
 - 4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

3.5 MAINTENANCE SERVICE

- A. Entrance Door Hardware Maintenance:
 - 1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

- 1. Mechanical and electrified door hardware
- 2. Electronic access control system components

B. Section excludes:

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

C. Related Sections:

- 1. Division 01 "General Requirements" sections for, Project Management and Coordination.
- 2. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
- 3. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Aluminum-Framed Entrances and Storefronts"
- 4. Division 26 "Electrical" sections for connections to electrical power system and for low- voltage wiring.
- 5. Division 28 "Electronic Safety and Security" sections for coordination withother components of electronic access control system and fire alarm system.

1.2 REFERENCES

- A. UL LLC
 - 1. UL 1784 Air Leakage Tests of Door Assemblies
 - 2. 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. Keying Systems and Nomenclature
 - 4. Installation Guide for Doors and Hardware
- C. NFPA National Fire Protection Association
 - 1. NFPA 70 National Electric Code

- 2. NFPA 101 Life Safety Code
- D. ANSI American National Standards Institute
 - 1. ANSI A117.1 2017 Edition Accessible and Usable Buildings and Facilities
 - 2. ANSI/BHMA A156.1 A156.29, and ANSI/BHMA A156.31 Standards for Hardware and Specialties
 - 3. ANSI/BHMA A156.28 Recommended Practices for Keying Systems
 - 4. ANSI/WDMA I.S. 1A Interior Architectural Wood Flush Doors
 - 5. ANSI/SDI A250.8 Standard Steel Doors and Frames

1.3 SUBMITTALS

- A. General:
 - 1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
 - 2. Prior to forwarding submittal:
 - a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
- B. Action Submittals:
 - 1. Product Data: Submit 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 of requested door 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:
 - a. Submit 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 critical in Project construction schedule.

- b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
- c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect's hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
- 5. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations 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. 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.
- C. Informational Submittals:
 - 1. Provide Qualification Data for Supplier, Installer and Architectural HardwareConsultant.
 - 2. Provide Product Data:
 - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
 - b. Include warranties for specified door hardware.
- 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. Final approved hardware schedule edited to reflect conditions as installed.
- d. Final keying schedule
- e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
- f. As-installed wiring diagrams for each opening connected to power, both lowvoltage and 110 volts.
- E. Inspection and Testing:
 - 1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
 - a. Required egress door assemblies, in compliance with NFPA 101.

1.4 QUALITY ASSURANCE

- A. Qualifications and Responsibilities:
 - 1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
 - 2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
 - 3. Architectural Hardware Consultant: 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:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
 - 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.
- B. Certifications:
 - 1. Electrified Door Hardware
 - a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
 - 2. Accessibility Requirements:
 - a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This
project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

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- 1. Keying Conference
 - a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic diagram.
 - 3) Requirements for key control system.
 - 4) Requirements for access control.
 - 5) Address for delivery of keys.
- 2. Pre-installation Conference
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Inspect and discuss preparatory work performed by other trades.
 - c. Inspect and discuss electrical roughing-in for electrified door hardware.
 - d. Review sequence of operation for each type of electrified door hardware.
 - e. Review required testing, inspecting, and certifying procedures.
 - f. Review questions or concerns related to proper installation and adjustment of door hardware.
- 3. Electrified Hardware Coordination Conference:
 - a. Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.
- 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. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. 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.
- E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

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

1.6 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- 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.

1.7 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warrantyperiod.
 - 1. Warranty does not cover damage or faulty operation due to improperinstallation, improper use or abuse.
 - 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
 - a. Mechanical Warranty
 - 1) Exit Devices
 - a) Von Duprin: 3 years
 - 2) Closers
 - a) LCN 4000 Series: 30 years

1.8 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

DOOR HARDWARE

- A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
 - 1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.
- C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.2 MATERIALS

- A. Fabrication
 - 1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
 - 2. Finish exposed 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 wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.
- B. 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.
- C. Cable and Connectors:
 - 1. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with number and gage of wires enough to accommodate electric function of specified hardware.
 - 2. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices.
 - Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.
- 2.3 HINGES

A. Manufacturers and Products:

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- 1. Scheduled Manufacturer and Product:
 - a. Ives 5BB series
- 2. Acceptable Manufacturers and Products:
 - a. Hager BB1191/1279 series
 - b. McKinney TB series
 - c. Best FBB series
- B. Requirements:
 - 1. Provide hinges conforming to ANSI/BHMA A156.1.
 - 2. Provide five knuckle, ball bearing hinges.
 - 3. 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
 - 4. 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
 - 5. 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
 - 6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.
 - 7. 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.
 - 8. 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
 - 9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component. Provide mortar guard for each electrified hinge specified.

2.4 CONTINUOUS HINGES

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. lves

B. Requirements:

- 1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
- 2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
- 3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
- 4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
- 5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
- 6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
- 7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.5 FLUSH BOLTS

A. Manufacturers:

- 1. Scheduled Manufacturer:
 - a. Ives

B. Requirements:

 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.

2.6 DEADBOLTS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Schlage B500 Series
- B. Requirements:
 - 1. Provide grade 2 deadbolt series conforming to ANSI/BHMA A156.
 - 2. Cylinders: Refer to "KEYING" article, herein.
 - 3. Provide deadbolts with standard 2-3/4 inches (70 mm) backset. Provide 2-3/8 inches (60 mm) where noted or if door or frame detail requires. Provide deadbolt with full 1-inch (25 mm) throw, constructed of steel alloy.
 - 4. Provide manufacturer's standard strike.
- 2.7 EXIT DEVICES

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. Von Duprin 98/35A series (Owner Standard)
- 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 smooth 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 exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
 - 7. Provide flush end caps for exit devices.
 - 8. Provide exit devices with manufacturer's approved strikes.
 - 9. 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.
 - 10. 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.
 - 11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
 - 12. 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.
 - 13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
 - 14. Provide electrified options as scheduled.
 - 15. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
 - 16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.8 CYLINDERS

A. Manufacturers: VERIFY WITH OWNER

- 1. Scheduled Manufacturer and Product:
 - a. Schlage
- B. Requirements:
 - 1. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

2.9 KEYING

A. Scheduled System: VERIFY WITH OWNER

- 1. New factory registered system:
 - a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- 2. Existing factory registered system:
 - a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- 3. Existing non-factory registered system:
 - a. Provide cylinders/cores keyed into Owner's existing keying system managed by Owner's locksmith, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference. Contact:
 - 1) Firm Name:
 - 2) Contact Person:
 - 3) Telephone:

B. Requirements:

- 1. Construction Keying:
 - a. Temporary Construction Cylinder Keying.
 - 1) Provide construction cores that permit voiding construction keys without cylinder removal, furnished in accordance with the following requirements.
 - a) Split Key or Lost Ball Construction Keying System.
 - b) 3 construction control keys, and extractor tools or keys as required to void construction keying.
 - c) 12 construction change (day) keys.
 - 2) Owner or Owner's Representative will void operation of temporary construction keys.
 - b. Replaceable Construction Cores.
 - 1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - a) 3 construction control keys
 - b) 12 construction change (day) keys.
 - Owner or Owner's Representative will replace temporary construction cores with permanent cores.

- 2. Permanent Keying:
 - a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - 1) Master Keying system as directed by the Owner.
 - b. 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.
 - c. Provide keys with the following features:
 - 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
 - 3) Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
 - d. Identification:
 - 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
 - 2) Identification stamping provisions must be approved by the Architect and Owner.
 - 3) 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.
 - 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
 - e. Quantity: Furnish in the following quantities.
 - 1) Permanent Control Keys: 3.
 - 2) Master Keys: 6.
 - 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
 - 4) Key Blanks: Quantity as determined in the keying meeting.

2.10 KEY CONTROL SYSTEM

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Telkee
- B. Requirements:
 - 1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and

standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.

- a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
- b. Provide hinged-panel type cabinet for wall mounting.

2.11 DOOR CLOSERS

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product:
 - a. LCN 4040XP series (Owner Standard)

B. Requirements:

- 1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
- 2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
- 3. Cylinder Body: 1-1/2-inch (38 mm) diameter piston with 5/8-inch (16 mm) diameter double heat-treated pinion journal. QR code with a direct link to maintenance instructions.
- 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. Provide snap-on cover clip, with plastic covers, that secures cover to spring tube.
- 6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck. Provide graphically labelled instructions on the closer body adjacent to each adjustment valve. Provide positive stop on reg valve that prevents reg screw from being backed out.
- 7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
- 8. Pressure Relief Valve (PRV) Technology: Not permitted.
- 9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
- 10. Provide 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.

2.12 DOOR TRIM

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:

- a. Burns
- b. Trimco
- B. Requirements:
 - 1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.13 PROTECTION PLATES

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco
- B. Requirements:
 - 1. Provide protection plates with a 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 plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
 - 3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.14 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

- A. Manufacturers:
 - 1. Scheduled Manufacturers:
 - a. Glynn-Johnson
 - 2. Acceptable Manufacturers:
 - a. Sargent
 - b. ABH
- B. Requirements:
 - 1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.
- 2.15 DOOR STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Ives
 - 2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco
- B. Provide door stops at each door leaf:
 - 1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
 - 2. Where a wall stop cannot be used, provide universal floor stops.
 - 3. Where wall or floor stop cannot be used, provide overhead stop.
 - 4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.16 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Zero International
 - 2. Acceptable Manufacturers:
 - a. Reese
 - b. DHSI
 - c. Legacy
- B. Requirements:
 - 1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
 - 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. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
 - 4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.17 SILENCERS

- A. Manufacturers:
 - 1. Scheduled Manufacturer:

- a. lves
- 2. Acceptable Manufacturers:
 - a. Burns
 - b. Trimco
- 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.

2.18 DOOR POSITION SWITCHES

- A. Manufacturers:
 - 1. Scheduled Manufacturer:
 - a. Schlage
 - 2. Acceptable Manufacturers:
 - a. GE-Interlogix
 - b. 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.

2.19 FINISHES

- A. FINISH: BHMA 626/652 (US26D); EXCEPT:
 - 1. Hinges at Exterior Doors: BHMA 630 (US32D)
 - 2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
 - 3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
 - 4. Protection Plates: BHMA 630 (US32D)
 - 5. Overhead Stops and Holders: BHMA 630 (US32D)
 - 6. Door Closers: Powder Coat to Match
 - 7. Wall Stops: BHMA 630 (US32D)
 - 8. Latch Protectors: BHMA 630 (US32D)
 - 9. Weatherstripping: Clear Anodized Aluminum
 - 10. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.2 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. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
 - 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.
- I. Lock Cylinders:
 - 1. Install construction cores to secure building and areas during construction period.
 - 2. Replace construction cores with permanent cores as indicated in keying section.
 - 3. Furnish permanent cores to Owner for installation.

- J. Wiring: Coordinate with Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for:
 - 1. Conduit, junction boxes and wire pulls.
 - 2. Connections to and from power supplies to electrified hardware.
 - 3. Connections to fire/smoke alarm system and smoke evacuation system.
 - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 - 5. Connections to panel interface modules, controllers, and gateways.
 - 6. Testing and labeling wires with Architect's opening number.
- K. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- L. Continuous Hinges: Re-locate the door and frame fire rating labels where they will remain visible so that the hinge does not cover the label once installed.
- M. Door Closers & Auto Operators: Mount closers/operators on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers/operators so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- N. Overhead Stops/Holders: Mount overhead stops/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.
- O. 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.
- P. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- Q. 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.
- R. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- S. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- T. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 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 can close freely from an open position of 30 degrees.
 - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

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- 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, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.4 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions 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.

3.5 DOOR HARDWARE SCHEDULE

- A. 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. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

132845 OPT0425041 Version 2

HARDWARE GROUP NO. 01

For use on Door #(s):

A115

Provide each SGL door(s) with the following:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	612	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC	612	SCH
1	EA	WALL STOP	WS406/407CVX	612	IVE
1	EA	SET GASKETING	488SBK	BK	ZER

HARDWARE GROUP NO. 02

For use on Door #(s): A114 A117

Provide 3 1 1 3	each SG EA EA EA EA EA	L door(s) with the following: HINGE PASSAGE SET WALL STOP SILENCER	5BB1 4.5 X 4.5 NRP ND10S RHO WS406/407CVX SR64	ALUI ALUI ALUI		612 612 612 GRY	IVE SCH IVE IVE
HARDW	VARE GR	OUP NO. 03					
For use A116,	on Door , A117A	#(s):					
Provide 3 1 1 1 3	each SG EA EA EA EA EA	L door(s) with the following: HINGE CLASSROOM LOCK SURFACE CLOSER WALL STOP SILENCER	5BB1 4.5 X 4.5 NRP ND70P6D RHO 4040XP H TBWMS WS406/407CVX SR64	AGUY AGUY AGUY AGUY AGUY		612 612 690 612 GRY	IVE SCH LCN IVE IVE
HARDW	VARE GR	ROUP NO. 04					
For use	on Door	#(s): A111 A113					
Provide 3 1 1 1 1 3	each SG EA EA EA EA EA EA	L door(s) with the following: HINGE CLASSROOM LOCK SURFACE CLOSER KICK PLATE WALL STOP SILENCER	5BB1 4.5 X 4.5 NRP ND70P6D RHO 4040XP H TBWMS 8400 10" X 2" LDW B-CS WS406/407CVX SR64	ALIO ALIO ALIO ALIO ALIO ALIO		612 612 690 612 612 GRY	IVE SCH LCN IVE IVE IVE
HARDW For use	VARE GR on Door B	COUP NO. AL01 #(s):					
Provide 1 1	each SG EA EA	L door(s) with the following: ELECTRIC STRIKE CARD READER	6300 FSE 12/24 VAC/VDC BY SECURITY CONTRACTOR		N N	630 BLK	VON SCE
1	EA	REMOTE RELEASE / INTERCOM	BY SECURITY CONTRACTOR		×	628	SCE
1	EA	DOOR CONTACT	7764 / 679-05 AS REQUIRED		×	628	SCE
1	EA	POWER / LOW VOLTAGE POWER HARDWARE TO	BY SECURITY CONTRACTOR EXISTING		×		VON
I		REMAIN					

DOOR IS NORMALLY LOCKED. RESTRICTING ENTRY.

AUTHORIZED CREDENTIAL AT OUTSIDE CARD READER MOMENTARILY RELEASES ELECTRIC STRIKE TO ALLOW ENTRY OR BY KEY.

REMOTE RELEASE / INTERCOM MOMENTARILY RELEASES ELECTRIC STRIKE TO ALLOW

ENTRY. INSIDE TOUCHBAR ALWAYS ALLOWS EGRESS.

HARDWARE GROUP NO. AL02

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For use on Door #(s): A112A

Provide each SGL door(s) with the following:

1	EA	ELECTRIC STRIKE	6300 FSE 12/24 VAC/VDC		630	VON
1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	98-NL-OP-110MD		626	VON
1	EA	RIM CYLINDER	AS REQUIRED		626	SCH
1	EA	90 DEG OFFSET PULL	8190HD 10" STD		630	IVE
1	EA	SURFACE CLOSER	4040XP EDA TBWMS		690	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA SRT		689	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30 SRT		689	LCN
1	EA	BLADE STOP SPACER	4040XP-61 SRT		689	LCN
1	EA	WALL STOP	WS406/407CVX		612	IVE
1	SET	SEALS	BY DOOR / FRAME			
			MANUFACTURER			
1	EA	WIRE HARNESS	CON-XX AS REQUIRED	×		SCH
1	EA	CARD READER	BY SECURITY		BLK	SCE
			CONTRACTOR			
1	EA	REMOTE RELEASE /	BY SECURITY		628	SCE
		INTERCOM	CONTRACTOR			
1	EA	POWER / LOW	BY SECURITY			VON
		VOLTAGE POWER	CONTRACTOR			

DOOR IS NORMALLY LOCKED. RESTRICTING ENTRY.

AUTHORIZED CREDENTIAL AT OUTSIDE CARD READER MOMENTARILY RELEASES ELECTRIC STRIKE TO ALLOW ENTRY OR BY KEY.

REMOTE RELEASE MOMENTARILY RELEASES ELECTRIC STRIKE TO ALLOW ENTRY. INSIDE TOUCHBAR ALWAYS ALLOWS EGRESS.

HARDWARE GROUP NO. AL03

For use on Door #(s):

A112C

Provide each SGL door(s) with the following:

1 HARDWARE TO EXISTING REMAIN

END OF SECTION

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Acoustical panels.
 - 2. Metal suspension system.
 - 3. Metal edge moldings and trim.
- B. Related Requirements:
 - 1. Section 095123 "Acoustical Tile Ceilings" for ceilings consisting of mineral-base acoustical tiles used with fully concealed suspension systems, adhesive bonding.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- 1.4 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
 - B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.
 - C. Delegated-Design Submittal: For seismic restraints for ceiling systems.
 - 1. Include design calculations for seismic restraints including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Method of attaching hangers to building structure.
 - 4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.

- 5. Size and location of initial access modules for acoustical panels.
- 6. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Fire sprinklers.
- 7. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
- 8. Minimum Drawing Scale: 1/8 inch = 1 foot.
- B. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- C. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.8 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockup of typical ceiling area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design seismic restraints for ceiling systems.
- B. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- C. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E 1264.
 - 2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide the Basis-of-Design product indicated or comparable product by one of the following.
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. CertainTeed LLC; Saint-Gobain North America.
 - 3. USG Corporation.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. 24 by 48-inch Acoustical Ceiling Panel **ACP1**:

- 1. Basis-of-Design Product: USG, Radar Basic 2310.
- 2. Classification: Provide panels as follows:
 - a. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
 - b. Pattern: CE (perforated, small holes and lightly textured).
- 3. Color: White.
- 4. Light Reflectance (LR): Not less than 0.83.
- 5. Ceiling Attenuation Class (CAC): Not less than 35.
- 6. Noise Reduction Coefficient (NRC): Not less than 0.55.
- 7. Edge/Joint Detail: Square, 15/16 inch.
- 8. Thickness: 5/8 inch.
- D. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273, ASTM D 3274, or ASTM G 21 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following
 - 1. Armstrong Ceiling & Wall Solutions.
 - 2. CertainTeed LLC; Saint-Gobain North America.
 - 3. Rockfon (Rockwool International).
 - 4. USG Corporation.
- B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M and designated by type, structural classification, and finish indicated.
 - 1. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch- wide metal caps on flanges.
 - a. Structural Classification: Heavy-duty system.
 - b. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 - c. Face Design: Flat, flush.
 - d. Cap Material: Cold-rolled steel.
 - e. Cap Finish: Painted white.

2.5 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.

- 3. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.
- C. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical panels in place during a seismic event.
- D. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- E. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Armstrong World Industries, Inc.
 - 2. CertainTeed LLC; Saint-Gobain North America.
 - 3. Rockfon (Rockwool International).
 - 4. USG Corporation.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
 - 2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.7 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C 636/C 636M, seismic design requirements, and manufacturer's written instructions.
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 - 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 8. Do not attach hangers to steel deck tabs.
 - 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 - 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 - 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

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- 1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
- 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
- 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
 - 1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 - 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 - 3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 - 4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 - 5. Install seismic clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.

3.4 ERECTION TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.5 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

3.6 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

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- - Β. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 097260 - TACKABLE WALLCOVERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient cork/linoleum tackable wallcovering.
 - 2. Accessories.
- B. Related Requirements:
 - 1. Section 099123 "Interior Painting" for priming gypsum board to receive wallcoverings.

1.3 SUBMITTALS

- A. Product data indicating compliance with specified requirements.
- B. Installation Instructions.
- C. Samples: 7 inch by 9 inch samples of each type of tackable wallcovering material required.
- D. Maintenance Instructions: Include precautions against cleaning materials and methods that may be detrimental to finishes and performance.

1.4 QUALITY ASSURANCE

- A. Surface Burning Characteristics Classification: Provide materials that meet classification ratings below:
 - 1. ASTM E84 (Flame Spread and Smoke Developed): II/B
- B. Single Source Responsibility: Obtain tackable wallcovering system components from a single source.
- C. Deliver materials in original factory packaging, labeled with manufacturer, brand name, size, color, and lot number.
- D. Store materials in original, undamaged packaging inside a well-ventilated area protected from weather, moisture, soiling, and extreme temperatures.

- E. Maintain room temperature within the storage area at not less than 68 degrees Fahrenheit during the period materials are stored.
- F. Mock-ups: Prepare mock-ups in the location and of the size as directed by Architect to establish requirements for seaming and finish trim.
 - 1. Correct areas, modify method of application/installation, or adjust finish texture as directed by architect to comply with specified requirements.
 - 2. Maintain mock-ups accessible to serve as a standard of quality.
 - 3. Install sample panel of each type of wallcovering specified.
 - 4. Install panels in areas designated by architect.

1.5 FIELD CONDITIONS

- A. Maintain ambient temperature within the building at not less than 68 degrees Fahrenheit for a minimum of seventy-two hours prior to beginning of installation.
- B. Do not install tackable wallcovering until the space is enclosed and weatherproof.
- C. Do not install tackable wallcovering until temperature is stabilized and permanent lighting is in place.

1.6 WARRANTY

A. Submit manufacturer's limited five-year written warranty against manufacturing defects.

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Basis of Design Product: Subject to compliance with requirements, provide Koroseal; Walltalkers, Tac-Wall, or comparable product approved prior to bidding.

2.2 MATERIALS – **TCK**

- A. Uni-color resilient homogeneous tackable linoleum surface consisting of linseed oil, granulated cork, rosin binders, and dry pigments calendered onto natural burlap backing. Color shall extend through thickness of material.
 - 1. Roll Width: 48 inches.
 - 2. Thickness: 1/4 inch.
 - 3. Color: As indicated in Finish Schedule.

2.3 ACCESSORIES

A. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) or polyvinyl acetate dispersion type (contact adhesive) when used in a press.

- B. Trim for Tackable Wall:
 - 1. Manufacturer's standard 'J' trim.
 - a. Finish: Clear satin, anodized aluminum at horizontal and vertical exposed panel edges, and "H" shape edge trim with baked enamel or powder coated painted finish matching panel faces at vertical edges of adjoining panels.
 - b. Size: 1/4 inch.
- C. Push-Pins: 48 push pins per room, translucent.

PART 3 - EXECUTION

- 3.1 EXAMINATION
 - A. Examine areas and conditions in which tackable wallcoverings will be installed.
 - B. Complete finishing operations, including painting, before beginning installation of tackable wallcovering materials.
 - C. Wall surfaces to receive wallcovering materials shall be dry and free from dirt, grease, loose paint, and scale.
 - D. Notify the contractor and architect in writing of any conditions detrimental to the proper and timely completion of the installation.
 - E. Beginning of installation means acceptance of surface conditions.

3.2 PREPARATION

- A. Surface Preparation: Remove hardware, accessories, plates, and similar items to allow tackable wallcovering to be installed.
- B. Gypsum board surface: Recess nails and screws. Repair irregular tape joints, sand and remove dust.
- C. Painted surface: Remove loose paint or scale. Sand surface of enamel or gloss paint and wipe clean with damp cloth.
- D. Ensure wall surfaces scheduled to receive tackable wallcovering are properly sealed with a quality primer specified for use under flexible vinyl wallcoverings.

3.3 APPLICATION

- A. Comply with manufacturer's printed installation instructions.
- B. Cut sheets to size including a few inches of overage. Allow sheets to lay flat for at least twentyfour hours prior to the application. Mark roll direction and sequence on the backside of each sheet. Hang sheets in sequence as cut from the roll, do not reverse sheets.

- C. Permanent HVAC system shall be set to 68 degrees Fahrenheit for at least seventy-two hours prior to, during, and after the installation.
- D. Back roll each sheet prior to the installation to release curl memory.
- E. For seamed applications, using a seam and strip cutter remove the factory edge of one sheet. Using the same tool, overlap and trace cut the mating edge of the second sheet. Repeat this step for as many sheets as required for the job.
- F. Scribe, cut, and fit material to butt tightly to adjacent surfaces, built-in casework, and permanent fixtures and pipes.
- G. Apply adhesive with a 1/16 inch square notch trowel to the area to receiving the sheet (apply enough for one sheet at a time).
- H. Work from top to bottom then side to side. Roll sheet firmly into adhesive for positive contact and to remove air bubbles.
- I. Remove adhesive residue immediately after each panel is hung with a mild soap/water solution and a soft cloth/sponge.

3.4 CLEANING

- A. Clean wallcovering using a sponge with a neutral pH cleaning solution. Do not use abrasive cleaners. Rinse thoroughly with water and let dry before using.
- B. Remove adhesive while wet.

3.5 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

END OF SECTION 097260

SECTION 099300 - STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Wood stains.
 - 2. Transparent finishes.
- B. Related Requirements:
 - 1. Section 064023 "Interior Architectural Woodwork" for interior lumber trim to receive transparent finishing.

1.2 ACTION SUBMITTALS

- A. Product Data:
 - 1. For each type of product.
 - 2. Include preparation requirements and application instructions.
 - 3. Indicate VOC content.
- B. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.
- C. Samples for Verification: Sample for each type of finish system and in each color and gloss of finish required on representative samples of actual wood substrates.
 - 1. Size: 8 inches long.
 - 2. Apply coats on Samples in steps to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.3 MAINTENANCE MATERIAL SUBMITTALS

- A. Extra Stock Material: Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Stains and Transparent Finishes: 5 percent, but not less than 1 gallon of each material and color applied.

1.4 MOCKUPS

- A. Apply mockups of each finish system indicated and each color selected to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each type of finish system and substrate.
 - a. Vertical Surfaces: Provide samples of at least 4 sq. ft.
 - b. Other Items: Architect will designate items or areas required.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 FIELD CONDITIONS

- A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures of less than 5 deg F above the dew point, or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. <u>Manufacturers:</u> 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. PPG Paints.
 - 2. Sherwin-Williams Company (The).

2.2 SOURCE LIMITATIONS

A. Source Limitations: Obtain each coating product from single source from single manufacturer.

2.3 MATERIALS, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2.4 WOOD STAINS

- A. Stain, Interior, Semitransparent, for Interior Wood: Solvent-based, oil or oil/alkyd, semitransparent, pigmented stain for new interior wood surfaces that are to be finished with a clear varnish.
 - 1. Maximum VOC Content: 275 g/L.

2.5 TRANSPARENT FINISHES

- A. Varnish, Interior, Water Based, Clear, Satin: Water-based clear satin coating for interior wood trim, frames, doors, paneling and cabinetry.
 - 1. Gloss and Sheen Level: Manufacturer's standard low-sheen finish.
 - 2. Maximum VOC Content: 275 g/L.

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 Interior Wood Substrates: 10 percent, when measured with an electronic moisture meter.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with finish application only after unsatisfactory conditions have been corrected.
 - 1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
 - 1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- B. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.
 - 1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.

- 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
- C. Interior Wood Substrates:
 - 1. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
 - 2. Sand surfaces exposed to view and dust off.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for finish and substrate indicated.
 - 2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
 - 3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood Substrates, Wood Trim:
 - 1. Water-Based Varnish over Stain System **WD1**:
 - a. Stain Coat: Stain, semitransparent, for interior wood.
 - b. First Intermediate Coat: Water-based varnish matching topcoat.
 - c. Second Intermediate Coat: Water-based varnish matching topcoat.
 - d. Topcoat: Varnish, water based, clear, satin.

END OF SECTION 099300

SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Public-use washroom accessories.
- B. Related Requirements:
 - 1. Section 220000 "Plumbing" for lavatory guards.

1.3 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Include electrical characteristics.
- B. Samples: Full size, for each exposed product and for each finish specified.
 - 1. Approved full-size Samples will be returned and may be used in the Work.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated.
 - 2. Identify accessories using designations indicated.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, visible silver spoilage defects.
 - 2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED / OWNER-INSTALLED MATERIALS

- A. Owner-Furnished / Owner-Installed Materials:
 - 1. Waste receptacles.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
- B. Liquid Soap Dispenser:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick Washroom Equipment, Inc; B-2111 or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc.
 - c. Bradley Corporation.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - 2. Description: Designed for dispensing antibacterial soap in liquid or lotion form.
 - 3. Materials: 18-8, Type 304, 0.0375-inch-thick stainless steel.
 - 4. Mounting: Vertically oriented, surface mounted.
 - 5. Capacity: 40 oz. mL
 - 6. Lockset: Tumbler type.
 - 7. Refill Indicator: Window type.
- C. Paper Towel (Folded) Dispenser:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick Washroom Equipment, Inc; B-262, or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc. Bradley.

- c. GAMCO Specialty Accessories; a division of Bobrick.
- 2. Mounting: Surface.
- 3. Minimum Capacity: 400 C-fold or 525 multifold towels.
- 4. Material and Finish: Stainless steel, ASTM A480/A480M No.4 finish (satin).
- 5. Lockset: Tumbler type.
- 6. Refill Indicator: Pierced slots at sides or front.
- D. Toilet Tissue (Roll) Dispenser:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide <u>Bobrick</u> <u>Washroom Equipment, Inc;</u> B-2888, or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc.
 - c. Bradley Corporation.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - 2. Description: Double-roll dispenser with anti-theft spindles retained in dispensing mechanism when door is locked.
 - 3. Materials:
 - a. Cabinet: 18-8, Type 304, 0.03125-inch-thick stainless steel with satin finish at exposed surfaces.
 - b. Door: 18-8, Type 304, 0.03125-inch-thick stainless steel with 0.050-inch-thick frame with satin finish at exposed surfaces.
 - c. Dispensing Mechanism, Inner Housing and Cam: 18-8, Type 304, 0.050-inch-thick stainless steel.
 - d. Spindles (2): Heavy-duty, one-piece, molded ABS.
 - 4. Mounting: Surface mounted.
 - 5. Lockset: Tumbler type.
 - 6. Operation: Non-control delivery.
 - 7. Capacity: Designed for two 4-1/2 or 5-inch-diameter tissue rolls.
- E. Toilet Seat-Cover Dispenser:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick Washroom Equipment, Inc; B-221, or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc.
 - c. Bradley Corporation.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - 2. Mounting: Surface mounted.
 - 3. Minimum Capacity: 250 seat covers.
 - 4. Exposed Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
 - 5. Lockset: Tumbler type.
- F. Grab Bar:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick B-6806 or comparable product by one of the following:
J E Cosgriff Memorial Catholic School

- a. AJW Architectural Products.
- b. American Specialties, Inc.
- c. Bradley Corporation.
- d. GAMCO Specialty Accessories; a division of Bobrick.
- 2. Mounting: Flanges with concealed fasteners.
- 3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
- 4. Outside Diameter: 1-1/2 inches.
- 5. Configuration and Length: As indicated on Drawings.
- G. Sanitary-Napkin Disposal Unit:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick, B-254 or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc.
 - c. Bradley Corporation.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - 2. Mounting: Surface mounted.
 - 3. Door or Cover: Self-closing, disposal-opening cover and hinged face panel with tumbler lockset.
 - 4. Receptacle: Removable.
 - 5. Material and Finish: Stainless steel, No. 4 finish (satin).
- H. Mirror Unit:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Bobrick B-165 or comparable product by one of the following:
 - a. AJW Architectural Products.
 - b. American Specialties, Inc.
 - c. Bradley Corporation.
 - d. GAMCO Specialty Accessories; a division of Bobrick.
 - 2. Frame: Stainless-steel channel.
 - a. Corners: Mitered and mechanically interlocked.
 - 3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
 - 4. Size: As indicated on Drawings.
- 2.3 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inchminimum nominal thickness unless otherwise indicated.
- B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036inchminimum nominal thickness.
- C. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60hot-dip zinc coating.
- D. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- F. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.4 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install as indicated on Drawings.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Manually operated roller shades with single rollers.
- B. Related Requirements:
 - 1. Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
 - 2. Section 079200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.
- C. Samples: For each exposed product and for each color and texture specified, 10 inches long.
- D. Samples for Initial Selection: For each type and color of shadeband material.
 - 1. Include Samples of accessories involving color selection.
- E. Samples for Verification: For each type of roller shade.
 - 1. Shadeband Material: Not less than 10 inches square. Mark interior face of material if applicable.
 - 2. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
 - 3. Installation Accessories: Full-size unit, not less than 10 inches long.
- F. Product Schedule: For roller shades. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of shadeband material.
- C. Product Test Reports: For each type of shadeband material, for tests performed by manufacturer and witnessed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For roller shades to include in maintenance manuals.
 - 1. Include vendor information and product details, sizes, locations, and other information required to reorder shades.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Roller Shades: Full-size units equal to 5 percent of quantity installed for each size, color, and shadeband material indicated, but no fewer than two units.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Draper Inc.
 - 2. MechoShade Systems, Inc.
 - 3. WT Shade, a division of inpro.
- B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.
 - 1. Bead Chains: Stainless steel.
 - a. Loop Length: Full length of roller shade.
 - b. Limit Stops: Provide upper and lower ball stops.
 - c. Chain-Retainer Type: Chain tensioner, sill mounted.
- C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idleend assemblies designed to facilitate removal of shadebands for service.
 - 1. Roller Drive-End Location: Right side of interior face of shade unless indicated otherwise on Drawings.
 - 2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller.
 - 3. Shadeband-to-Roller Attachment: Manufacturer's standard method.
- D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
- E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.
- F. Shadebands:
 - 1. Shadeband Material: Light-filtering or light blocking fabric as indicated on the Drawings.
 - 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.
- G. Installation Accessories:
 - 1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

- a. Shape: L-shaped.
- b. Height: Manufacturer's standard height required to conceal roller and shadeband assembly when shade is fully open, but not less than 4 inches.
- 2. Endcap Covers: To cover exposed endcaps.
- 3. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.
 - 1. Source: Roller shade manufacturer.
 - a. Basis of Design: MechoShade Systems, Inc.; EcoVeil, 1550 Series.
 - 2. Type: Thermoplastic Olefin.
 - 3. Weave: Basketweave.
 - 4. Roll Width: 126 inches.
 - 5. Orientation on Shadeband: Up the bolt.
 - 6. Openness Factor: 3 percent.
 - 7. Color: As selected by Architect from manufacturer's full range.

2.4 ROLLER SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:
 - 1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.
 - 2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:
 - 1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, locations of connections to building electrical system, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.
- B. Roller Shade Locations: As indicated on Drawings.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 122413



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DEMOLITION GENERAL NOTES

Existing Conditions: Verify existing site and building conditions including but not limited to underground utilities and service lines, irrigation lines, sub-surface structures and all other existing construction both above and below grade.

Protection: Protect existing construction to remain from damage during demolition and new construction work. Repair any damage resulting from this work.

Protect in-place, existing mechanical, plumbing and electrical systems above ceilings that are not shown to be removed. This includes, but is not limited to: network cabling, coax cabling, conduits, piping, ductwork, etc.

When removing concrete slabs on grade, take all necessary precautions to protect electrical lines in or under those slabs.

Site Access: Coordinate phased access to the site with the Owner, including times of restricted access. **Coordination:** Coordinate extent of walls to be removed with architectural floor plan(s).

Masonry Walls: Where masonry walls are demolished, clean and repair newly exposed surfaces to match

adjacent wall finish. Salvage: Review with the owner, casework, furniture, equipment and wall mounted display surfaces left behind after owner move out, that are not shown on drawings. Identify as either salvage or to be disposed

Where indicated to be removed, salvage whiteboards and tack boards for reuse, UNO.

Where indicated to be removed, salvage undamaged acoustical ceiling panels for use in repair, patching and modifications of existing ceilings. Use only in ceilings where panels match.

Verify that existing equipment that is to remain, to be salvaged or to be re-installed, is in working condition. Provide written documentation to the Owner for any items that are not in working condition before beginning work in the area.

LEGEND - DEMOLITION

AREA OF NO WORK

EXISTING TO REMAIN



of by contractor.

REMOVE DOOR & FRAME === WALLS & OTHER ITEMS

TO BE DEMOLISHED NOTE: WHERE WALLS, CEILINGS AND OTHER ITEMS ARE SHOWN WITH DASHED LINES, WHETHER KEYNOTED OR NOT, REMOVE THESE

ITEMS TO THE EXTENT INDICATED AND AS

REQUIRED BY NEW CONSTRUCTION.

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NEW WINDOW. REFER TO NEW ELEVATION FOR EXACT PLACEMENT OF OPENING. REMOVE CLOTHES HOOKS AND SAVE FOR USE IN REMODEL

-(E.A)

RAISED STEP ON FLOOR BELOW

- LINE OF DEMOLITION FOR NEW BATHROOM. PLEASE REFER TO STRUCTURAL DRAWINGS (A5/S501) FOR REPLACEMENT SLAB DETAIL. RECESS TO BE 2" FOR NEW TILE SYSTEM

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REFLECTED CEILING PLAN GENERAL NOTES

RE: A710 for typical suspended ceiling details, including seismic bracing.

Ceiling Grid/Panel Alignment: The design intent of the Reflected Ceiling Plans is center ceiling grids or acoustical panels between walls in both directions, or to center grids in one direction, panels in the other. If the grid does not comply with the design intent, then coordinate with Architect to adjust the ceiling layout prior to installation.

Seismic Design Category: D: Heavy-duty suspension system required / Refer to Structural / Refer to Specifications.

Seismic Bracing: Rigid bracing required at ceilings over 1,000 SF and at all ceilings with fire sprinklers and other penetrations.

Seismic Control Joints: Provide seismic control joints in suspended acoustical ceilings greater than 2,500 SF.

Control Joints: Provide control joints in gypsum board ceilings at 30'-0" max spacing. Coordinate locations with Architect to align joints with other elements in the ceilings or on the walls.

Exposed Elements: Paint exposed structure, pipe, conduit and HVAC duct at open ceilings and at open areas around ceiling clouds. Color: As selected by Architect.

Walls to Deck: Extend all walls to deck, including all components of the wall assembly, UNO.

Fire Sprinklers: Center sprinkler heads in acoustical panels; run in straight lines in orthogonal, rectangular spaces.

Electrical, Mechanical and other Devices: Center in acoustical panels. Coordinate feature lighting layout with Architect prior to rough-in.

LEGEND - REFLECTED CEILING PLANS

ACP1 - 24" X 48" ACOUSTICAL CEILING PANEL

GB1 - EPOXY PAINTED GYPSUM BOARD



ACT1 - 12" X 12" ADHEREDACOUSTICAL CEILING PANEL

MECHANICAL DIFFUSERS MECHANICAL DIFFU



LIGHT FIXTURES

MANUAL ROLLER SHADE

FLOOR PLAN GENERAL NOTES

References to sheets below are provided to aid in navigating the drawings.

RE: G200 for Fixture Mounting Heights.

- RE: G500 for Interior Wall Types.
- RE: A600 for the Door Schedule.
- RE: A620 drawings for Window Types.
- RE: Structural drawings for slab recesses.

Rated Construction: Provide as shown on the plans, the Life Safety Plans and elsewhere in the documents. Seal penetrations with systems applicable to the application and that have UL or other testing agency certifications.

LEGEND - FLOOR PLAN

FEC	FIRE EXTINGUISHER + CABINET SURFACE MOUNTED
FEC	FIRE EXTINGUISHER + CABINET SEMI-RECESSED
FE	FIRE EXTINGUISHER
CG T	CORNER GUARD
	WALL HUNG LAVATORY RE: PLUMBING
	ELECTRICAL WATER COOLER RE: PLUMBING
•	MOP SINK RE: PLUMBING
	- MARKERBOARD, OFCI

NOTE: PROVIDE ITEMS INDICATED IN THE LEGEND IN THE QUANTITIES SHOWN ON THE PLAN.

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RE: North American Architectural Woodwork Standards v4.0 (NAAWS), Cabinet Design Series for cabinet

Countertops: 25" deep with 4" high backsplash, UNO. Provide sidesplashes at walls, tall cabinets or similar

Blocking: Provide blocking in walls at cabinets, wall-mounted accessories, equipment, display boards

Finishes: Finishes are required on all exposed and semi-exposed surfaces, UNO. Wall elevations are not

Casework Finishes: Provide laminate finishes on all exposed and semi-exposed surfaces as required by the specifications. Provide laminate finishes on concealed surfaces if required by the specifications. Refer to

GLAZING		TV
PLASTIC LAMINATE, PL1	φ	COAT HOOK
MOSAIC TILE, FT2		
CERAMIC TILE, WT1		
CERAMIC TILE, WT2		
TACKABLE WALLCOVERING, TCK		
MARKERBOARD, OFCI		

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MHTN ARCHITECTS

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				LIGHT FIXTURE ABBREVIATION SCHEDULE
	A.F.F. WALL@CL CCBA	ABOVE FINISH FLOOR G WALL MOUNT AT CORNER OF WALL AND CEILING CUSTOM PAINTED COLOR AS SELECTED BY THE ARCHITECT		SCBA STANDARD PA CFBA CUSTOM FINIS SFBA STANDARD FIN
	1.	REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATIONS OF I	IGHT FIXTURES AN	LIGHT FIXTURE GENERAL NOTES ND, CONFIRM CEILING TYPES WITH LIGHT FIXTURE TRIMS. BRING ALL DISCR
	2.	REFER TO ARCHITECTURAL ELEVATIONS FOR MOUNTING HEIGHTS AND LOCA	TIONS OF LIGHT FI	XTURES. BRING ALL DISCREPENCIES TO THE ATTENTION OF THE ARCHITEC
	3.	REFER TO THE SPECIFICATIONS FOR OTHER LIGHT FIXTURE, FUSING, LED DR	IVERS, AND LAMP F	REQUIREMENTS AND ACCEPTABLE MANUFACTURERS.
	4.	CONFIRM AVAILABLE MOUNTING DEPTHS OF ALL LIGHT FIXTURES AND COMPA	ARE WITH DEPTHS	SHOWN ON SHOP DRAWINGS. BRING ALL POTENTIAL CONFLICT AREAS TO
	5.	REFER TO LIGHTING PLANS FOR ALL LINEAR FIXTURE LENGTHS. THE CATALO TO ACHIEVE THE OVERALL RUN LENGTH.	G NUMBER IS BASE	D ON THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANTITY OR C
	6.	REFER TO LIGHTING PLANS FOR ALL UNDERCABINET FIXTURE LENGTHS. THE MAY BE REQUIRED TO ACHIEVE THE OVERALL RUN LENGTH OR TO FIT WITHIN	CATALOG NUMBEF I THE MILLWORK. C	R IS BASED ON THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANT OORDINATE FIXTURE LAYOUT WITH MILLWORK SHOP DRAWINGS PRIOR TO
	7.	WHEN A CONTRADICTION EXISTS BETWEEN A SPECIFIC MODEL NUMBER AND	THE DESCRIPTION	, NOTIFY THE ELECTRICAL ENGINEER AND/OR LIGHTING DESIGNER.
	8.	PRIOR APPROVALS ARE REQUIRED BEFORE BIDDING THE PROJECT AND SHAI	L BE SUBMITTED T	O THE ELECTRICAL ENGINEER'S OFFICE AT LEAST (8) EIGHT WORKING DAY
	9.	REFER TO SPECIFICATIONS 20 0500, 26 5100 & 26 5600 (16001, 16510 & 16551).		
	10.	VALUE ENGINEERING CONDUCTED WITHOUT THE DESIGN TEAM IE; ARCHITEC	T, ENGINEER & LIG	HTING CONSULTANT/DESIGNER WILL NOT BE ALLOWED, REVIEWED OR APP
F	TYPE	DESCRIPTION	MFR.	CATALOG #
	A4H	2'X4' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE LUMEN OUTPUT [HIGH, 4000K]	ILP	VPAN24-33L/44L/55L-U-CCTS
	A4HE	2'X4' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE LUMEN OUTPUT [HIGH, 4000K],10W LED SELF-DIAGNOSING BATTERY BACKUP	ILP	VPAN24-33L/44L/55L-U-CCTS-EM10/HE/SD
	A4M	2'X4' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE LUMEN OUTPUT [HIGH, 4000K]	ILP	VPAN24-33L/44L/55L-U-CCTS
	A4ME	2'X4' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE LUMEN OUTPUT [HIGH, 4000K],10W LED SEI E-DIAGNOSING BATTERY BACKUP	ILP	VPAN24-33L/44L/55L-U-CCTS-EM10/HE/SD
	B2M	2'X2' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE DUMEN OUTPUT [MEDIUM; 4000K]		VPAN22-22L/33L/44L-U-CCTS
	B2ME	2'X2' LED FLAT PANEL LUMINAIRE; HIGH TRANSMISSION EXTRUDED LOW GLARE PMMA FROSTED ACRYLIC LENS, ULTRA-THIN <2" H; SCRATCH AND IMPACT RESISTANT; RECESSED INTO ACCESSIBLE ARCHITECTURAL CEILING; EASY TO CLEAN; 100,000 HOUR [L70]; DLC LISTED; 5 YR. WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE LUMEN OUTPUT [MEDIUM, 4000K] 10W LED SEI E-DIAGNOSING BATTERY BACKUP	ILP	VPAN22-22L/33L/44L-U-CCTS-EM10/HE/S
	L4HPE	2.5"X4' LINEAR DIRECT/INDIRECT PENDANT LED LUMINAIRE; WIDESPREAD OPTICS; FLUSH LENS; FIXTURE LENS SHALL BE CONTINUOUS (NO BREAKS) FIELD VERIFY SUSPENSION HEIGHT WITH ARCHITECT [GENERALLY 18-24"]; 50,000 HOUR (L70); 0-10 DIMMING; 7 YR WARRANTY; INTEGRAL EM BATTERY PACK; FIELD-SELECTABLE LUMEN OUTPUT [80W/MEDIUM, 4000K]; FIELD-SELECTABLE UP/DOWN LIGHT IUP 30% & DOWN 70%1		LPA-4UX-50-8-CCT-WH-EM1400+LPA-ACCSY-PK
	L8MPE	2.5"X8' WIDE LINEAR DIRECT/INDIRECT PENDANT LED LUMINAIRE; WIDESPREAD OPTICS; FLUSH LENS; FIXTURE LENS SHALL BE CONTINUOUS (NO BREAKS) FIELD VERIFY SUSPENSION HEIGHT WITH ARCHITECT [GENERALLY 18-24"]; 50,000 HOUR (L70); 0-10 DIMMING; 7 YR WARRANTY; INTEGRAL EM BATTERY PACK; FIELD-SELECTABLE LUMEN OUTPUT [80W/MEDIUM, 4000K]; FIELD-SELECTABLE UP/DOWN LIGHT [UP 30% & DOWN 70%1	ALEO LIGHTING	LPA-8UX-100-8-CCT-WH-EM1400+LPA-ACCSY-PK
	S8RDE	8" ROUND SURFACE MOUNTED ROUND LED LUMINAIRE; DURABLE CAST ALUMINUM LOW PROFILE OF <1/2"; LOW GLARE POLYCARBONATE LENS; MOUNTS IN STANDARD 4" DEEP OCTAGONAL JUNCTION BOX; PROVIDE JUNCTION BOX/HOUSING AS REQUIRED; 50,000 HOUR (L70); 5 YR WARRANTY; 0-10 DIMMING; FIELD-SELECTABLE CCT [3000K]; EM BATTERY PACK	PRESCOLITE	LBSES-8RD-CS9-WH-EM
	VL	WALL MOUNTED 18W x 5H x 2.5D LINEAR RECTANGULAR LED VANITY; WHITE ACRYLIC DIFFUSER; SCBA; 60,000 HOUR (L70); 0-10 DIMMING	TRANSGLOBE LIGHTING	LED-22463-SAAVY
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CONNECTION TYPE NOTES: 1. NON-FUSED DISCONNECT SWITCH 2. FUSED DISCONNECT SWITCH 3. BREAKER IN ENCLOSURE 4. MANUAL STARTER WITH THERMAL OVERLOAD 5. MAGNETIC STARTER WITH THERMAL OVERLOAD 5. MAGNETIC STARTER WITH THERMAL OVERLOAD 5. MAGNETIC STARTER DISCONNECT COMBINATION 8. MAGNETIC STARTER/FUSED DISCONNECT COMBINATION 8. MAGNETIC STARTER/BREAKER COMBINATION 9. VARIABLE FREQUENCY DRIVE 10. REDUCED VOLTAGE STARTER 11. DIRECT CONNECTION 12. RECEPTACLE/SPECIAL PURPOSE OUTLET/ETC. 13. TWO-SPEED STARTER. COORDINATE WITH MOTOR TYPE 14. SOLID STATE SOFT-STARTER UNIT # DESCRIPTION 14. DESCRIPTION 15. MESCRIPTION 16. MESCRIPTION 17. MESCRIPTION 18. MESCRIPTION 19. MESCRIPTION 10. MESCRIPTION 10. MESCRIPTION 10. MESCRIPTION 10. MESCRIPTION 11. MESCRIPTION 12. MESCRIPTION 13. MONON MESSION 14. MESCRIPTION 15. MESSION 15. MESSION 16. MESSION 17. MESSION						
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UNIT # DESCRIPTION 또 신자		1. NON 2. FUSI 3. BRE 4. MAN 5. MAG 6. MAG 7. MAG 8. MAG 9. VAR 10. REI 11. DIR 12. REC 13. TW 14. SOI	-FUSED DISCONNECT SWITCH ED DISCONNECT SWITCH AKER IN ENCLOSURE UAL STARTER WITH THERMAL OV INETIC STARTER INETIC STARTER/NON-FUSED DIS INETIC STARTER/BEAKER COME INETIC STARTER/BREAKER COME IABLE FREQUENCY DRIVE DUCED VOLTAGE STARTER IECT CONNECTION CEPTACLE/SPECIAL PURPOSE OL O-SPEED STARTER. COORDINATI LID STATE SOFT-STARTER	/ERLOAD CONNEC NECT CON BINATION JTLET/ET(E WITH MO	T COMBIN IIBINATIO C. DTOR TYF	IAT N PE
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LIGHT	FIXTURE	SCHEDU	JLE

LIGHT FIXTURE ABBREVIATION SCHEDULE

STANDARD PAINTED COLOR AS SELECTED BY THE ARCHITECT SCBA CUSTOM FINISH AS SELECTED BY THE ARCHITECT CFBA STANDARD FINISH AS SELECTED BY THE ARCHITEC SFBA

LIGHT FIXTURE GENERAL NOTES ONFIRM CEILING TYPES WITH LIGHT FIXTURE TRIMS. BRING ALL DISCREPANCIES OF LOCATIONS AND QUANTITIES TO THE ATTENTION OF THE ARCHITECT AND ELECTRICAL ENGINEER PRIOR TO

RES. BRING ALL DISCREPENCIES TO THE ATTENTION OF THE ARCHITECT PRIOR TO BIDDING.

IREMENTS AND ACCEPTABLE MANUFACTURERS.

WN ON SHOP DRAWINGS. BRING ALL POTENTIAL CONFLICT AREAS TO THE ATTENTION OF THE ARCHITECT AND ELECTRICAL ENGINEER PRIOR TO RELEASE. N THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANTITY OR OVERALL LENGTH OF LINEAR FIXTURES REQUIRED. CONTRACTOR TO NOTE THAT VARIOUS FIXTURE LENGTHS MAY BE REQUIRED

ASED ON THE FIXTURE SPECIFIED AND MAY NOT REFLECT THE QUANTITY OR OVERALL LENGTH OF THE UNDERCABINET FIXTURES REQUIRED. CONTRACTOR TO NOTE THAT VARIOUS FIXTURE LENGTHS

DINATE FIXTURE LAYOUT WITH MILLWORK SHOP DRAWINGS PRIOR TO LIGHTING SUBMITTALS

TIFY THE ELECTRICAL ENGINEER AND/OR LIGHTING DESIGNER.

E ELECTRICAL ENGINEER'S OFFICE AT LEAST (8) EIGHT WORKING DAYS BEFORE THE BID. PRIOR APPROVALS RECEIVED AFTER THIS TIME PERIOD SHALL BE REJECTED.

CONSULTANT/DESIGNER WILL NOT BE ALLOWED, REVIEWED OR APPROVED.

PROJECT MANAGER: DRAYTON BAILEY

80+

CATALOG #

VOLTS TOTAL WATTS LAMP TYPE DIMMING TYPE VPAN24-33L/44L/55L-U-CCTS 0-10 4000 K 120 V 49 VA LED 6.466 49 VA 0-10 6,466 4000 K 120 V LED

VPAN24-33L/44L/55L-U-CCTS-EM10/HE/SD 80+ 5,191 4000 K 80+ VPAN24-33L/44L/55L-U-CCTS 38 VA LED 0-10 120 V VPAN24-33L/44L/55L-U-CCTS-EM10/HE/SD 38 VA 0-10 5,500 4000 K 80+ 120 V LED 4000 K VPAN22-22L/33L/44L-U-CCTS 30 VA 0-10 4,156 80+ 120 V LED VPAN22-22L/33L/44L-U-CCTS-EM10/HE/S 120 V 30 VA LED 0-10 4,156 4000 K 80+

> 120 V 50 VA 0-10 6,400 4000 K LED 120 V 80 VA LED 0-10 10,320 4000 K

> > LED

LED

120 V LED 2 VA

EQUIPMENT SCHEDULE

RESPONSIBILITY LEGEND:

CB = CIRCUIT BREAKER

20 VA

120 V

120 V 20 VA

A FURNISHED INSTALLED AND CONNECTED UNDER DIVISION 26(16) B. FURNISHED AND INSTALLED UNDER ANOTHER DIVISION. REQUIRED CONNECTION UNDER DIVISION 26(16) C. FURNISHED UNDER ANOTHER DIVISION BUT INSTALLED AND CONNECTED UNDER DIVISION 26(16) D. FURNISHED, INSTALLED AND CONNECTED UNDER ANOTHER DIVISION

1,750

1,625

4000 K

3000 K

L STARTER WITH THERMAL OVERLOAD TIC STARTER TIC STARTER/NON-FUSED DISCONNECT COMBINATION TIC STARTER/FUSED DISCONNECT COMBINATION

NOTE 1: PER 250.122(A), EQUIPMENT GROUND IS NOT REQUIRED TO BE LARGER THAN THE PHASE CONDUCTOR NOTE 2: OVERCURRENT PROTECTION DEVICE (OCPD) SHOWN IS LOCATED AT POWER PANEL. ALL FUSING TO BE SIZED IN ACCORDANCE WITH FUSE MFR RECOMMENDATION FOR MOTOR NAME PLATE RATING. NOTE 3: ALL EQUIPMENT TO BE RATED FOR THE ENVIRONMENT FOR WHICH IT IS INSTALLED.

		ELECTRICAL EQUIPMENT INFORMATION						ZE	WIRE				OCPD		/ VFD DTES)	
DESCRIPTION	문	FLA	MCA	VA	VOLTAGE	PHASE	FULL LOAD AMP	CONDUIT SI	SETS	QTY	SIZE	EQ. GROUND	ТҮРЕ	AMPS	STARTER/ DISC OTHER (SEE NC	REMARKS
OUTDOOR UNIT	0.00	0 A	22.7 A	0 VA	240 V	1	18.2 A	3/4"	1	2	10	10	СВ	30 A	2 A	
EXHAUST FAN	0.00	0 A	0 A	528 VA	120 V	1	4.4 A	3/4"	1	2	12	12	СВ	20 A	4 A	REWORK EXISTING EXHAUST FAN CIRC. TIE INTO LIGHTING WALL MOTION SWITCH

PANELBOARD SCHEDULE

PANEL: A [E] TYPE: Type 1 VOLTS: 120/240 PHASE: WIRES: MAINS: MLO MOUNTING: SURFACE LOCATION SUBFEED LUGS BUSSING: ALUMINUM FED FROM DOOR-IN-DOOR AMP: 225 A _____ ISO GROUND _____200% NEUTRAL _____ SPD BRANCH BREAKERS WIRE CIR. CIR. WIRE NO. | SIZE | POLE | TYPE | AMPS TYPE | POLE | SIZE | NO. ITEM ITEM AMPS EXISTING CIRCUITS EXISTING CIRCUITS -- | 1 | --EXISTING CIRCUITS EXISTING CIRCUITS 4 EXISTING CIRCUITS 12 EXISTING CIRCUITS EXISTING CIRCUITS . | 13 | 14 | --EXISTING CIRCUITS EXISTING CIRCUITS - | 15 | | 16 | -EXISTING CIRCUITS **EXISTING CIRCUITS** 18 **EXISTING CIRCUITS** -- 19 20 EXISTING CIRCUITS EXISTING CIRCUITS EXISTING CIRCUITS -- 21 -- 23 EXISTING CIRCUITS 24 EXISTING CIRCUITS EXISTING CIRCUITS - 25 EXISTING CIRCUITS 26 EXISTING CIRCUITS EXISTING CIRCUITS 28 EXISTING CIRCUITS -- 1 -- 29 --EXISTING CIRCUITS 30 EXISTING CIRCUITS -- | -- | 1 | -- | 31 | -- | -- | 32 | -- | 1 | -- | -- | EXISTING CIRCUITS --EXISTING CIRCUITS EXISTING CIRCUITS -- 1 -- 33 -- 1 34 ----EXISTING CIRCUITS EXISTING CIRCUITS -- 36 ---- 1 -- 35
- - 1
- 37
- 2179
38
10
2

- - 1
- 39
- 2179
40
- - EXISTING CIRCUITS 38 10 2 30 A *** AC-1 EXISTING CIRCUITS -- -- 1 -- 41 --1440 EXISTING CIRCUITS 42 12 1 20 A *** RECEPT RECEPTION A113 CONNECTED LOAD TOTAL FEED THRU LOAD 3619 2179 **TOTAL (VA)** 0 VA 30 A 18 A **AMPS/PHASE** 5798 VA AIC RATING AMPS RMS SYSM. CIRCUIT BREAKER TYPE: * PROVIDE 5mA GFCI CIRCUIT BREAKER** PROVIDE ARC-FAULT CIRCUIT BREAKER* <BLANK THERMAL MAGNETIC CIRCUIT BREAKER UTILIZE EXISTING 20A/1P SPARE**** PROVIDE NEW BREAKER AS INDICATED 5 mA GROUND FAULT CIRCUIT BREAKER ARC-FAULT CIRCUIT BREAKER COMBINATION AFCI/GFCI CIRCUIT BREAKER

30 mA EQUIPMENT GROUND FAULT CIRCUIT BREAKER

3

SHUNT TRIP CIRCUIT BREAKER

			REQUIRED RELA WALLSTATIONS,
			SPECIFIC AREAS:
			CLASSROOMS: • ROOM CONTROLI CLASSROOM LIG • ENTERING THE S
CRI	ALTERNATE MFR		OCCUPANTS CAN STATIONS. LIGHTS TURN OF EMERGENCY LUN
80+			IN CASE OF A PO 100% BRIGHTNES
80+			VESTIBULES: OCCUPANCY SEN VACANCY. OCCUPANCY SEN DETECTION.
80+			EGRESS VESTIBULES: • SAME OPERATIO • MOTION SENSOR THEN DIM BACK T • LIGHTS REMAIN A
80+			CORRIDORS: • LIGHTS AUTOMA ⁻ OCCUPANCY SEM
80+			EGRESS CORRIDORS: • LIGHTS AUTOMATA AFTER BUILDING • MOTION SENSOR THEN DIM BACK TA • LIGHTS REMAIN A
80+			WASHROOMS: • OCCUPANCY: LIG
80+			OFFICES: • ROOM CONTROLI TO DAYLIGHT LEV AFTER VACATED • TOGGLE CONTRO
80+			COMPLIANCE: THIS NARRATIVE OUTLINE REQUIREMENTS, EMPHAS DIMMING BASED ON OCCU CONSUMPTION WHILE ENS
90+		_	EMERGENCY LIGHTING AN THE PROJECT WILL INCLU INTERNATIONAL BUILDING SYSTEM PRIORITIZES OCC
		_	EMERGENCY LIGHTING F PROJECT UTILIZE PLANS FOR LOCA CONTROL DEVICI AUTOMATIC ACTI AUTOMATICALLY EXIT PATH ILLUM ILLUMINATE ALL I COMPLIANCE AN IN ACCORDANCE TO ENSUBE DEOD
ISION 26(1	e)		ADDITIONAL NOTES: THE SPECIFIED T BUILDING AND OC TO MAKE ADJUST
6(16)	0)		
SE CONDUC LL FUSING	CTOR TO BE		
TARTER/ DISC/ VFD THER (SEE NOTES)	REMARKS	_	
ο Ο 2 Α			

GENERAL PRINCIPLES:

- REVIEW PROCESS.

CIRCUITS, VOLTAGE DIFFERENCES).

SYSTEM MUST INTERFACE WITH NEW OR EXISTING ENERGY MANAGEMENT SYSTEM/BMS. PROVIDE SYSTEM CONSISTING WITH MONITOR(S), COMMUNICATIONS EQUIPMENT, A CONTROLLER(S), TIMER(S), OR OTHER DEVICE(S) THAT MONITOR AND/OR CONTROL AN ELECTRICAL LOAD OR POWER PRODUCTION OR STORAGE SOURCE. COORDINATE EXACT TIE-IN POINTS AND COMMUNICATION PROTOCOL/MODULES REQUIRED. PROGRAM ACCORDINGLY AND PER OWNERS REQUIREMENTS.

2

LIGHTING CONTROL INTENT NARRATIVE (IECC 2021 COMPLIANT)

THE DRAWINGS SHOW GENERAL ZONING INTENT. THE BIDDING CONTRACTOR ALONG WITH THE LIGHTING CONTROLS MANUFACTURER IS RESPONSIBLE FOR PROVIDING A SYSTEM WITH THE FEATURES NECESSARY AND MUST BE CAPABLE OF MEETING THE INTENT. THE MANUFACTURER'S REPRESENTATIVE FOR DIVISION 26 AND BIDDING CONTROLS SHALL BE ACCOUNTABLE FOR THE COMPREHENSIVE LIGHTING CONTROLS PACKAGE'S FINALIZATION IN ALIGNMENT WITH THE DESIGN INTENT DEPICTED IN THE DRAWINGS AND COMPLYING WITH IECC 2021 REQUIREMENTS. THE LIGHTING REPRESENTATIVE IS REQUIRED TO FURNISH EXHAUSTIVE SHOP DRAWINGS. ELUCIDATING THE LIGHTING CONTROL SYSTEM'S TOPOLOGY AND THE ESSENTIAL CONNECTIONS NECESSARY FOR ITS PROPER FUNCTIONING.

ALL INDOOR AND OUTDOOR LIGHTING WILL BE CONTROLLED BY A SYSTEM THAT PRIORITIZES ENERGY EFFICIENCY AND OCCUPANT COMFORT. MEETING IECC 2021 REQUIREMENTS. LIGHTING WILL PRIMARILY FOLLOW A MASTER CLOCK SCHEDULE PROVIDED BY THE OWNER, WITH MANUAL OVERRIDE THROUGH TOUCH PANELS FOR FINE-TUNING. 0-10V DIMMING WILL BE AVAILABLE ON ALL APPLICABLE LUMINARIES FOR SMOOTH LIGHT LEVEL ADJUSTMENTS. OCCUPANCY SENSORS WILL AUTOMATICALLY DIM LIGHTS TO PRESET LEVELS (50% FOR CORRIDORS, STAIRWELLS, VESTIBULES) AFTER PERIODS OF INACTIVITY (15 MINUTES). TYPICAL ROOM CONTROLLER STYLE BASED LIGHTING CONTROLLER (NON-NETWORKED). PROVIDE YS AND END DEVICES AS NEEDED E.G. OCCUPANCY SENSORS, DAYLIGHT SENSORS,

> LER BASED SYSTEM WITH OCCUPANCY AND DAYLIGHT SENSORS THAT MANAGE SPACE TRIGGERS THE SENSORS. TURNING LIGHTS ON TO 50% BRIGHTNESS. NSET DESIRED LIGHT LEVELS FROM PRE-PROGRAMMED SCENES THROUGH THE WALL F AUTOMATICALLY AFTER VACANCY OR A PRESET TIMEOUT PERIOD. MINARIES OPERATE ON THE SAME CIRCUIT AS NORMAL CLASSROOM LIGHTS. WER FAILURE, DESIGNATED EMERGENCY LUMINAIRE(S)AUTOMATICALLY SWITCH TO

> NSORS TRIGGER CORRIDOR RELAY TO DIM ALL LIGHTS TO 50% AFTER 15 MINUTES OF NSOR PLACEMENT WILL FOLLOW MANUFACTURER RECOMMENDATIONS FOR OPTIMAL

> ON AS VESTIBULES, BUT EGRESS LIGHTS REMAIN ON AT 30% AFTER BUILDING CLOSURE. RS ACTIVATE EGRESS LIGHTS TO 100% FOR 20 MINUTES AFTER DETECTING MOVEMENT, TO 30% ON VACANCY AT 30% UNTIL SCHEDULED BUILDING OPENING.

> TICALLY TURN ON TO 100% WHEN USER ENTERS, WITH 50% DIM LEVEL TRIGGERED BY NSORS AFTER 15 MINUTES OF INACTIVITY.

TICALLY TURN ON TO 100% WHEN USER ENTERS, BUT EGRESS LIGHTS REMAIN ON AT 30% CLOSURE RS ACTIVATE EGRESS LIGHTS TO 100% FOR 20 MINUTES AFTER DETECTING MOVEMENT, TO 30% ON VACANCY AT 30% UNTIL SCHEDULED BUILDING OPENING.

GHTS AUTOMATICALLY TURN AFTER VACATED.

LER BASED, SIMILAR TO CLASSROOM OR OCCUPANCY: LIGHTS AUTOMATICALLY TURN ON VEL WHEN USER ENTERS, AND LIGHTS WILL AUTOMATICALLY TURN OFF 15 MINUTES OL BETWEEN ON/OFF. 0-10V DIMMING, RAISE AND LOWER.

ES A LIGHTING CONTROL SYSTEM THAT COMPLIES WITH THE LATEST IECC 2021 SIZING AUTOMATED CONTROLS, DAYLIGHT HARVESTING, AND ENERGY-EFFICIENT UPANCY AND AMBIENT LIGHT LEVELS. THIS APPROACH HELPS MINIMIZE ENERGY SURING ADEQUATE LIGHTING FOR OCCUPANT SAFETY AND COMFORT. ND IBC/IECC COMPLIANCE IN ADDITION TO THE STANDARD LIGHTING CONTROL SYSTEM. JDE AN EMERGENCY LIGHTING SYSTEM DESIGNED TO MEET THE REQUIREMENTS OF THE

G CODE (IBC) AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC). THIS CUPANT SAFETY AND EGRESS DURING POWER OUTAGES. EATURES ES INTEGRAL EMERGENCY BATTERY PACKS WITHIN SPECIFIC LIGHT FIXTURES. SEE

ATIONS. PROVIDE UNSWITCHED NORMAL CIRCUIT HOT LEG TO ALL EMERGENCY POWER ES FOR PROPER POWER SENSING IVATION: UPON DETECTION OF A POWER FAILURE, EMERGENCY LIGHTS WILL SWITCH ON TO 100% BRIGHTNESS WITHIN THE FACILITY. MINATION: EMERGENCY LIGHTING WILL BE STRATEGICALLY PLACED TO EFFECTIVELY TO

DESIGNATED. EXIT PATHS AND STAIRWELLS. FACILITATING SAFE EVACUATION. ID INSPECTION: THE EMERGENCY LIGHTING SYSTEM WILL BE DESIGNED AND INSTALLED E WITH IBC AND IECC REQUIREMENTS, AND WILL BE SUBJECT TO REGULAR INSPECTIONS PER FUNCTIONALITY.

TIME DELAYS AND LIGHT LEVELS CAN BE ADJUSTED TO SUIT THE SPECIFIC NEEDS OF THE CCUPANTS. AFTER 2 MONTHS OF OCCUPANCY, LIGHTING PROGRAMMER SHALL RETURN TMENTS PER THE OWNERS REQUEST.

LIGHTING GENERAL SHEET NOTES

- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL FIXTURE LOCATIONS WITHIN A CEILING OR CEILING GRID. FOR AREAS WITHOUT CEILINGS. FIXTURE LOCATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ALIGN, CENTER, OR SPACE FIXTURES BETWEEN ARCHITECTURAL AND STRUCTURAL ELEMENTS. COORDINATE WITH PAINTING CONTRACTOR FOR PAINTING OF EXPOSED RACEWAY.
- FIELD VERIFY EXACT FIXTURE LENGTHS FOR CONTINUOUS ILLUMINATION FOR COVES AND LINEAR RUNS. PROVIDE CONTINUOUS ILLUMINATION WITH NO MORE THAN A 1" GAP BETWEEN THE END OF THE EDGE OF THE WALL / CEILING AND THE FIXTURE.
- ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR PLACEMENT OF FIXTURES WITHIN MECHANICAL ROOMS.
- ALL ROOM CONTROLLERS AND/OR POWER PACKS SHALL BE INSTALLED IN THE CEILING SPACE DIRECTLY ABOVE THE ENTRY DOOR TO THE SPACE IT IS CONTROLLING.
- ALL UNDERCABINET LIGHTS MUST BE COORDINATED WITH MILLWORK FOR EXACT LENGTHS. ALL UNDERCABINET LIGHTS SHALL BE COORDINATED WITH MILLWORK SHOP DRAWINGS.
- PROVIDE 0-10V DIMMING CONDUCTORS FOR ALL AREAS AND/OR ROOMS WHERE 0-10V DIMMING IS INDICATED BY THE RELAY PANEL SCHEDULE AND/OR WALL STATION CONTROL SEQUENCE.
- SUBSCRIPT ADJACENT TO LIGHT FIXTURE INDICATES CONTROLS, PROVIDE LIGHTING CONTROLS WITH THE REQUIRED NUMBER OF RELAY/DIMMERS. PROVIDE ADDITIONAL RELAY/DIMMERS FOR DAYLIGHT ZONES AS REQUIRED.

LIGHTING SENSOR GENERAL NOTES

- THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE SENSOR MANUFACTURER FOR PROPER PLACEMENT AND ADJUSTMENT OF OCCUPANCY SENSORS.
- EACH ZONE SHALL HAVE COVERAGE BY OCCUPANCY SENSOR SUCH THAT NO BLIND SPOT EXIST.
- UPON COMPLETION OF THE INSTALLATION, THE SYSTEM SHALL BE COMPLETELY COMMISSIONED BY THE MANUFACTURER'S FACTORY AUTHORIZED TECHNICIAN WHO WILL VERIFY ALL ADJUSTMENTS AND SENSOR PLACEMENT TO ENSURE A TROUBLE-FREE INSTALLATION.
- THE LOCATION AND QUANTITIES OF SENSORS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE ROOMS WHICH ARE TO BE PROVIDED WITH SENSORS. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ADDITIONAL SENSORS IF REQUIRED TO PROPERLY COVER THE RESPECTIVE ROOM.
- PROVIDE DAYLIGHT ZONE CONTROL REQUIREMENTS PER CURRENT IECC REQUIREMENTS. LOCATE DAYLIGHT SENSOR(S) PER MANUFACTURER'S RECOMMENDATION AND WHERE REQUIRED WITHIN THE ROOM FOR PROPER COVERAGE
- PROVIDE OCCUPANCY SENSOR WITH AN ADDITIONAL SET OF DRY CONTACTS FOR HVAC CONTROL AT EACH VAV BOX LOCATION. COORDINATE WITH MECHANICAL DRAWINGS AND THE MECHANICAL CONTRACTOR FOR EXACT LOCATIONS.

SECURITY GENERAL NOTES

- PRIOR TO STARTING ANY WORK THE DIV.28 VIDEO SURVEILLANCE CONTRACTOR SHALL COORDINATE A MEETING WITH THE OWNER AND THE DIV.26 ELECTRICAL CONTRACTOR TO REVIEW THE SURVEILLANCE CAMERA LOCATIONS AND ROUGH-IN. THE VIDEO SURVEILLANCE CONTRACTOR SHALL PROVIDE ALL OF THE CORRECT HARDWARE AND MOUNTING EQUIPMENT FOR THE IP SURVEILLANCE CAMERAS AND VIDEO EQUIPMENT. PRIOR TO STARTING ANY WORK CONTRACTOR SHALL COORDINATE A MEETING WITH THE OWNER TO REVIEW AND VERIFY: A. EACH SURVEILLANCE CAMERA LOCATION, HEIGHT, ORIENTATION, AND VIEW. B. VERIFY WHICH EF/ER/TR ROOM AND COMMUNICATION EQUIPMENT RACK THE VIDEO SURVEILLANCE
- EQUIPMENT WILL INSTALL INTO. PRIOR TO STARTING ANY WORK THE DIV.28 ACCESS CONTROL CONTRACTOR SHALL COORDINATE A MEETING WITH THE OWNER, THE DIV.8 DOOR HARDWARE CONTRACTOR, AND THE DIV.26 ELECTRICAL CONTRACTOR TO REVIEW THE DOOR HARDWARE SPECIFICATIONS AND DOOR ROUGH-IN.
- A. VERIFY WHAT ELECTRIFIED DOOR HARDWARE IS GOING TO GET INSTALLED ONTO EACH DOOR. B. THE POWER REQUIREMENTS FOR ALL OF THE ELECTRIFIED HARDWARE DISCUSS HOW EACH DOOR WILL NEED TO BE PROGRAMMED TO OPERATE, COORDINATE FAIL-SAFE OR FAIL-SECURE OPERATION, AND FIRE ALARM INTERFACE. D. VERIFY WHICH AREA IN THE EF/ER/TR ROOM IS TO BE UTILIZED TO INSTALL THE ACCESS CONTROL HEAD-
- END CONTROL PANEL(S) AND THE ELECTRIFIED DOOR HARDWARE POWER SUPPLIES. E. CONFIRM WHICH CIRCUIT THE HEAD-END CONTROL PANELS AND POWER SUPPLIES SHOULD BE CIRCUITED TO (EMERGENCY POWER OR A STANDARD CIRCUIT). PROVIDE ALL SPECIFIED AND NON-SPECIFIED COMPONENTS IN ORDER TO PROVIDE A COMPLETE AND
- WORKING SYSTEM.
- SECURITY INTEGRATOR SHALL CAREFULLY REVIEW THE REFLECTED CEILING PLANS AND ARCHITECTURAL ELEVATIONS FOR COMPONENT INSTALLATION. SECURITY INTEGRATOR SHALL CAREFULLY REVIEW DOOR HARDWARE SUBMITTAL AND SUMMARIZE
- DISCREPANCIES TO TEAM. EQUIPMENT COUNTS ARE PROVIDED FOR INFORMATION ONLY AT A CONVENIENCE TO THE CONTRACTOR. IT STILL REMAINS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DRAWING QUANTITIES. IF A DISCREPANCY ARISES BETWEEN THE SCHEDULE COUNTS AND THE DRAWING COUNTS, THE HIGHEST QUANTITY SHALL BE INCLUDED IN THE BID.
- ACCESS CONTROL SYSTEM SHALL INCLUDE ANY RELAYS, EXTERNAL POWER SUPPLIES, AUXILIARY DEVICES OR INPUT/OUTPUT MODULES REQUIRED TO SUPPORT DOOR TYPE INDICATED FOR COMPLETE AND FUNCTIONING CARD READER AND DOOR CONTROL.
- ALL FINAL CAMERA VIEWS SHALL BE APPROVED BY THE OWNER PRIOR TO PROJECT COMPLETION. ALL PENETRATIONS OF FIRE RATED FLOORS, WALLS, AND CEILINGS SHALL BE SEALED WITH APPROVED MATERIAL TO MAINTAIN FIRE RATING OF SURFACE PENETRATED.
- 10. REFER TO SPECIFICATIONS FOR INTEGRATION BETWEEN VIDEO MANAGEMENT, ACCESS CONTROL, INTRUSION DETECTION, FIRE ALARM SYSTEMS, ETC. 1. PROVIDE INTERACTIVE MAP ON VMS WITH CAMERA AND ACCESS CONTROL DEVICES.
- 2. COORDINATE WITH ELECTRICAL CONTRACTOR AND OWNERS AND REVIEW WHAT ELECTRICAL CIRCUITS THE ACTIVE ACCESS CONTROL & VIDEO SURVEILLANCE EQUIPMENT WILL NEED TO BE CONNECTED TO. (I.E. EMERGENCY BACK-UP POWER CIRCUITS, OR STANDARD/DIRTY POWER CIRCUITS).
- . INSTALL AND PROGRAM THE ACCESS CONTROL AND THE IP VIDEO SURVEILLANCE SYSTEMS TO THE MANUFACTURER'S INSTRUCTIONS, SPECIFICATIONS, INDUSTRIES STANDARDS, AND TO THE OWNER'S REQUIREMENTS

14. CONTRACTOR(S) SHALL PROMPTLY NOTIFY ENGINEER PRIOR TO INSTALLATION OF WORK IF ANY OF THE SECURITY DEVICE LOCATIONS THAT ARE SHOWN IN THE SECURITY DRAWINGS ARE OBSTRUCTED.

GENERAL NOTES

PROGRAM SYSTEM TO MEET THE REQUIREMENTS OF IECC 2018 OR CURRENT ENERGY CODE.

CONFIRM SWITCHING AND PROGRAMMING SCHEME WITH OWNER PRIOR TO PROGRAMMING. PROGRAM SYSTEM TO INCORPORATE AUTO DAYLIGHT SAVINGS ADJUSTMENTS, ASTRONOMICAL CLOCK WITH OFFSETS, HOLIDAY DATES, AND NETWORK OVERRIDE.

REFER TO WALLSTATION DIAGRAMS FOR FACTORY ENGRAVED LABELING FOR ALL INDIVIDUAL PUSH-BUTTONS. DEVICE AND COVERPLATE COLORS SELECTED BY ARCHITECT.

SUBMIT ALL WALLSTATION LAYOUTS, ENGRAVING AND CONTROL SEQUENCES DURING THE SHOP DRAWINGS

PROVIDE RELAY BARRIER FOR VOLTAGE AND POWER SOURCE SEPARATION (EMERGENCY AND NORMAL

4





GENERAL NOTES

- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR ALL FIXTURE LOCATIONS WITHIN A CEILING OR CEILING GRID. FOR AREAS WITHOUT CEILINGS, FIXTURE LOCATIONS ARE DIAGRAMMATIC. THE INTENT IS TO ALIGN, CENTER, OR SPACE FIXTURES BETWEEN
- ARCHITECTURAL AND STRUCTURAL ELEMENTS. CONTRACTOR TO PAINT EXPOSED RACEWAY TO MATCH ADJACENT SURFACES. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR PLACEMENT OF FIXTURES WITHIN MECHANICAL ROOMS.
- ALL ROOM CONTROLLERS AND/OR POWER PACKS SHALL BE INSTALLED IN THE CEILING SPACE DIRECTLY ABOVE THE ENTRY DOOR TO THE
- SPACE IT IS CONTROLLING. . SEE CORRESPONDING LIGHTING DIAGRAMS FOR GENERAL INSTALLATION REQUIREMENTS, CONNECTIONS, AND CABLE TYPES.
- PROVIDE UNSWITCHED NORMAL CIRCUIT HOT LEG TO ALL EMERGENCY POWER CONTROL DEVICES FOR PROPER POWER SENSING.
- PROVIDE UNSWITCHED HOT AHEAD OF RELAY, OCCUPANCY SENSOR, OR SWITCH TO ALL EXIT SIGNS. IF SHOWN, SUBSCRIPT NEAR LIGHT FIXTURES INDICATES CONTROL INTENT. PROVIDE LIGHTING CONTROLLERS WITH THE REQUIRED NUMBER OF RELAYS/DIMMERS.
- MANUFACTURER'S REPRESENTATIVE FOR DIVISION 26 AND BIDDING CONTROLS SHALL BE ACCOUNTABLE FOR THE COMPREHENSIVE LIGHTING CONTROLS PACKAGE'S FINALIZATION IN ALIGNMENT WITH THE DESIGN INTENT DEPICTED IN THE DRAWINGS AND COMPLYING WITH IECC 2021 REQUIREMENTS. THE LIGHTING REPRESENTATIVE IS REQUIRED TO DEVELOP DETAILED SHOP DRAWINGS DEMONSTRATING THE LIGHTING CONTROL SYSTEM'S TOPOLOGY AND THE ESSENTIAL CONNECTIONS NECESSARY FOR ITS PROPER FUNCTIONING. LIGHTING CONTROL DEVICES SHOWN ARE TO PROVIDE GENERAL INTENT ONLY. MANUFACTURERS REPRESENTATIVE TO PROVIDE ALL ADDITIONAL DEVICES AND
- MODIFY DEVICE LOCATIONS AS REQUIRED TO MEET IECC 2021 REQUIREMENTs PROVIDE ADDITIONAL RELAYS/DIMMERS FOR DAYLIGHT ZONES AS NEEDED. PROVIDE 0-10V DIMMING FOR ALL AREAS AND/OR ROOMS WHERE 0-10V DIMMING IS INDICATED BY THE WALLSTATION CONTROL SEQUENCE AND OR BY TYPE OF CONTROL INTERFACE SHOWN.
-). PROVIDE CONDUIT FROM DEVICE TO DEVICE IN OPEN AND/OR EXPOSED CEILINGS. CEILINGS WITH CLOUDS ARE CONSIDERED OPEN/EXPOSED CEILINGS. NO EXPOSED CABLES SHALL BE SEEN FROM BELOW. 1. COORDINATE PLACEMENT OF ELECTRICAL DEVICES WITH ARCHITECT PRIOR TO ROUGH-IN. WHERE DEVICES ARE SHOWN IN SAME WALL SPACE, ALIGN VERTICALLY AND HORIZONTALLY. COORDINATE WITH ARCHITECTURAL DRAWINGS, ATHLETIC SAFETY WALL PADDING AND
- CABINETRY DRAWINGS. 2. ALL THE LOW VOLTAGE WIRE/CABLE FOR LIGHTING SENSORS, AUDIO/VISUAL EQUIPMENT, SOUND AMPLIFICATION, ETC. TO BE ROUTED THROUGH CONDUIT IN EXPOSED AND CLOUDED CEILING AREAS.
- 3. ALL LOW VOLTAGE WIRE/CABLE FOR LIGHTING SENSORS, AUDIO/VISUAL EQUIPMENT, CLASSROOM SOUND AMPLIFICATION, ETC. TO BE PROPERLY SUPPORTED PER THE TELE/DATA SPEC. AND AT 5'-0" INTERVALS AND TO FOLLOW BUILDING STRUCTURAL LINES. PULLING WIRE DIAGONALLY ACROSS ROOMS IS NOT ALLOWED. USING CEILING SYSTEM OR LIGHT FIXTURE SUPPORT/SEISMIC WIRES FOR SUPPORT IS NOT ALLOWED.
- 4. PROVIDE GFCI PROTECTION ON ALL DEVICES AND EQUIPMENT PER THE NEC REQUIREMENTS. DEVICES SHALL BE READILY ACCESSIBLE. IF ANY OUTLET IS INSTALLED WITHIN 6 FEET OF OUTSIDE EDGE OF SINK, CONTRACTOR SHALL PROVIDE GFCI RECEPTACLE PER NEC, WHETHER SHOWN OR NOT.
- 15. ALL RECEPTACLES LOCATED THROUGHOUT THE BUILDING SHALL BE TAMPER RESISTANT PER NEC 406.12.
- 3. ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL MECHANICAL UNITS WITH MECHANICAL CONTRACTOR. CIRCUITS TO ALL MECHANICAL EQUIPMENT SHALL BE DEDICATED UNLESS NOTED OTHERWISE.
- 7. ALL NEW DATA DROPS SHALL BE RAN TO THE BASEMENT LEVEL IDF ROOM, UNLESS OTHERWISE NOTED.

E1

T2

REQUIREMENTS

SHEET KEYNOTES

EXISTING POWER AND LIGHTING PANELBOARDS. REMOVE ANY CIRCUITS NOT UTILIZED FOR NEW

	CONSTRUCTION BACK TO PANELBOARD. UTILIZE EXISTING CIRCUIT BREAKERS THAT WERE FREED DURING CONSTRUCTION WHEN NECESSARY/AVAILABLE. PROVIDE NEW UPDATED TYPED INDEX CARD IDENTIFYING NEW AND REMAINING CIRCUITS.	
E2	BIDDING DIVISION 26,27, AND 28 CONTRACTOR(S) RESPONSIBLE FOR EXPANDING EXISTING SYSTEMS FOR THE REMODELED AREAS. PROVIDE A TURN-KEY SOLUTION AND BUILD-OUT FOR ALL IMPACTED SYSTEMS I.E. NETWORK, FIRE ALARM, AND INTERCOM.	
E3	EXISTING MIRCOM FX-351 MAIN FIRE ALARM PANEL. EXTEND EXISTING FIRE ALARM INITIATION/NOTIFICATION CIRCUITS TO ACCOMMODATE NEW FIRE ALARM DEVICES SHOWN AND AS REQUIRED. MATCH SYSTEM WIRING. SEE DEMO AND NEW ELECTRICAL PLAN FOR REQUIREMENTS.	
E5	EXISTING NETWORK RACK. REMOVE ANY DEMOLISHED NETWORK CIRCUITS BACK TO SOURCE. WHERE SHOWN ON PLANS, ROUTE NEW DATA CABLES TO THE NEAREST TELECOM RACK. PROVIDE NEW PATCH PANEL AND TERMINATE NEW CABLES AS REQUIRED. SEE NEW ELECTRICAL PLAN FOR NEW REQUIREMENTS.	
E6	EXISTING ACCESS CONTROL HEAD-END PANEL. PROVIDE NEW CARD READERS AND ACCESS CONTROL CIRCUITS AS SHOWN. ADD ADDITIONAL CONTROLLERS AS REQUIRED FOR NEW CARD READERS. SEE NEW ELECTRICAL PLAN FOR NEW REQUIREMENTS.	
F1	REINSTALL EXISTING FIRE ALARM DEVICE PREVIOUSLY REMOVED DURING DEMOLITION. EXTEND EXISTING CIRCUIT AND REWORK AS REQUIRED.	
F2	PROVIDE NEW HORN/STROBE AS SHOWN. TIE ONTO EXISTING FIRE ALARM NOTIFICATION LOOP.	
F3	PROVIDE NEW SMOKE/HEAT DETECTOR AS SHOWN. TIE INTO THE EXISTING FIRE ALARM INITIATION LOOP.	
L1	PROVIDE NEW LIGHT FIXTURES AND CONTROLS AS SHOWN. WIRE NEW LIGHT FIXTURES TO LIGHTING CIRCUIT PREVIOUSLY FEEDING THIS AREA.	
L3	FIXTURE SUPPLIED WITH EMERGENCY BATTERY BACK-UP. WIRE FIXTURE INTO NORMAL CONTROL/CIRCUIT AS INDICATED. PROVIDE UNSWITCHED NORMAL CIRCUIT HOT LEG TO ALL EMERGENCY POWER CONTROL DEVICES FOR PROPER POWER SENSING AND OPERATION DURING A POWER OUTAGE.	
L4	PROVIDE NEW EXIT SIGN AS SHOWN. WIRE TO EXISTING UNSWITCHED EMERGENCY CIRCUIT PREVIOUSLY FEEDING CORRIDOR/EXIT SIGNS AND AHEAD OF NEW RELAY.	
L5	PROVIDE NEW LIGHT FIXTURES AND CONTROLS AS SHOWN. WIRE LIGHTING AND NEW EXHAUST FAN TOGETHER UTILIZING THE SAME 120V CIRCUIT. SET WALL MOTION WALL SENSOR SWITCH TO 15 MINUTE OFF DELAY.	
P2	PROVIDE NEW DEVICES AS SHOWN. CIRCUIT TO EXISTING RECEPTACLE CIRCUIT FREED DURING DEMOLITION. VERIFY EXISTING CIRCUITING CONDITIONS AND MAINTAIN CIRCUIT INTEGRITY OF ANY ADDITIONAL DEVICES NOT SHOWN BUT WIRED TO THE EXISTING CIRCUIT.	

- P3 PROVIDE NEW ELECTRICAL DEVICE AND CIRCUIT/TERMINATION(S) AS SHOWN (MINIMUM OF #12 CU). PROVIDE NEW 20A 1P BREAKER WITHIN EXISTING PANELBOARD AND TERMÍNATE CIRCUIT AS REQUIRED.
- P5 PROVIDE NEW CIRCUIT/TERMINATION(S)/DISC. FOR NEW MECHANICAL/PLUMBING EQUIPMENT AS SHOWN. WIRE TO EXISTING DISTRIBUTION/PANELBOARD INDICATED. REFER EQUIPMENT SCHEDULE AND PANELBOARD FOR BREAKER AND WIRE SIZE REQUIREMENTS.
- P6 OUTDOOR UNIT POWERS INDOOR UNIT. VERIFY LOCATION OF SPLIT AC SYSTEM AND WIRE ACCORDINGLY. PROVIDE 3/4" CONDUIT AND POWER CIRCUIT WIRING BETWEEN OUTDOOR AND INDOOR UNIT. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL CONDUIT AND WIRING. COORDINATE LOCATION TERMINATION REQUIREMENTS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.
- P7 PROVIDE POWER TO NEW EXHAUST FAN. CIRCUIT TO EXISTING EXHAUST FAN CIRCUIT FREED DURING DEMOLITION. WIRE EXHAUST FAN CONTROL WITH WALL MOTION LIGHT SWITCH. SET 15 MINUTE DELAY ON SWITCH. REFER EQUIPMENT SCHEDULE AND PANELBOARD FOR BREAKER AND WIRE SIZE REQUIREMENTS.
- T1 PROVIDE CAT6A DATA CABLE(S) AND OUTLET AS SHOWN. ROUTE AND TERMINATE AT NEAREST TELECOM ROOM/IDF. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. REINSTALL EXISTING WIRELESS ACCESS POINT DEVICE PREVIOUSLY REMOVED DURING DEMOLITION.
- EXTEND EXISTING WIRING AND REWORK AS REQUIRED. REINSTALL EXISTING INTERCOM SPEAKER/STATION PREVIOUSLY REMOVED DURING DEMOLITION. EXTEND Т3
- EXISTING WIRING AND REWORK AS REQUIRED. PROVIDE NEW AE CLASSROOM SOUND SYSTEM [MS-700+OPTIMUM SYSTEM]. PROVIDE COMPLETE SYSTEM T4 WITH INTERCONNECTIONS WITH OWNER-PROVIDED DISPLAY FOR PROPER AUDIO OUTPUT FROM DISPLAY. COORDINATE WITH AUDIO-ENHANCEMENT CONTACT PROVIDED SHEET E001 FOR BID AND INSTALL.
- T5 PROVIDE FSR METAL PRODUCTS -PWB-3204 OR EQUAL DISPLAY BOX.. PROVIDE (1) 1-1/4" CONDUIT BETWEEN ACCESSIBLE CEILING AND DISPLAY BOX+THE AV CONNECT PLATE+POWER+DATA PATHWAY AND CABLING.. VERIFY DISPLAY BOX AND DISPLAY HEIGHT WITH OWNER PRIOR TO ROUGH-IN.
- T7 PROVIDE AE AVCONNECT (HDMI, USB, AND AUDIO) WALL TRANSMITTER AND RECEIVER AT THE TEACHING STATION LOCATION. PROVIDE REQUIRED HBL260 JUNCTION BOX WITH EXTENSION SINGLE GANG MUDRING AND (1) 1-1/4" CONDUIT BETWEEN BOX AND DISPLAY BOX ALONG CAT 6A STP OR HDBAST CERTIFIED CABLING LOCATE RECEIVER BEHIND OFOI DISPLAY. PROVIDE ANY ADDITIONAL CONNECTIONS BETWEEN DISPLAY AND AE AMP FOR AUDIO OUTPUT. PROVIDE EXTRON HDMI ULTRA CABLE AND TERMINATE AT WALLPLATE AND DISPLAY AND CABLE FOR TEACHING STATION COMPUTER. COORDINATE WITH AUDIO-ENHANCEMENT CONTACT PROVIDED SHEET E001 FOR BID AND INSTALL.
- Y1 BEFORE STARTING ANY WORK OR ROUGH-IN, THE CONTRACTOR MUST COORDINATE A MEETING WITH THE SCHOOL / OWNER AND REVIEW THE PLANS AND CONFIRM THE EXACT MOUNTING LOCATION AND THE OPERATIONAL REQUIREMENTS FOR THE NEW HID CREDENTIAL CARD READER (SIGNO-20) AND THE EXISTING AIPHONE IP TWO-WAY AUDIO & VIDEO INTERCOM DOOR STATION (IX-DVM), THESE DEVICES THAT ARE INSTALLED ON THE DOOR FRAME OR MULLION, THE CABLING SHALL BE ROUTED THROUGH THE DOOR FRAME OR MULLION TO ENSURE A CLEAN AND SECURE INSTALLATION. NO EXPOSED CONDUIT OR CABLING IS PERMITTED. COORDINATE INSTALLATION LOCATIONS THE DOOR/WINDOW SYSTEM INSTALLER PRIOR TO ANY ROUGH-IN, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE SPECIFIED RACEWAY AND ALL NECESSARY CABLING TO CONNECT THE CREDENTIAL CARD READER TO THE ACCESS CONTROL SYSTEM, AND THE IP TWO-WAY AUDIO & VIDEO INTERCOM DOOR STATION TO THE INTERCOM ANSWERING BASE STATION, TO THE ACCESS CONTROL SYSTEM, AND TO THE IP VIDEO SURVEILLANCE NVR. THE CONTRACTOR MUST ENSURE THE INSTALLATION OF A COMPLETE AND FULLY FUNCTIONAL SYSTEM THAT INTEGRATES WITH THESE SYSTEMS, MEETS THE MANUFACTURER'S SPECIFICATIONS, AND COMPLIES WITH THE OWNER'S
- BEFORE STARTING ANY WORK OR ROUGH-IN, THE CONTRACTOR MUST COORDINATE A MEETING WITH THE Y2 SCHOOL / OWNER AND THE DIV.8 DOOR HARDWARE INSTALLATION CONTRACTOR AND REVIEW THE PLANS AND CONFIRM THE MOUNTING LOCATIONS, TYPE OF CABLING TO BE INSTALLED, THE ELECTRIFIED DOOR HARDWARE POWER REQUIREMENTS, AND THE OPERATIONAL PROGRAMMING FOR THE ELECTRIFIED DOOR HARDWARE AND THE DOOR POSITION SWITCHES / CONTACTS THAT ARE GETTING INSTALLED ON EACH DOOR EQUIPMENT INSTALLED ON DOOR FRAMES OR MULLIONS, THE CABLING SHALL BE ROUTED THROUGH THE DOOR FRAME OR MULLION TO ENSURE A CLEAN AND SECURE INSTALLATION. NO EXPOSED CONDUIT OR CABLING IS PERMITTED. COORDINATE INSTALLATION LOCATIONS WITH THE DOOR/WINDOW SYSTEM INSTALLER PRIOR TO ANY ROUGH-IN. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE SPECIFIED RACEWAY AND ALL NECESSARY CABLING TO CONNECT THE ELECTRIFIED DOOR HARDWARE AND THE DOOR POSITION SWITCHES / CONTACTS TO THE ACCESS CONTROL SYSTEM THE CONTRACTOR MUST ENSURE THE INSTALLATION OF A COMPLETE AND FULLY FUNCTIONAL SYSTEM THAT INTEGRATES WITH THE ACCESS CONTROL SYSTEM, MEETS THE MANUFACTURER'S SPECIFICATIONS, AND COMPLIES WITH THE OWNER'S REQUIREMENTS.
- BEFORE STARTING ANY WORK OR ROUGH-IN, THE CONTRACTOR MUST COORDINATE A MEETING WITH THE SCHOOL / OWNER AND REVIEW THE PLANS AND CONFIRM THE EXACT MOUNTING LOCATION AND THE Y3 OPERATIONAL REQUIREMENTS FOR THE NEW HID CREDENTIAL CARD READER (SIGNO-20). CREDENTIAL CARD READERS THAT ARE INSTALLED ON THE DOOR FRAME OR MULLION. THE CABLING SHALL BE ROUTED THROUGH THE DOOR FRAME OR MULLION TO ENSURE A CLEAN AND SECURE INSTALLATION. NO EXPOSED CONDUIT OR CABLING IS PERMITTED. COORDINATE INSTALLATION LOCATIONS THE DOOR/WINDOW SYSTEM INSTALLER PRIOR TO ANY ROUGH-IN. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE SPECIFIED RACEWAY AND ALL NECESSARY CABLING TO CONNECT THE CREDENTIAL CARD READER TO THE ACCESS CONTROL SYSTEM. THE CONTRACTOR MUST ENSURE THE INSTALLATION OF A COMPLETE AND FULLY FUNCTIONAL SYSTEM THAT INTEGRATES WITH THE ACCESS CONTROL SYSTEM, MEETS THE MANUFACTURER'S SPECIFICATIONS, AND COMPLIES WITH THE OWNER'S REQUIREMENTS.
- BEFORE STARTING ANY WORK OR ROUGH-IN, THE CONTRACTOR MUST COORDINATE A MEETING WITH THE Y4 SCHOOL / OWNER AND REVIEW THE PLANS AND THE MILLWORK DRAWINGS AND CONFIRM THE EXACT MOUNTING LOCATION AND OPERATIONAL REQUIREMENTS FOR THE DOOR RELEASE BUTTON (ALARM CONTROL #TS-18) LOCATED ON THE RECEPTION DESK IN AREA #A113. THE DOOR RELEASE BUTTON WILL NEED TO BE PROGRAMMED TO OPERATE THE ELECTRIFIED DOOR HARDWARE ON DOOR #A112A. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE SPECIFIED RACEWAY AND ALL NECESSARY CABLING TO CONNECT THE DOOR RELEASE BUTTON TO THE ACCESS CONTROL SYSTEM. THE CONTRACTOR MUST ENSURE THE INSTALLATION OF A COMPLETE AND FULLY FUNCTIONAL DOOR RELEASE BUTTON SYSTEM THAT INTEGRATES WITH THE ACCESS CONTROL SYSTEM, MEETS THE MANUFACTURER'S SPECIFICATIONS, AND COMPLIES WITH THE OWNER'S REQUIREMENTS.

