Texas Tech University Health Sciences Center

Preston Smith Library Levels 1 and 2

Section 000110 - Table of Contents

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SECTION #	SECTION TITLE	ISSUE	ISSUED BY	DATE

END OF SECTION 000110

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedure for alternates.

1.02 DEFINITIONS

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

1. Alternates are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition **(Add Alternate)** to, or deduction **(Deduct Alternate)** from, the Contract sum to incorporate alternates into the Work. No other adjustments are made to the Contract sum.
3. Where stipulated in the alternate, adjustments **(Add or Deduct)** shall be made to the Contract time.

1.03 RELATED REQUIREMENTS

A. Schedule of alternates including in Architectural drawing set.

1.04 PROCEDURES

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

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

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

C. Schedule: A Schedule of Alternates is included on the Architectural drawing set. Specification Sections for each item in schedule contain requirements for materials necessary to achieve the work described under each alternate.

1.05 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option.

1. Order of Alternates does not indicate the Owner's preference for acceptance. Accepted alternates will be identified in the Owner-Contractor Agreement.
2. Coordinate related work and modify surrounding work to integrate the Work of each alternate.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 SCHEDULE OF ALTERNATES

1. Add Alternate 01: Level 02 Office Scope. Demolition and build back of extents as indicated on Architectural drawings. Work is to be completed after completion of Level 2 base scope.
2. Add Alternate 02: Level 02 Collaboration Suites. Wall and door scope, to the extents indicated on Architectural drawings, **in lieu of demountable partitions**. Include Electrical scope in alternate pricing.

END OF SECTION 012300

SECTION 033543.16 - SEALED CONCRETE FINISHING

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. This Section includes:

1. Finishing floor slabs.
2. Surface treatment with sealer.

1.3 RELATED REQUIREMENTS

A. Division 09 Floor Finishes.

1.4 REFERENCES

A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.

B. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.

1.5 SUBMITTALS

A. General: Submit under provisions of 013300 - Submittals.

B. Product Data:

1. Submit concrete finishes manufacturer's specifications and test data.
2. Submit concrete finishes describing product to be provided, giving manufacturer’s name and product name for the specified material proposed to be provided under this section.
3. Submit concrete finishes manufacturer's recommended installation procedures; which when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
4. Submit concrete finishes technical data sheet giving descriptive data, curing time, and application requirements.
5. Submit concrete finishes manufacturer’s Safety Data Sheet (SDS) and other safety requirements.

a. Submit SDS data to Owner only; do not submit to Architect.

C. Test Reports:

1. Provide certified test reports, prepared by an independent testing laboratory, confirming compliance with specified performance criteria.

D. Maintenance Data: For inclusion in closeout maintenance manuals.

1. Provide data on maintenance renewal of applied coatings.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer shall have minimum five years' experience, and provide an adequate number of skilled workers who are thoroughly trained and experienced in the specified applications.
2. Applicator shall be familiar with the references requirements and the methods needed for acceptable performance of work of this section.
    a. Perform Work in accordance with ACI 301.

B. Manufacturer's Certification:

1. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

C. Mock-ups:

1. Apply mock-ups of each type finish, to demonstrate typical joints, surface finish, color variation (if any), and standard of workmanship.
    a. Build mock-ups approximately 50 square feet in the location indicated or if not indicated, as directed by the Architect or Owner Representative.
    b. Notify Architect or Owner Representative seven days in advance of dates and times when mock-ups will be constructed.
    c. Obtain from the Architect or Owner Representative approval of mock-ups before starting construction.
    d. If the Architect or Owner Representative determines that mock-ups do not meet requirements, demolish and remove them from the site and cast others until mock-ups are approved.
    e. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed work.

f. Approved mock-ups may become part of the completed work if undisturbed at time of substantial completion.

D. Protection:

1. No satisfactory chemical or cleaning procedure is available to remove petroleum stains from the concrete surface. Prevention is therefore essential.
   a. All hydraulic powered equipment must be diapered to avoid staining of the concrete.
   b. No trade will park vehicles on the inside slab. If necessary to complete their scope of work, drop cloths will be placed under vehicles at all times.
   c. No pipe cutting machine will be used on the inside floor slab.
   d. Steel will not be placed on interior slab to avoid rust staining.
   e. Acids and acidic detergents will not come into contact with slab.
   f. All trades informed that the slab must be protected at all times.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.

1. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.
2. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in strict accordance with manufacturer's recommendations.

1.8 PROJECT CONDITIONS

A. Maintain light level equivalent to minimum 200 W light source, placed 8 feet above the floor surface, for each 425 sq. ft of floor being finished.

B. Do not finish floors until interior heating system is operational.

C. Maintain ambient temperature of 50° F minimum.

D. Provide ventilation sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

E. Close areas to traffic during floor application and after application, for time period recommended in writing by manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Dunne-Edwards

B. Subject to the requirements specified herein, other manufacturers offering acceptable products may include, but are not limited to:

1. XYPEX
2. Substitutions: See Section 012500 - Substitution Procedures.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate, with installer present, for conditions affecting performance of finish.

1. Verify that base slab meets finish and surface profile requirements as recommended by Manufacturer.
2. Prior to application, verify that floor surfaces are free of construction latents.

B. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.

1. Commencement of Work constitutes acceptance of conditions and substrates by installer.

3.2 PREPARATION

A. Broom clean surfaces prior to preparation.

B. Prepare surfaces in strict accordance with Manufacturer's written instructions.

3.3 APPLICATION

A. General: Commence floor finish applications in presence of manufacturer's technical representative.

B. Finish concrete floor surfaces in accordance with ACI 301 and ACI 302.1R, and Manufacturer's written instructions.

C. Apply sealer directly from container with no dilution in one saturating coat. Aggressively scrub into surface with a mechanical scrubber or bristle broom. Do not use metallic brushes.

D. Keep surface wet for a minimum of 30 minutes and continue scrubbing and/or brooming. When product begins to thicken, sprinkle with water and scrub another 10-15 minutes.

E. Thoroughly wash with clean water to remove all remaining solution from floor by squeegee and wet vacuum.

F. Allow floor to dry thoroughly for minimum of 24 hours before allowing traffic on sealed floor.

3.4 CLEANING AND PROTECTION

A. The premises shall be kept clean and free of debris at all times.

B. Remove spatter from adjoining surfaces, as necessary.

C. Remove packaging and construction debris and legally dispose of off-site.

D. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning recommendations and comply with their documented instructions.

E. Protect finished work until fully cured in accordance with manufacturer's recommendations.

END OF SECTION 033543.16

SECTION 078100 - APPLIED FIREPROOFING

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 the following:

1. SFRM: Sprayed fire-resistive material.
2. Exposed SFRM.

1.3 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Product Data:

1. Manufacturer's specifications and other data needed to prove compliance with specified requirements.
2. Evidence that the spray-applied fireproofing has been subjected to full-scale ASTM E119 fire testing by the manufacturer at UL or other testing agency approved by code authorities having jurisdiction.
3. Schedule indicating material to be used, building elements to be protected with spray-applied fireproofing, hourly rating and material thickness provided and appropriate references.
4. Independent laboratory test results for fireproofing shall be submitted for all specified performance criteria.
5. Manufacturer's installation instructions.

C. Certification: Manufacturer's affidavit that materials used in Project contain no asbestos.

1.4 QUALITY ASSURANCE

A. Source Quality Control: Submit documentation that the fireproofing has been tested in accordance with ASTM E119 by UL or other testing agency approved by code authorities having jurisdiction. Include documentation that the fire testing was sponsored by the manufacturer and that the material tested was produced at the manufacturer's facility

under the supervision of personnel by said testing agency. Letters documenting classification status are not acceptable documentation of compliance with this Section.

1. Obtain all SFRM materials from a single source, from a single manufacturer.

B. Installer: Company specializing in applying the Work of this Section with minimum three (3) years experience and approved by manufacturer.

C. Products, execution, and fireproofing thicknesses shall conform to the required fire-resistance ratings requirements of code authorities having jurisdiction.

D. Provide certificate of compliance for fireproofing materials to requirements of code authority having jurisdiction indicating approval for use on this Project.

E. Pre-installation Conference:

1. General contractor shall arrange a meeting not less than two weeks prior to starting work.

a. Attendance:

1) General Contractor.

2) Architect/Owner's Representative.

3) Installer's Representative.

4) Fireproofing Manufacturer.

5) Independent Testing Laboratory.

6) All other affected installers.

b. Agenda, at a minimum: Review substrates for acceptability, method of application, applied thicknesses, inspection procedures and other issues as required.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver material in manufacturer’s original unopened packages, fully identified as to manufacturer, brand or other identifying data and bearing the proper UL labels for Surface Burning Characteristics and Fire Resistance Classification.

B. Storage and Handling:

1. Store material off the ground, under cover, and in a dry location until ready for use.

2. Bags which have been exposed to water before use shall be found unsuitable and discarded.

3. Stock of material shall be rotated and used prior to its expiration date.

1.6 TESTING AND INSPECTIONS

A. Architect may require tests and inspections as necessary to verify quality, strength, and thickness of sprayed fireproofing. Laboratory tests of materials for resistance to damage, bond strength, and air erosion will be made in accordance with referenced ASTM standard procedures.

B. Owner will engage Testing Laboratory and Owner will pay for initial tests of Testing Laboratory. Work which fails initial testing shall be replaced with new materials. Retesting shall be at Contractor's expense until test results are satisfactory to Architect.

1.7 WARRANTY

A. Warrant the work specified herein for five (5) years against becoming unserviceable or causing an objectionable appearance resulting from either defective or nonconforming materials and workmanship. Repair or reinstall failures or damaged fireproofing to achieve required fire resistive ratings at no additional expense to Owner.

B. Defects shall include, but not be limited to, the following:

1. Non-compliance with specifications.
2. Loss of fire resistance rating
3. Cracking, checking, dusting or flaking.
4. Spalling or separation from structural substrate.
5. Blooming, blistering or peeling.

1.8 PROJECT CONDITIONS AND COORDINATION

A. When the prevailing outdoor temperature at the building is less than 40 degrees F, a minimum substrate and ambient temperature of 40 degrees F shall be maintained prior to, during and for a minimum of 24 hours after application of the spray-applied fireproofing. If necessary for job progress, Contractor shall provide enclosures with heat to maintain temperatures.

B. Provide ventilation to allow proper drying of spray-applied fireproofing during and subsequent to its application.

C. Sequence and coordinate application of spray-applied fireproofing with work in other sections which would interfere with efficient fireproofing application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Subject to compliance with requirements: Grace Construction Products, W.R. Grace & Co., Monokote MK-6

1. Substitutions: Refer to Section 012500 - Substitution Procedures.

B. Subject to requirements, other manufacturers offering acceptable products may include, but are not limited to:

1. Carboline Company, Southwest Fireproofing Products Co., Type 5GP
2. Isolatek International, Cafco 300 AC

2.2 FIREPROOFING SYSTEM MATERIALS

A. Fire Resistance Classification: The spray-applied fireproofing material shall have been tested and reported by Underwriters Laboratories Inc. in accordance with the procedures of ASTM E119 and shall be listed in the UL Fire Resistance Directory.

B. Spray-applied fire resistive materials shall be free of all forms of asbestos, including actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite. Material manufacturer shall provide certification of such.

C. Physical Performance Characteristics: Fireproofing material shall meet the following physical performance standards:

1. Deflection: When tested in accordance with ASTM E759, the material shall not crack or delaminate when the non-concrete topped galvanized deck to which it is applied is subjected to a one (1) time vertical center load resulting in a downward deflection of 1/120th of the span.
2. Bond Impact: When tested in accordance with ASTM E760, the material shall not crack or delaminate from the concrete topped galvanized deck to which it is applied.
3. Cohesion/Adhesion (Bond Strength): When tested in accordance with ASTM E736, the material applied over uncoated or galvanized steel shall have an average bond strength of 150 psf.
4. Air Erosion: When tested in accordance with ASTM E859, the material shall not be subject to losses from the finished application greater than 0.25 grams per square foot.

5. Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than ten (10) percent when subjected to a crushing force of 750 psf.
6. Corrosion Resistance: When tested in accordance with ASTM E937, the material shall not promote corrosion of steel.
7. Non-combustibility: When tested in accordance with ASTM E136, the material shall not be combustible.
8. Surface Burning Characteristics: When tested in accordance with ASTM E84, the material shall exhibit the following surface burning characteristics:
    a. Flame Spread: 0
    b. Smoke Developed: 0
9. Density: When tested in accordance with ASTM E605, the material shall meet the minimum individual and average density values as listed in the appropriate UL design or as required by the authority having jurisdiction, but in no case shall be less than 15 pcf.

D. Water: Mixing water shall be clean, fresh, and suitable for domestic consumption and free from such amounts of mineral or organic substances as would affect the set of the fireproofing material. Provide water with sufficient pressure and volume to meet the fireproofing application schedule.

E. Accessory Materials: Provide accessories to comply with manufacturer's recommendations and to meet fire resistance design and code requirements. Such accessories include, but are not limited to, any required items such as bonding agents, mechanical attachments; application aids such as metal lath, scrim, or netting; and manufacturer's recommended accelerator.

2.3 MAINTENANCE MATERIALS

A. Installer/subcontractor to provide General Contractor with additional materials for patching of previously applied material damaged by other trades after fireproofing installer has completed work and has left site. Provide material equal to one percent of total project quantity.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Application of the fireproofing shall not begin until the contractor, applicator and fireproofing testing laboratory (inspector) have examined surfaces to receive fireproofing and determined that the surfaces are acceptable to receive the fireproofing material.

1. Commencement of work constitutes acceptance of conditions and substrates by installer.

3.2 PREPARATION

A. All surfaces to receive fire protection shall be free of oil, grease, loose mill scale, dirt, paints/primers (other than those listed and tested) or other foreign materials which would impair satisfactory bonding to the surface. Any cleaning of surfaces to receive sprayed fire protection shall be the responsibility of the General Contractor or Steel Erector, as outlined in the structural steel or steel deck section.

B. Clips, hangers, supports, sleeves and other attachments to the substrate shall be placed prior to the application of spray-applied fire resistive materials.

C. The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of sprayed fire protection is complete in an area.

D. The spray-applied fire resistive material shall only be applied to steel deck which has been constructed in accordance with the criteria set forth by the Steel Deck Institute.

E. On roof decks without a concrete cover, complete all roofing applications and roof mounted equipment installation prior to application of the fireproofing to the underside of roof decking and supporting beams and joists. Prohibit all roof traffic upon commencement of the fireproofing and until the fireproofing material is dry.

F. Protect permanently exposed walls or floors, or special surfaces which are not scheduled to receive fireproofing.

3.3 INSTALLATION

A. Equipment, mixing and application shall be in accordance with the manufacturer's written application instructions.

B. The application of spray-applied fire resistive material shall not commence until certification has been received by the General Contractor that surfaces to receive

sprayed fire protection have been inspected by the applicator and are acceptable to receive sprayed fire protection.

C. All unsuitable substrates must be identified and made known to the General Contractor and corrected prior to the application of the spray-applied fire resistive material.

D. Fire protection shall not be applied to steel floor decks prior to the completion of concrete work on that deck, if any.

E. The application of sprayed fire protection to the underside of roof deck shall not commence until the roof is completely installed and tight, all penthouses are complete, all mechanical units have been placed, and all roof traffic has ceased.

F. Proper temperature and ventilation shall be maintained as specified herein.

G. Provide masking, drop cloths or other suitable coverings to prevent overspray from coming in contact with surfaces not intended to be sprayed.

H. Bonding materials (adhesives, catch coats, metal lath, mesh, stud pins, etc.) shall be applied in accordance with the appropriate UL fire resistance design and manufacturer's written instructions.

I. Equipment and application procedures for installation of topcoat sealer materials shall conform to the material manufacturer’s application instructions.

J. Post appropriate cautionary “Slippery When Wet” signs in all areas in contact with wet fireproofing material.

K. Erect appropriate barriers to prevent entry by non-fireproofing workers into the fireproofing spray and mixing areas and other areas exposed to wet fireproofing material.

3.4 POST-APPLICATION INSPECTION AND TESTING

A. The Owner shall select and compensate an independent testing laboratory to randomly sample and verify the thickness and the density of the fireproofing in accordance with one (1) of the following procedures:

1. ASTM E605, Standard Test Method for Thickness and Density of Sprayed Fire-Resistive Materials Applied to Structural Members.
2. AWCI, Standard Practice for the Testing and Inspection of Field-Applied Sprayed Fire-Resistive Materials.
3. UBC Standard No. 7-6, Thickness and Density Determination for Spray-Applied Fire Protection.

3.5 REPAIRING, CLEANING, AND PROTECTION

A. All patching of and repair to sprayed fire protection, due to damage by other trades, shall be performed under this Section.

B. Remove packaging and construction debris and legally dispose of off-site.

C. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

D. Repair or replace defaced or damaged finishes caused by work of this section.

E. After the completion of the Work in this Section, equipment shall be removed and all surfaces not to be sprayed shall be cleaned to the extent previously agreed to by applicator and General Contractor.

F. Except as detailed within this section, floors shall be left in a scraped condition.

END OF SECTION 078100

SECTION 081416 - FLUSH WOOD DOORS

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. Five-ply flush wood veneer-faced doors for transparent finish.~~

~~2. Five-ply flush wood doors for opaque finish.~~

~~3.~~**1.** Solid-core flush wood doors with plastic-laminate-faces.

~~4.~~**2.** Factory priming flush wood doors and frames.

~~5.~~**3.** Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 092900 - Gypsum Board.
2. Section 092216 - Non-Structural Metal Framing.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for openings.
5. Door frame construction.
6. Factory-priming specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.

2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
5. Dimensions and locations of blocking for hardware attachment.
6. Dimensions and locations of mortises and holes for hardware.
7. Clearances and undercuts.
8. Requirements for veneer matching.
9. Doors to be factory finished and application requirements.
10. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples for Initial Selection: For factory-finished doors and factory-finished door frames.

D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species ~~and transparent finish~~, provide set of three Samples showing typical range of color and grain to be expected in finished Work.
2. Plastic laminate, 6 inches square, for each color, texture, and pattern selected.
3. ~~Polymer edging, in manufacturer's standard colors.~~
4. ~~.~~**3.** Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
5. ~~.~~**4.** Frames for light openings, 6 inches long, for each material, type, and finish required.

E. Qualification Data: For door inspector.

1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
3. Submit copy of DHI's Fire and Egress Door Assembly Inspector (FDAI) certificate.

F. Field quality-control reports.

G. Sample Warranty: For special warranty.

H. Special warranties.

I. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

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

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

B. Vendor Qualifications: A vendor that is certified for chain of custody by an FSC-accredited certification body.

C. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

D. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies shall comply with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

E. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies shall comply with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in cardboard cartons, and wrap bundles of doors in plastic sheeting.

C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

B. Environmental Limitations: Do not deliver or install doors until building is enclosed and weathertight, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during remainder of construction period.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors and frames that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Delamination of veneer.
   b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
   c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors and frames.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.
4. ~~Warranty Period for Hollow-Core Interior Doors: Two year(s) from date of Substantial Completion.~~

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flush wood doors indicated to be blueprint matched with paneling from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

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

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

2. Temperature-Rise Limit: Where indicated on Drawings, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

B. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

2.3 FLUSH WOOD DOORS AND FRAMES, GENERAL

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

1. Provide labels and certificates from AWI certification program indicating that doors and frames comply with requirements of grades specified.
2. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

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

2.4 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOOR FOR TRANSPARENT FINISH

A. Interior Doors:

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. Eggers Industries.
   b. Lambton Doors.
   c. Oshkosh Door Company.
   d. VT Industries Inc.
2. Performance Grade:
   a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.
   b. ANSI/WDMA I.S. 1A Extra Heavy Duty: Classrooms public toilets janitor's closets assembly spaces exits and where indicated on Drawings.
   c. ANSI/WDMA I.S. 1A Standard Duty: Closets (not including janitor's closets) and private toilets and where indicated on Drawings.

3. Architectural Woodwork Standards Grade: Custom.
4. Faces: Single-ply wood veneer not less than 1/50 inch thick.
    a. Species: As indicated on Architectural finish schedule.
    b. Cut: As indicated on Architectural finish schedule.
    c. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
    d. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
    e. Transom Match: As indicated.
    f. Blueprint Match: Where indicated, provide doors with faces produced from same flitches as adjacent wood paneling and arranged to provide blueprint match with wood paneling.
5. Exposed Vertical and Top Edges: Same species as faces or a compatible species - Architectural Woodwork Standards edge Type A.
    a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
    b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
    c. Fire-Rated Pairs of Doors: Provide formed-steel edges and astragals with intumescent seals.
        1) Finish steel edges and astragals with baked enamel.
        2) Finish steel edges and astragals to match door hardware (locksets or exit devices).
    d. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
6. Core for Non-Fire-Rated Doors:
    a. ANSI A208.1, Grade LD-1 particleboard.

1) Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.

2) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 - Door Hardware.

b. Glued wood stave.

c. WDMA I.S. 10 structural composite lumber.

d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.

7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.

a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.

8. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

~~**2.5 SOLID-CORE FIVE-PLY FLUSH WOOD DOORS FOR OPAQUE FINISH**~~

~~A. Interior Solid-Core Doors:~~

~~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. Eggers Industries.~~

~~b. Lambton Doors.~~

~~c. Oshkosh Door Company.~~

~~d. VT Industries Inc.~~

~~2. Performance Grade:~~

~~a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.~~

~~b. ANSI/WDMA I.S. 1A Extra Heavy Duty: Classrooms public toilets janitor's closets assembly spaces exits and where indicated on Drawings.~~

~~c. ANSI/WDMA I.S. 1A Standard Duty: Closets (not including janitor's closets) and private toilets and where indicated on Drawings.~~

~~3. Architectural Woodwork Standards Grade: Custom.~~

4. Faces: Hardboard or MDF.
    a. Apply MDO to standard-thickness, closed-grain, hardwood face veneers or directly to high-density hardboard crossbands.
    b. Hardboard Faces: ANSI A135.4, Class 1 (tempered) or Class 2 (standard).
    c. MDF Faces: ANSI A208.2, Grade 150 or Grade 160.
5. Exposed Vertical and Top Edges: Any closed-grain hardwood.
6. Core for Non-Fire-Rated Doors:
    a. ANSI A208.1, Grade LD-1 particleboard.
        1) Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.
        2) Provide doors with glued-wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 - Door Hardware.
    b. Glued wood stave.
    c. WDMA I.S. 10 structural composite lumber.
    d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.
7. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.62.5 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.
    1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
    2. Comply with NFPA 80 requirements for fire-rated doors.
B. Factory machine doors for hardware that is not surface applied.
    1. Locate hardware to comply with DHI-WDHS-3.
    2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA 156.115-W, and hardware templates.
    3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
    4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

5. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Transom and Side Panels:

1. Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.
2. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.
3. Fabricate door and transom panels with full-width, solid-lumber meeting rails.
4. Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.

~~2.7 FACTORY PRIMING~~

~~A. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified on Architectural finish schedule.~~

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install doors and frames to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

B. Install frames level, plumb, true, and straight.

1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
2. Anchor frames to anchors or blocking built in or directly attached to substrates.
    a. Secure with countersunk, concealed fasteners and blind nailing.
    b. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

1) For factory-finished items, use filler matching finish of items being installed.

3. Install fire-rated doors and frames in accordance with NFPA 80.
4. Install smoke- and draft-control doors in accordance with NFPA 105.

C. Job-Fitted Doors:

1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
   a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
2. Machine doors for hardware.
3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
4. Clearances:
   a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
   b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
   c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
   d. Comply with NFPA 80 for fire-rated doors.
5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
6. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

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

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

3.3 FIELD QUALITY CONTROL

A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.

B. Inspections:

1. Provide inspection of installed Work through AWI's Quality Certification Program, certifying that wood doors and frames, including installation, comply with requirements of AWI/AWMCA/WI's "Architectural Woodwork Standards" for the specified grade.

2. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
3. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.

D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.

E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely across entire range of motion.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements.

1. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

3.5 CLEANING AND PROTECTION

A. Remove packaging and construction debris and legally dispose of off-site.

B. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust, and other debris.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning recommendations and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

E. Protect installed work from construction activities until time of Substantial Completion.

END OF SECTION 081416

SECTION 092900 - GYPSUM BOARD

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. Interior gypsum board.
2. Glass mat panels (tile backer board).

B. Related Requirements:

1. Section 092216 - Non-Structural Metal Framing for non-structural steel framing and suspension systems that support gypsum board panels.
2. Section 079200 - Joint Sealants.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Gypsum board, Type X.
2. Gypsum ceiling board.
3. Gypsum board, Type C.
4. Glass-mat panels with moisture and mold resistance, Type X.
5. Aluminum trim.
6. Joint treatment materials.
7. Acoustical sealant.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

C. Samples for Verification: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockups for the following:
    a. Each level of gypsum board finish indicated for use in exposed locations.
    b. Glass-mat panels as substrate for FRP at. damp locations
2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
3. Simulate finished lighting conditions for review of mockups.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396

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. Basis-of-Design: USG Corporation.
    b. American Gypsum.
    c. CertainTeed Corporation.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C1396

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. Basis-of-Design: USG Corporation.
    b. American Gypsum.
    c. CertainTeed Corporation.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
2. Thickness: 1/2 inch.
3. Long Edges: Tapered.

2.4 MOISTURE- AND MOLD-RESISTANT GLASS-MAT TYPE X GYPSUM PANEL

A. ASTM C1658, Standard Specification for Glass Mat Gypsum Panels, for 1/2 in. (12.7 mm) Regular, 5/8 in. (15.9 mm) Type X and glass mat water-resistant gypsum panel

1. Basis-of-Design: United States Gypsum Company (USG) Sheetrock Brand Glass-Mat Panels Mold Tough.
2. UL Type Designation: 5/8 in. (15.9 mm): “SGX”
3. ASTM E136 Noncombustibility: Meets
4. ASTM E84 Surface-Burning Characteristics
    a. Flame Spread: 5/8 in. (15.9 mm): 0

b. Smoke Developed: 5/8 in. (15.9 mm): 0

c. Class A (Flame spread not greater than 25 and smoke developed not greater than 450): Meets

5. ASTM C473, Standard Test Methods for Physical Testing of Gypsum Panel Products

6. Core Hardness

1) Field: 5/8 in. (Not less than 15 lbf (67 N): Meets

2) End: 5/8 in. (Not less than 15 lbf (67 N): Meets

3) Edge: 5/8 in. (Not less than 15 lbf (67 N): Meets

b. Flexural Strength

1) Parallel: 5/8 in. (Not less than 100 lbf (445 N): Meets

2) Perpendicular: 5/8 in. (Not less than 140 lbf (623 N): Meets

c. Nail Pull Resistance: 5/8 in. (Not less than 90 lbf (400 N): Meets

d. Humidified Deflection: 5/8 in. (Not greater than 1/4 in. (6 mm): Meets

e. Average Water Absorption (Not greater than 5% by weight after two-hour immersion): Meets

7. ASTM D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber: 10

8. Thickness: 5/8 in. (15.9 mm)

9. Length: 8-12 ft. (2438-3658 mm)

10. Width: 4 ft. (1219 mm)

11. Weight: 2.2 lb./sq. ft. (10.7 kg/sq. m.)

12. Edge: Tapered

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.

2. Shapes:

a. Cornerbead.

b. Bullnose bead.

c. LC-Bead: J-shaped; exposed long flange receives joint compound.

d. L-Bead: L-shaped; exposed long flange receives joint compound.

e. U-Bead: J-shaped; exposed short flange does not receive joint compound.

f. Expansion (control) joint.

g. Curved-Edge Cornerbead: With notched or flexible flanges.

h. Base-of-Wall Galvanized Moisture Barrier Trim: Galvanized-steel sheet, 2 inches high.

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) VersaDry, LLC.

b) TrimTex.

c) Gordon Inc.

B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

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

a. Flannery, Inc.

b. Fry Reglet Corporation.

c. Gordon, Inc.

d. Pittcon Industries.

e. Tamlyn.

2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221, Alloy 6063-T5.

3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.

2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
    a. Use setting-type compound for installing paper-faced metal trim accessories.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.
6. Joint Compound for Backing Panels:
    a. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.

2.7 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
1. Adhesives shall have a VOC content of 50 g/L or less.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Type X: As indicated on Architectural partition schedule.
2. Ceiling Type: Ceiling surfaces.
3. Type C: Where indicated on Architectural partition schedule or required for specific fire-resistance-rated assembly indicated.

B. Single-Layer Application:
1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:
1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. On Z-shaped furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLATION OF TILE BACKING PANELS

A. Where tile backing panels abut other types of panels in same plane, shim surfaces if necessary to produce a uniform plane across panel surfaces.

3.5 INSTALLATION OF TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.
4. U-Bead: Use at exposed panel edges where indicated.
5. Curved-Edge Cornerbead: Use at curved openings.

D. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

A. General:
1. Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
2. Unless noted otherwise, all interior wall surfaces to receive medium orange peel (eggshell) texture.
~~1.~~**3.** Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840.

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    a. Primer and its application to surfaces are specified in Section 099000 - Painting and Coating.

E. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture matching approved mockup and free of starved spots or other evidence of thin application or of application patterns.

3.7 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 101116.13 - FIXED MARKERBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Back painted magnetic glass dry erase boards.
2. Back painted glass dry erase boards.

1.3 RELATED REQUIREMENTS

A. Section 092216 - Non-Structural Metal Framing: Concealed supports in metal stud walls.

1.4 SUBMITTALS

A. See Division 01 for submittals procedures.

B. Product Data: Provide manufacturer's data on accessories and each type of back painted glass dry erase board and magnetic back painted dry erase board.

C. Shop Drawings: Indicate wall elevations, dimensions, joint locations, edge details, special anchor details.

D. Samples: Submit two samples 12 x 12 inch in size illustrating materials and finish, color of each type of back painted glass dry erase board.

E. Test Reports: Show conformance to specified surface burning characteristics requirements.

F. Manufacturer's printed installation instructions.

G. Maintenance Data: Include data on regular cleaning, stain removal.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Back-Coated and Magnetic Back Coated Glass: Mirror-quality glass with color coating applied to second surface.

1. Basis of Design: Clarus Glassboards, LLC.
2. Glass: ASTM C1036 and ASTM C1503, Mirror Select Quality, low-iron tempered glass, minimum 91 percent visible light transmission.
    a. Basis of Design: PPG Industries, Inc. Starphire Ultra Clear.
    b. Thickness: 1/4 inch nominal.

B. Coating: Water-based, zero-VOC opaque coating bonded to glass as permanent coating that will not crack or peel. Ferrous coating when back painted magnetic surface is scheduled.

1. Color and Effect: As selected by Architect.

C. Mounting: Float.

D. Accessories:

1. Box Tray.
2. Dry Erase markers.
3. Magnetic Erasers.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.2 INSTALLATION

A. Install back painted glass dry erase boards in accordance with manufacturer's instructions.

B. Secure units level and plumb.

3.3 CLEANING

A. Clean board surfaces in accordance with manufacturer's instructions.

END OF SECTION 101116.13

SECTION 102113.14 - STAINLESS-STEEL TOILET COMPARTMENTS

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 stainless steel toilet compartments configured as toilet enclosures, entrance screens, and urinal screens.

1.3 RELATED REQUIREMENTS

A. Section 055001 - Metal Fabrications - Interior for supports that attach floor-and-ceiling-anchored compartments and post-to-ceiling screens to overhead structural system.

B. Section 061001 - Rough Carpentry - Interior for blocking.

C. Section 102813 - Toilet Accessories for accessories mounted on toilet compartments.

1.4 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Product Data: Provide for each product type.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

C. Shop Drawings: For each partition types indicated on Architectural plans.

1. Include plans, elevations, sections, details, and attachment details.
2. Show locations of cutouts for compartment-mounted toilet accessories.
3. Show locations of reinforcements for compartment-mounted grab bars and locations of blocking for surface-mounted toilet accessories.
4. Show locations of centerlines of toilet fixtures.
5. Show locations of floor drains.
6. Show ceiling grid, ceiling-mounted items, and overhead support or bracing locations.

D. Samples for Verification: For the following products, in manufacturer's standard sizes unless otherwise indicated:

1. Each type of material, color, and finish required for toilet compartments, prepared on 2-by-3-inch- (51-by-76 mm-) Samples of 0.03 inches (0.76 mm), 22 gauge thickness of same material indicated for Work.
2. Each type of hardware and accessory.

E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

F. Maintenance Data: For toilet compartments to include in maintenance manuals.

1.5 MAINTENANCE MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hinges: Two hinge(s) with associated fasteners.
2. Latch and Keeper: Two latches and keepers with associated fasteners.
3. Door Bumper: Two door bumpers with associated fasteners.
4. Door Pull: One door pull with associated fasteners.
5. Fasteners: Ten fasteners of each size and type.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

B. Installer Qualifications: Minimum of 5 years experience with installation of similar products.

C. Pre-installation Conference:

1. General contractor shall arrange a meeting not less than two weeks prior to starting work.
    a. Attendance:
        1) General Contractor.
        2) Architect/Owner's Representative.
        3) Installer's Representative.
        4) All other affected installers.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.

1. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.
2. Protect exposed surfaces from damage by application of strippable, temporary protective covering before shipment.
3. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in strict accordance with manufacturer's recommendations.

1.8 WARRANTY

A. Provide manufacturer’s standard warranty executed in Owner’s name.

1. Manufacturer shall warrant that its products will be free of defects in material or workmanship under normal usage from the date of invoice for a period as stated below.
    a. Stainless Steel: Five (5) years against corrosion or discoloration.
2. If material is found to be defective during the above period, the material shall be repaired or replaced free of charge.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions regarding conditions affecting application.

B. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

C. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: ASI Accurate Partitions

1. Model: ASI Stainless Steel Ultimate Privacy

B. Subject to the requirements contained herein, other manufacturers offering acceptable products may include, but are not limited to:

1. Bradley Corporation
2. General Partitions Mfg. Corp.

2.2 PERFORMANCE REQUIREMENTS

A. Regulatory: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1 for toilet compartments designated as accessible.

2.3 STAINLESS STEEL TOILET COMPARTMENTS

A. Configuration:
   1. Toilet-Enclosure Style: Floor anchored/overhead braced.
   2. Entrance-Screen Style: Floor anchored/overhead braced.
   3. Urinal-Screen Style: Floor anchored/overhead braced.
   4. Door Width: As indicated on Drawings.
   5. Door Panel Height: As indicated on Drawings.
   6. Door Height Above Floor: As indicated on Drawings.
   7. Pilaster Height: As indicated on Drawings.

B. Door Construction:
   1. Seamless, metal facing sheets pressure laminated to sounded-deadening core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth.
   2. Privacy Requirements:
      a. Provide doors with integral no-sightline system including profile on strike and hinge side that overlaps adjacent pilaster.
      b. Integrated hinge and latch side privacy components
      c. Occupancy indicator latches
      d. Continuous channels to obscure viewing angle
      e. Door Height: As indicated on Architectural drawings
      f. Door mounting height: 6″ above finished floor
      g. Basis-of-Design: ASI Accurate Integrated Privacy System

C. Panel and Pilaster Construction: Seamless, metal facing sheets pressure laminated to sounded-deadening core material; with continuous, interlocking molding strip or lapped-and-formed edge closures; corners secured by welding or clips and exposed welds ground smooth. Exposed surfaces to be free of pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections.

1. Core Material: Manufacturer's standard sound-deadening honeycomb of resin-impregnated kraft paper in thickness required to provide finished thickness of 1 inch (25 mm) for doors and panels and 1-1/4 inches (32 mm) for pilasters.
2. Grab-Bar Reinforcement: Provide concealed internal reinforcement for grab bars mounted on units of size and material adequate for panel to withstand applied downward load on grab bar of at least 250 lbf (1112 N), when tested in accordance with ASTM F446, without deformation of panel.
3. Tapping Reinforcement: Provide concealed reinforcement for tapping (threading) at locations where machine screws are used for attaching items to units.

D. Urinal-Screen Construction:
1. Flat-Panel Urinal Screen: Matching partition panel construction.

E. Facing Sheets and Closures: Stainless steel sheet of nominal thicknesses as follows:
1. Pilasters, Braced at Both Ends: Manufacturer's standard thickness, but not less than 0.038 inch (0.95 mm).
2. Pilasters, Unbraced at One End: Manufacturer's standard thickness, but not less than 0.050 inch (1.27 mm).
3. Panels: Manufacturer's standard thickness, but not less than 0.031 inch.
4. Doors: Manufacturer's standard thickness, but not less than 0.031 inch (0.79 mm).
5. Flat-Panel Urinal Screens: Thickness matching toilet partitions.

F. Pilaster Shoes: Stainless steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, No. 4 satin finish. Shoe bottom enclosed and integral to compartment structure. Secure to floor with manufacturer's recommended concrete anchors.

G. Panel or Pilaster Pedestal Legs: Stainless steel and minimum 4 inches (102 mm) high. Pedestal legs adjustable in height to within 1 inch (25 mm). Secure to floor with 2-1/2-inch- (64-mm-) long, corrosion-resistant screws.

H. Urinal-Screen: Manufacturer's standard post design of material matching the thickness and construction of pilasters, with shoe matching that on the pilaster.

I. Brackets (Fittings):
1. Continuous Type: Manufacturer's standard design; stainless steel.

J. Stainless Steel Finish: ASTM A480 No. 4 satin, directional polish on exposed faces.

2.4 HARDWARE AND ACCESSORIES

A. Hardware and Accessories: Manufacturer's standard operating hardware and accessories.
   1. Material: Stainless steel.
   2. Hinges: Manufacturer's standard paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees.
   3. Latch and Keeper: Manufacturer's standard recessed latch unit with designed for occupancy indication and emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
   4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
   5. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors and entrance-screen doors.
   6. Door Pull: Manufacturer's standard unit at out-swinging doors that complies with regulatory requirements for accessibility.
      a. Provide units on both sides of doors at compartments designated as accessible.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use rust-resistant, protective-coated steel anchors compatible with related materials.

2.5 MATERIALS

A. Aluminum Castings: ASTM B26.

B. Aluminum Extrusions: ASTM B221.

C. Stainless Steel Sheet: ASTM A240 or ASTM A666, Type 304, stretcher-leveled standard of flatness.

D. Stainless Steel Castings: ASTM A743.

2.6 FABRICATION

A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories and solid blocking within panel where required for attachment of toilet accessories.

B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

C. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of posts. Provide shoes and sleeves (caps) at posts to conceal anchorage.

D. Door Size and Swings: Unless otherwise indicated on Architectural drawings, provide 24-inch-wide in-swinging doors for standard toilet compartments and 36-inch-wide out-swinging doors with a minimum 32-inch-wide clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.
2. Confirm location and adequacy of miscellaneous steel bracing required for installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Commencement of Work constitutes acceptance of conditions by Installer.

3.2 PREPARATION

A. Clean all substrates and prepare in accordance with partition manufacturer’s written instructions.

3.3 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:
    a. Pilasters and Panels: 1/2 inch.
    b. Panels and Walls: 1 inch.
2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.
    a. Locate bracket fasteners so holes for wall anchors occur in masonry or tile joints.
    b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilaster shoes with concrete anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions.
1. Secure continuous head rail to each pilaster with no fewer than two fasteners.
2. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.4 ADJUSTING, CLEANING AND PROTECTION

A. Remove packaging and construction debris and legally dispose of off-site.

B. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning recommendations and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

E. Hardware Adjustment: Adjust and lubricate hardware in accordance with hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.
1. Ensure smooth and uninterrupted operation across full range of motion prior to time of project turnover.

F. Clean toilet partitions using techniques and materials as recommended by partition manufacturer.

G. Protect finished work from construction activities until time of Substantial Completion.

END OF SECTION 102113.14

SECTION 102239 - FOLDING PANEL PARTITIONS

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 the following:

1. Manually operated, paired panel operable partitions.

1.3 RELATED REQUIREMENTS

A. Section 055001 Metal Fabrications – Interior, for metal framing and supports, and blocking at head and jambs as required

B. Section 061001- Rough Carpentry – Interior, for wood framing and supports, and blocking at head and jambs as required.

C. Section 092216 - Non-Structural Metal Framing for wall and ceiling framing at head and jambs.

1.4 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Product Data: Material descriptions, construction details, finishes, installation details, and operating instructions for each type of operable partition, component, and accessory specified.

C. Shop Drawings: Show location and extent of operable partitions. Include plans, elevations, sections, details, attachments to other construction, and accessories.

1. Indicate dimensions, weights, conditions at openings, and at storage areas, and required installation, storage, and operating clearances. Indicate location and installation requirements for hardware and track, including floor tolerances required and direction of travel. Indicate blocking to be provided by others.

D. Setting Drawings: Show imbedded items and cutouts required in other work, including support beam punching template.

E. Samples: Color samples demonstrating full range of finishes available by architect. Verification samples will be available in same thickness and material indicated for the work.

F. Reports: Provide a complete and unedited written sound test report indicating glass thickness and spacing in test specimen matches product as submitted.

G. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: Procure all parts and components, including accessories, necessary for a complete, functional installation, from a single source, from a single manufacturer.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

C. Installer Qualifications: An experienced installer who is certified in writing by the operable partition manufacturer, as qualified to install the manufacturer’s partition systems for work similar in material, design, and extent to that indicated for this Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.

1. Clearly mark packages and panels with numbering systems used on Shop Drawings. Do not use permanent markings on panels.
2. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.
3. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in accordance with manufacturer's recommendations.

1.7 WARRANTY

A. Provide manufacturer’s standard warranty, on standard form and executed in Owner’s name.

1. Warranty shall cover operable partitions and agree to repair or replace any components with manufacturing defects.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions regarding conditions affecting application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Subject to compliance with requirements: Modernfold, Inc.

1. Substitutions: Refer to Section 012500 - Substitution Request Procedures.

B. Subject to requirements, other manufacturers offering acceptable products may include, but are not limited to:

1. Euro-Wall

2.2 SYSTEM PERFORMANCE

A. Acoustical Performance: Test operable partitions in an independent acoustical laboratory in accordance with ASTM E90 test procedure and classified in accordance with ASTM E413 to attain no less than the STC rating specified. Provide a complete and unedited written test report by the testing laboratory upon request.

2.3 MANUALLY OPERATED OPERABLE GLASS PARTITIONS

A. System Description: Paired flat panels hinged together, manually operated, top supported with operable floor seals and automatic top seals. Final Closure shall be horizontally expanding panel edge with removable crank.

B. Basis-of-Design: Acousti-Seal Encore

2.4 FABRICATION

A. Nominal 4-1/4-inch (108 mm) thick panels in manufacturer’s standard 51-inch (1295 mm) widths. All panel horizontal and vertical framing members fabricated from minimum 16-gage formed steel with overlapped and welded corners for rigidity. Top channel is reinforced to support suspension system components. Frame is designed so that full vertical edges of panels are of formed steel and provide concealed protection of the edges of the panel skin.

B. Panel Skin:

1. Roll-formed steel wrapping around panel edge. Panel skins shall be lock formed and welded directly to the frame for unitized construction. Acoustical ratings of panels with this construction:

a. 56 STC - 16-gage steel

C. Hinges for Panels, Pass Doors, and Pocket Doors shall be:

1. Concealed laminated hinge with antifriction segments mounted between each heat-treated link. Hinge to be attached directly to panel frame. Welded internal hinge bracket shall support the hinge and allow for adjustment of hinge plates. Concealed hinges mounted into panel edge or vertical astragal are not acceptable.

D. Panel Trim: No vertical or horizontal trim required or allowed on edges of panels; minimal groove appearance at panel joints.

E. Steel Skin Panel Weight:

1. 56 STC – 11.9 lbs./square foot

2.5 FINISHES

A. Panel face finish shall be:

1. Reinforced vinyl with woven backing weighing not less than 20 ounces (567 g) per lineal yard.
    a. As selected by Architect from manufacturer's full range of offerings.

B. Panel trim: No exposed panel trim required or allowed; seals and hardware to be of one color.

1. As selected by Architect from manufacturer's full range of offerings.

2.6 SUSPENSION SYSTEM

A. Suspension Tracks: Minimum 11-gage, 0.12-inch (3.04 mm) roll-formed steel track, supported by adjustable steel hanger brackets, supporting the load-bearing surface of the track, connected to structural support by pairs of 3/8-inch (9.5 mm) diameter threaded rods. Aluminum track not acceptable.

1. Exposed track soffit: Steel, removable for service and maintenance, attached to track bracket without exposed fasteners, and pre-painted off-white.
2. Carriers: One all-steel trolley with steel-tired ball bearing wheels per panel (except hinged panels). Non-steel tires are not acceptable.

2.7 SOUND SEALS

A. Vertical Interlocking Sound Seals between panels: Roll-formed steel astragals, with tongue and groove configuration in each panel edge. Rigid plastic or aluminum astragals are not acceptable.

B. Horizontal Top Seals:

1. Basis-of-Design: Modernfold SureSet automatic operable top seals. Manually operated operable top seals shall not be permitted.

C. Horizontal Bottom Seals shall be:

D. Manually activated bottom seals providing nominal 6-inch (152 mm) operating clearance with an operating range of +1/2-inch (13 mm) to –5-1/2-inch (140 mm). Seal shall be operable from panel edge or face. Extended seal shall exert nominal 120 pounds (54 kg) downward force to the floor throughout operating range.

1. Basis-of-Design: Modernfold SureSet bottom seal

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Commencement of work constitutes acceptance of conditions and substrates by installer.

3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for application.

B. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

C. Install operable partitions and accessories after other finishing operations, including painting, have been completed.

3.3 INSTALLATION

A. General: Comply with operable partition manufacturer’s written installation instructions and approved shop drawings.

3.4 CLEANING, ADJUSTING, DEMONSTRATION, AND PROTECTION

A. Remove surplus materials, rubbish and debris resulting from installation as work progresses.

B. Upon completion of work, remove packaging and construction debris and legally dispose of off-site.

C. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

D. Repair or replace defaced or damaged adjacent surfaces and finishes caused by work of this section.

E. Upon completing installation, clean partition surfaces to remove dust, dirt, adhesives, and other foreign materials. Clean according to manufacturer's written instructions.

F. Adjust operable partitions to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and other moving parts.

G. Demonstrate proper operation and maintenance procedures to Owner's representative.

H. Protect finished work from construction activities until time of Substantial Completion.

END OF SECTION 102239

SECTION 102239.13 - FOLDING GLASS-PANEL PARTITIONS

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 the following:

1. Manually operated, paired panel operable partitions.

1.3 RELATED REQUIREMENTS

A. Section 055001 Metal Fabrications – Interior, for metal framing and supports, and blocking at head and jambs as required

B. Section 061001- Rough Carpentry – Interior, for wood framing and supports, and blocking at head and jambs as required.

C. Section 092216 - Non-Structural Metal Framing for wall and ceiling framing at head and jambs.

1.4 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Product Data: Material descriptions, construction details, finishes, installation details, and operating instructions for each type of operable partition, component, and accessory specified.

C. Shop Drawings: Show location and extent of operable partitions. Include plans, elevations, sections, details, attachments to other construction, and accessories.

1. Indicate dimensions, weights, conditions at openings, and at storage areas, and required installation, storage, and operating clearances. Indicate location and installation requirements for hardware and track, including floor tolerances required and direction of travel. Indicate blocking to be provided by others.

D. Setting Drawings: Show imbedded items and cutouts required in other work, including support beam punching template.

E. Samples: Color samples demonstrating full range of finishes available by architect. Verification samples will be available in same thickness and material indicated for the work.

F. Reports: Provide a complete and unedited written sound test report indicating glass thickness and spacing in test specimen matches product as submitted.

G. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: Procure all parts and components, including accessories, necessary for a complete, functional installation, from a single source, from a single manufacturer.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

C. Installer Qualifications: An experienced installer who is certified in writing by the operable partition manufacturer, as qualified to install the manufacturer’s partition systems for work similar in material, design, and extent to that indicated for this Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.

1. Clearly mark packages and panels with numbering systems used on Shop Drawings. Do not use permanent markings on panels.
2. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.
3. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in accordance with manufacturer's recommendations.

1.7 WARRANTY

A. Provide manufacturer’s standard warranty, on standard form and executed in Owner’s name.

1. Warranty shall cover operable partitions and agree to repair or replace any components with manufacturing defects.

2. Manufacturing defects are defined as any defect materially obstructing vision through the glass, and mechanical failure of hardware which prevents the proper operation of the panels after appropriate installation.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions regarding conditions affecting application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Subject to compliance with requirements: Modernfold, Inc.
   1. Substitutions: Refer to Section 012500 - Substitution Request Procedures.

B. Subject to requirements, other manufacturers offering acceptable products may include, but are not limited to:
   1. Euro-Wall

2.2 MANUALLY OPERATED OPERABLE GLASS PARTITIONS

A. System Description: Glass panels hinged together in pairs, manually operated and top-supported. Panels use two-piece, clamp-on top and bottom rails that fasten together from alternating sides.
   1. 4-1/8-inch (105 mm) square top and bottom rails.
   2. Final closure: Standard intermediate panel ending within storage pocket, or at face of storage pocket

B. Basis-of-Design: Modernfold Glass Wall Model PureView

2.3 FABRICATION

A. Provide top reinforcement as required to support panel from suspension components and provide reinforcement for hardware attachment. Fabricate panels with concealed fasteners. Finished in-place partition shall be rigid, level, plumb, aligned with uniform joints and appearance, free of bow, warp, twist, deformation, and surface and finish irregularities.

B. Dimensions: Fabricate operable glass panel partitions with manufacturer’s standard panel sizes to form an assembled system of dimensions indicated on Drawings and verified by field measurements.
   1. Maximum panel width: 48-inches (1219 mm)
   2. Standard rail thickness: 1-9/16-inches (40 mm)

C. Top and Bottom Rails: Continuous two-piece assemblies with removable end caps. Rails fasten together from alternate sides of partition allowing for field adjustment to job site conditions. Snap-on covers are furnished to facilitate installation.

D. Horizontal Top and Bottom Seals: Continuous contact vinyl seals without the need for mechanically operated parts.

E. Bottom Rail Locking System: Engage adjacent panels by use of interlocking floor bolts to stabilize panels from movement in all directions.

1. Equip a minimum of one end panel with a brass, mortised lock allowing for cylinder and/or thumb turn operation. Round bolts engage eccentric bushing floor strikes for security.
2. Pivot panels to have mortised cylinder with key and thumb turn.
3. Intermediate panels to have interconnecting floor bolts.
4. Lead panels to have mortised cylinder with thumb turn.

F. Hinges for panels shall be:

1. Butt hinges attached to top and bottom rail

G. Acoustical ratings of panels with this construction achieve Sound Transmission Class of minimum STC when tested in accordance with ASTM E90 and classified in accordance with ASTM E413.

1. 15 STC

2.4 MATERIALS AND FINISHES

A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use, corrosion resistance, and finish indicated; ASTM B221 (ASTM B221M) for extrusions; manufacturer's standard strengths and thicknesses for type of use.

B. Glass Type: Tempered, 1/2-inch (13 mm) complying with safety standards specified in ANSI Z97.1 CPSC16, CFR1201, ASTM C1036 and ASTM C1048.

1. Glass Finish:
    a. As selected by Architect from manufacturer's full range of offerings.

C. Panel trim: Provide top and bottom rails as selected by Architect from manufacturer's full range of offerings.

2.5 SUSPENSION SYSTEM

A. Suspension Tracks: Extruded aluminum with a minimum wall thickness of 0.235 inches (6 mm). Incorporate cast aluminum or mitered intersections, switches, and curves in

stacking area. Provide alignment pins for track, intersections, switches and curves insuring both fit and roller surface integrity.

1. Exposed track soffit: Factory-finished aluminum with white powder coat.

B. Carriers: Two stainless steel trolleys with vinyl roller surfaces. Trolley design incorporates eight (8) wheels of varying dimensions. Automatic indexing of panels into stack area is provided by pre-programmed switches and trolleys without electrical, pneumatic, or mechanical activation.

C. Basis-of-Design: G-330 Suspension System Smart Track

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Commencement of work constitutes acceptance of conditions and substrates by installer.

3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for application.

B. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

C. Install operable partitions and accessories after other finishing operations, including painting, have been completed.

3.3 INSTALLATION

A. General: Comply with operable partition manufacturer’s written installation instructions and approved shop drawings.

3.4 CLEANING, ADJUSTING, DEMONSTRATION, AND PROTECTION

A. Remove surplus materials, rubbish and debris resulting from installation as work progresses.

B. Upon completion of work, remove packaging and construction debris and legally dispose of off-site.

C. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

D. Repair or replace defaced or damaged adjacent surfaces and finishes caused by work of this section.

E. Upon completing installation, clean metal and glass surfaces to remove dust, dirt, adhesives, and other foreign materials. Clean according to manufacturer's written instructions.

F. Adjust operable partitions to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Lubricate hardware and other moving parts.

G. Demonstrate proper operation and maintenance procedures to Owner's representative.

H. Protect finished work from construction activities until time of Substantial Completion.

END OF SECTION 102239.13

SECTION 102813 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Restroom accessories.
2. Underlavatory guards.
3. Diaper Changing Stations.

B. Related Requirements:

1. Section 092900 - Gypsum Board.
2. Section 055001 - Metal Fabrications - Interior.
3. Section 061001 - Rough Carpentry - Interior.

1.3 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

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 products using designations indicated.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.

B. Installer Qualifications: Minimum of 5 years experience with installation of similar products.

C. Source Limitation: For products listed together in the same Part 2 articles, obtain products from single source.

D. Pre-installation Conference:

1. General contractor shall arrange a meeting not less than two weeks prior to starting work.
    a. Attendance:
        1) General Contractor.
        2) Architect/Owner's Representative.
        3) Installer's Representative.
        4) All other affected installers.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.

1. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.
2. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in strict accordance with manufacturer's recommendations.

1.6 WARRANTY

A. Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

B. Baby Changing Station Warranty: Warranted for five (5) years against defects in material or workmanship.

1.7 PROJECT CONDITIONS

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.

C. Environmental Limitations: Comply with manufacturer's written instructions regarding conditions affecting application.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: ASTM A666, Type 304, alloy 18-8, 0.03 inch minimum nominal thickness unless otherwise indicated.

B. Steel Sheet: ASTM A1008, Designation CS (cold rolled, commercial steel), 0.036 inch minimum nominal thickness.

C. Galvanized-Steel Sheet: ASTM A653, with G60 hot-dip zinc coating.

D. Galvanized-Steel Mounting Devices: ASTM A153, 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. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).

G. Mirrors: ASTM C1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

H. 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.

2.2 RESTROOM ACCESSORIES

A. Refer to toilet accessory schedule on Architectural drawings for additional requirements.

B. Subject to the requirements contained herein, manufacturers offering acceptable products may include, but are not limited to:

1. Basis-of-Design: Bobrick Washroom Equipment, Inc.
2. Bradley Corporation.
3. American Specialties, Inc.

C. Grab Bars:
   1. Mounting: Snap-on flange covers with concealed fasteners.
   2. Material: 18 gauge stainless steel.
   3. 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.

D. Surface-Mounted Sanitary Napkin Disposal:
   1. Container: 18-8, type-304, 22-gauge (0.8mm) stainless steel. All-welded construction. Exposed surfaces shall have satin finish. Integral finger depression for opening cover. Radius on side edges of container match corners
   2. Cover: 18-8, type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn, one-piece, seamless construction. Radius on corners and edges of cover.

E. Mirror Unit:
   1. Frame: Type-430 stainless steel, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm) channel with 1/4" (6mm) return at rear. One piece frame with 90 degree mitered corners. Integral horizontal hanging brackets near the top for hanging the mirror and near the bottom to prevent the bottom of the mirror from pulling away from the wall.
   2. Concealed Wall Hanger: For snap locking design: Heavy gauge steel construction. Incorporates upper and lower members, which engage backplate louvers to keep mirror against the wall.
   3. Mirror — No. 1 quality, 1/4" (6mm) select float glass: selected for silvering and electrolytically copper-plated by the galvanic process. Back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, polyethylene padding.

F. Surface-Mounted Clothes Hook with Bumper:
   1. Hook and Base: Solid cast aluminum.
   2. Bumper: Hard rubber secured with drive-screw.

2.3 UNDERLAVATORY GUARDS

A. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide product indicated on Drawings or product by one of the following:
   1. Plumberex Specialty Products, Inc.
   2. Truebro by IPS Corporation.

B. Underlavatory Guard:

1. Basis-of-Design Product: Truebro Lav Shield.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
3. Material and Finish: Anti-microbial, molded plastic, white.

2.4 DIAPER CHANGING STATIONS

A. Wall-mounted folding diaper changing station, meeting or exceeding ASTM F2285.

1. Style: Horizontal.
2. Material: Stainless steel.
3. Minimal deflection from 90 degrees with a 200 lbs. static load placed in the center of the changing surface.
4. Shall include external stainless steel bag hook.
5. Operation: Concealed pneumatic cylinder providing controlled opening and closing of the changing station bed.

2.5 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges.

1. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and re-supplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Commencement of work constitutes acceptance of conditions and substrates by installer.

3.2 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for application.

3.3 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F446.

3.4 ADJUSTING, CLEANING AND PROTECTION

A. Remove packaging and construction debris and legally dispose of off-site.

B. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning recommendations and comply with their documented instructions.

D. Repair or replace defaced or damaged finishes caused by work of this section.

E. For operable accessories, verify smooth operation of all moveable parts, along entire range of motion. Adjust as required according to manufacturer’s written instructions.

F. Protect finished work from construction activities until time of Substantial Completion.

END OF SECTION 102813

SECTION 123661.19 - QUARTZ AGGLOMERATE COUNTERTOPS

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. This Section includes:

1. Quartz Surfacing Countertops.
2. Quartz Surfacing Reception areas.
3. Quartz Surfacing countertops with drop-in sinks and lavatory bowls.
4. Other interior Quartz Surfacing counter or surfacing applications as shown on drawings.

1.3 RELATED REQUIREMENTS

A. Section 061001 - Rough Carpentry - Interior.

B. Section 064100 - Architectural Wood Casework.

C. Section 096516 - Resilient Sheet Flooring.

1.4 SUBMITTALS

A. Submit under provisions of 013300 - Submittals.

B. Submit product data for each type of product indicated.

1. Submit manufacturer’s product data on material characteristics, performance properties, fabrication instructions, installation instructions, compliance with specified performance requirements, and maintenance instructions.

C. Shop drawings:

1. Show location of each item; provide complete detailed and dimensioned plans and elevations, large-scale details, attachment devices and other components.
    a. Show the following:
        1) Full-size details, edge details, attachments, etc.
        2) Locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
        3) Fabrication details for brackets.

4) Locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in quartz surface.
5) Locations and sizes of cutouts for sink installation and lavatory installation.
6) Type of sealant.
7) Type of adhesive.
8) Seam locations.

D. Samples:
1. For each type of product indicated:
a. Submit minimum 2-inch-by-2-inch sample in specified color. For viewing pattern or veining, submit minimum 4-inch-by-4-inch samples.
b. Cut sample and seam together for representation of seaming techniques.
c. Indicate full range of color and pattern variation.
d. Approved samples will be retained as a standard for work.

E. Fabricator/installer qualifications:
1. Provide copy of certification number.

F. Certificates: Certify that products meet or exceed requirements.
1. UL Environment – Mold Resistance Certification in accordance with UL 2824.

G. Fire test response characteristics:
1. United States – Provide Class A surface burning characteristics as determined by testing products per UL 723 (ASTM E84, NFPA 255) or another testing and inspecting agency acceptable to authorities having jurisdiction.
2. Flame Spread Index: 25 or less.
3. Smoke Developed Index: 450 or less.

H. Maintenance data:
1. Submit manufacturer’s care and maintenance data.
2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Shop employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:

1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer or designated representative.

C. Allowable tolerances:

1. Variation in component size: ±1/8 inch (3 mm) over a 10 foot length.
2. Location of openings: ±1/8 inch (3 mm) from indicated location.
3. Minimum of 1/16 inch and a maximum of 1/8 inch (3 mm) clearance between quartz surfaces and each wall.

D. Coordination drawings:

1. Shall be prepared indicating:
    a. Plumbing work.
    b. Electrical work.
    c. Miscellaneous steel for the general work.
    d. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
2. Content:
    a. Project-specific information, drawn accurately to scale.
    b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
    c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
    d. Provide alternate sketches to designer for resolution of such conflicts.
        1) Minor dimension changes and difficult installations will not be considered changes to the contract.
3. Drawings shall:
    a. Be produced in 1/2 inch scale minimum for all fabricated items.

4. Drawings must be complete and submitted to the architect within 60 days after award of contract for record only.
    a. No review or approval will be forthcoming.
    b. Coordination drawings are required for the benefit of contractor's fabricators/installers as an aid to coordination of their work to eliminate or reduce conflicts that may arise during the installation of their work.

E. Mock-up:
1. Prior to fabrication of architectural millwork, erect sample unit to further verify selections made under sample submittals and to demonstrate the quality of materials and execution.
2. Build the mock-up to comply with the contract documents and install in a location as directed by the architect.
3. Notify the architect two weeks in advance of the date of when the mock-up will be delivered.
4. Should mock-up not be approved, re-fabricate and reinstall until approval is secured.
5. Remove rejected units from project site.
6. Mock-up, once approved, may become a part of the project and serve as a standard for judging quality of all completed units of work.

F. Pre-installation Conference:
1. General contractor shall arrange a meeting not less than two weeks prior to starting work.
    a. Attendance:
        1) General Contractor.
        2) Architect/Owner's Representative.
        3) Installer's Representative.
        4) All other affected installers.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage.
1. Schedule delivery to minimize time on site for storage of materials, without affecting sequence of construction operations.

2. Inspect for damage prior to acceptance.

B. Store materials, in manufacturer’s unopened packing, to prevent deterioration, and in strict accordance with manufacturer's recommendations.

1.7 WARRANTY

A. Provide manufacturer’s standard warranty, on standard form and executed on Owner’s behalf.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's written instructions regarding conditions affecting application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Basis-of-Design:

1. Refer to Architectural Finish schedule.

B. Subject to the requirements specified herein, manufacturers offering acceptable products may include, but are not limited to:

1. Silestone
2. E. I. du Pont de Nemours and Company (DuPont)
3. Substitutions: See Section 012500 - Substitution Request Procedures.

2.2 MATERIALS

A. Quartz Agglomerate Surface:

1. Corian Quartz material composed of ~93 % natural quartz with pigments and resin.
    a. Material shall have minimum physical and performance properties as specified.
2. Thickness: 3 cm, unless noted otherwise on drawings.
3. Edge Treatment: As indicated.
4. Seam Width: 1/16 inch nominal unless otherwise specified.
5. Sink mounting:
    a. Undermount, unless noted otherwise on drawings.

2.3 ACCESSORIES

A. Mounting Adhesives:

1. 100 percent Silicone Sealant.

B. Seam Adhesive:
   1. Manufacturer's standard Joint Adhesive to create color-coordinated seam.
C. Sink/bowl mounting hardware:
   1. Manufacturer's approved sink setters, bowl clips and fasteners for attachment of sinks/bowls.
D. Concealed Brackets: A&M Hardware - Concealed Bracket, C-24. Color as indicated on drawings.

2.4 FABRICATION

A. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
B. Form joints between components using manufacturer's standard joint adhesive.
   1. Reinforce as required.
C. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
D. Rout and finish component edges with clean, sharp returns.
E. Rout cutouts, radii and contours to template.
F. Smooth edges.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that project conditions and substrates are acceptable, to the installer, to begin installation of work of this section.
B. Commencement of Work constitutes acceptance of conditions and substrates by installer.

3.2 INSTALLATION

A. General:
   1. Install countertop materials in accordance with manufacturer's instructions.
   2. Additional weight from attached sink or lavatory will affect maneuverability of tops during transportation and installation.
   3. Carefully plan work to avoid damaging finished tops during transportation and installation.
   4. Keep components and hands clean during installation.

B. Install components plumb and level, in accordance with approved shop drawings and product installation details.

1. Tops:

a. Flat and true to within 1/8 inch (3 mm) of a flat surface over a 10-foot length.

b. Allow a minimum of 1/16 inch to a maximum of 1/8 inch (3 mm) clearance between surface and each wall.

c. Form field joints using manufacturer's recommended adhesive (Corian® Joint Adhesive), with joint widths no greater than 1/8 inch (3 mm) in finished work.

d. Keep components and hands clean when making joints.

C. Sinks/Lavatories:

1. Adhere drop-in sinks/bowls to countertops using silicone sealant and manufacturer-recommended adhesives.

D. Provide backsplashes and, if indicated on drawings, endsplashes.

1. Adhere to countertops using silicone sealant.

2. Keep components and hands clean when working with silicone sealant.

3.3 INSTALLATION - UTILITY CONNECTIONS

A. Make plumbing connections in accordance with Division 22.

B. Make electrical connections in accordance with Division 26.

3.4 CLEANING AND PROTECTION

A. Remove packaging and construction debris and legally dispose of off-site.

B. Clean up installation area and sweep, dust or wipe material to remove any dirt, dust or debris.

C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning recommendations and comply with their documented instructions.

D. Remove adhesives, sealants and other stains in accordance with manufacturer's instructions.
   1. Clean exposed surfaces in accordance with manufacturer's instructions.
   2. Components shall be clean on date of substantial completion.

E. Protect surfaces from damage until date of substantial completion.

F. Replace or repair damaged work in a satisfactory manner.

END OF SECTION 123661.19

SECTION 237100 – ROOFTOP UNIT FOR RARE BOOKS ROOM

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION

A. This section includes the design, controls and installation requirements for packaged rooftop units / heat pumps / outdoor air handling units.

1.2 QUALITY ASSURANCE

A. Packaged air-cooled condenser and cold climate air-source heat pump units shall be certified in accordance with AHRI Standard 210/240 performance rating of unitary air-conditioning and air-source heat pump equipment.

B. Cold climate air-source heat pump heating performance shall be laboratory tested and verified down to zero degrees ambient.

C. Unit shall be certified in accordance with UL Standard 1995/CSA C22.2 No. 236, Safety Standard for Heating and Cooling Equipment.

D. Unit and refrigeration system shall comply with ASHRAE 15, Safety Standard for Mechanical Refrigeration.

~~E. Unit shall be certified in accordance with ANSI Z21.47b/CSA 2.3b and ANSI Z83.8/CSA 2.6, Safety Standard Gas-Fired Furnaces.~~

F. Unit (Seasonal) Energy Efficiency Ratio, (SEER) EER, shall be equal to or greater than prescribed by ASHRAE 90.1, Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.

G. Unit shall be safety certified by ETL and be ETL US and ETL Canada listed. Unit nameplate shall include the ETL/ETL Canada label.

H. Unit shall comply with Chicago code requirements for an HVAC unit ~~(with cooling and gas heat) (~~with cooling and electric heat~~) (with cooling) (with gas heat) (with electric heat) (without cooling or heating)~~.

I. Unit cabinet construction shall be designed and manufactured to meet IBC 2009/2012 seismic standards.

J. Unit shall be IBC 2009/2012 seismically certified. Unit shall be certified through seismic analysis and shake testing in accordance with ASCE-7-05/7-10 and ICC-ES AC-156.

K. Unit shall be preapproved for California Office of Statewide Health Planning and Development (OSHPD) special seismic certification (OSP-0180-10).

1.3 SUBMITTALS

A. Product Data: Literature shall be provided that indicates dimensions, operating and shipping weights, capacities, ratings, fan performance, filter information, factory supplied accessories, electrical characteristics and connection requirements. Installation, Operation and Maintenance manual with startup requirements shall be provided.

B. Shop Drawings: Unit drawings shall be provided that indicate assembly, unit dimensions, construction details, clearances, and connection details. Computer generated fan curves for each fan shall be submitted with specific design operation point noted. Wiring diagram shall be provided with details for both power and control systems and differentiate between factory installed and field installed wiring.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Unit shall be shipped with doors bolted shut and outside air hood closed to prevent damage during transport and thereafter while in storage awaiting installation.

B. Follow Installation, Operation and Maintenance manual instructions for rigging, moving, and unloading the unit at its final location.

C. Unit shall be stored in a clean, dry place protected from construction traffic in accordance with the Installation, Operation and Maintenance manual.

1.5 WARRANTY

~~A. Manufacturer shall provide a “parts only” limited warranty for a period of 24 months from the date of original equipment shipment from the factory. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided manufacturer’s written instructions for installation, operation and maintenance have been followed. Warranty excludes parts associated with routine maintenance, such as belts and air filters.~~

~~B. Manufacturer shall provide a “parts only” limited warranty for a period of 60 months from the date of original equipment shipment from the factory. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided manufacturer’s written instructions for installation, operation and maintenance have been followed. Warranty excludes parts associated with routine maintenance, such as belts and air filters.~~

C. Manufacturer shall provide a “parts only” limited warranty for a period of 120 months from the date of original equipment shipment from the factory. Warranty shall cover material and workmanship that prove defective, within the specified warranty period, provided manufacturer’s written instructions for installation, operation and maintenance have been followed. Warranty excludes parts associated with routine maintenance, such as belts and air filters.

1.6 START-UP REPAIR PROGRAM

A. Manufacturer shall provide start-up repair for a period of 12 months from the date of original equipment shipment from the factory. Program shall cover labor for material and workmanship that prove defective, within the specified warranty period, provided manufacturer’s written instructions for installation, operation and maintenance have been followed. Program excludes labor associated with routine maintenance, such as belt and air filter replacement.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Products shall be provided by the following manufacturers:
   1. AAON
   2. Substitute equipment may be considered for approval that includes at a minimum:
      a. R-454B refrigerant
      b. Direct drive supply fans
      c. Double wall cabinet construction
      d. Insulation with a minimum R-value of 13
      e. Stainless steel drain pans
      f. Hinged access doors with lockable handles
      g. Variable capacity compressor with 10-100% capacity
      h. Inverter driven variable speed compressor
      i. Cold climate air-source heat pump heating down to zero degrees ambient
      j. All other provisions of the specifications must be satisfactorily addressed

2.2 ROOFTOP UNITS

A. General Description:
   1. Packaged rooftop unit shall include compressor, evaporator coil, filters, supply fan, dampers, air-cooled condenser coil, condenser fan, water-cooled condenser,

~~electric~~ reheat coil, ~~gas heaters,~~ electric heaters, ~~hot water coil, steam coil, exhaust fan, energy recovery wheel (fixed plate heat exchanger)~~ and unit controls.

2. Packaged cold climate air-source heat pump rooftop unit shall include variable speed compressor, evaporator coil, electronic expansion valve, reversing valve, filters, supply fans, dampers, air-cooled condenser coils, condenser fans, reheat coil, ~~auxiliary dual fuel gas heaters,~~ electric heaters, ~~hot water coil, steam coil, exhaust fans, return fans, energy recovery wheels (fixed plate heat exchanger),~~ and unit controls.
3. Outdoor air handling unit shall include filters, supply fan, dampers, chilled water coil, DX evaporator coil, ~~gas heaters,~~ electric heaters, ~~hot water coil, steam coil, exhaust fan, energy recovery wheel (fixed plate heat exchanger)~~ and unit controls.
4. Unit shall be factory assembled and tested including leak testing of the coils, pressure testing of the refrigeration circuit, and run testing of the completed unit. Run test report shall be supplied with the unit in the controls compartment's literature pocket.
5. Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.
6. Unit components shall be labeled, including pipe stub outs, refrigeration system components and electrical and controls components.
7. Estimated sound power levels (dB) shall be shown on the unit ratings sheet.
8. Installation, Operation and Maintenance manual shall be supplied within the unit.
9. Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's access door.
10. Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment's access door.
11. Options: Unit shall be crated for overseas shipment. Crate shall be fabricated from blocked, braced, and banded dimensional lumber and plywood.

B. Construction:

1. All cabinet walls, access doors, and roof shall be fabricated of double wall, impact resistant, rigid polyurethane foam panels.
2. Unit insulation shall have a minimum thermal resistance R-value of 13. Foam insulation shall have a minimum density of 2 pounds/cubic foot and shall be tested

in accordance with ASTM D-1929 for a minimum flash ignition temperature of 610°F.

3. Unit construction shall be double wall with G90 galvanized steel on both sides and a thermal break. Double wall construction with a thermal break prevents moisture accumulation on the insulation, provides a cleanable interior, reduces heat transfer through the panel and prevents exterior condensation on the panel.
4. Unit shall be designed to reduce air leakage and infiltration through the cabinet. Cabinet leakage shall not exceed 1% of total airflow when tested at 3 times the minimum external static pressure provided in AHRI Standard 210/240. Panel deflection shall not exceed L/240 ratio at 125% of design static pressure, at a maximum 8 inches of positive or negative static pressure, to reduce air leakage. Deflection shall be measured at the midpoint of the panel height and width. Continuous sealing shall be included between panels and between access doors and openings to reduce air leakage. Refrigerant piping and electrical conduit through cabinet panels shall include sealing to reduce air leakage.
5. Roof of the air tunnel shall be sloped to provide complete drainage. Cabinet shall have rain break overhangs above access doors.
6. Access to filters, dampers, cooling coil, reheat coil, heaters, energy recovery wheel, compressor, water-cooled condenser and electrical and controls components shall be through hinged access doors with quarter turn lockable handles. Full length stainless steel piano hinges shall be included on the doors.
7. Exterior paint finish shall be capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.
8. Units with cooling coils shall include double sloped 304 stainless steel drain pans.
9. Unit shall be provided with through the base vertical (left side horizontal) discharge and return air openings. All openings through the unit shall have upturned flanges of at least 1/2 inch around the opening.
10. Unit shall include lifting lugs on the top of the unit.
11. Unit shall include factory installed welded wire mesh screen on the face of the condenser coil.

12. Options to be included in the unit provided for the rare books room:
    a. ~~Interior ceiling, floor, service doors, fan inlet cone, damper rack, and filter rack in the air stream are spray coated with a two-part polyurethane, heat baked coating. The coils, coil casings, condensate drain pans, damper blades and gears, fan wheel, fan motor, energy recovery wheel casing, and compressor cabinet are not coated. Option is intended for use in coastal saltwater conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polyurethane coating is acceptable. Coating withstands at least 2,500 hours when tested under ASTM B 117-95 requirements.~~
    b. Unit base pan shall be provided with 1/2 inch thick foam insulation.
    c. Unit shall include factory installed burglar bars on the supply and return air openings.
    d. Unit shall include factory wired control panel and heat access compartment LED service lights.
    e. Unit shall include factory provided and installed UV lights.

C. Electrical:
    1. Unit shall be provided with standard power block for connecting power to the unit.
    2. Unit shall have a 5 (10) kAIC SCCR.
    3. Options to be included in the unit provided for the Rare Books Room:
        a. Unit shall be provided with factory installed and factory wired, non-fused disconnect switch.
        b. Air-source heat pump shall include an optimized start defrost cycle to prevent frost accumulation on the outdoor coil during heat pump heating operation and to minimized defrost cycle energy usage. If the temperature of the outdoor heat exchanger and/or the suction line is less than a predetermined value, a deferred defrost cycle is initiated wherein the defrost cycle starts after a variable, continuously optimizing, time interval has elapsed. The defrost cycle is terminated when the relative temperatures of the outdoor heat exchanger and/or the suction line indicate that sufficient frost is melted from the heat exchanger to insure adequate time between successive defrost cycles for optimizing the efficiency and reliability of the system, or after a predetermined

time interval has elapsed, whichever condition occurs first. During defrost cycle all compressors shall energize, reversing valves shall de-energize, and auxiliary heat shall energize via the Orion Controls System

c. Unit shall be provided with factory installed and field wired 115V, 20 amp GFI outlet in the unit control panel.

d. Unit shall be provided with phase and brownout protection which shuts down all motors in the unit if the electrical phases are more that 10% out of balance on voltage, the voltage is more that 10% under design voltage, or on phase reversal.

e. Unit shall be provided with manual reset low temperature limit controls that shut off the unit when the discharge temperature reaches a field adjustable setpoint. Supply air temperature sensor shall be factory provided for field installation in the supply air ductwork.

f. Unit shall be provided with blower auxiliary contacts on the low voltage terminal block which close when the supply fans are energized.

g. Unit shall be provided with remote stop/start terminals which require contact closure for unit operation. When these contacts are open the low voltage circuit is broken and the unit will not operate.

D. Supply Fan:

1. Unit shall include direct drive, unhoused, backward curved, plenum supply fan.
2. Blower and motor shall be dynamically balanced.
3. Options:
   a. Motor shall be a high efficiency electrically commutated motor.
   b. Motor shall be standard (inverter rated) efficiency ODP with ball bearings rated for 200,000 hours service with external lubrication points.

E. Cooling Coil:

1. Evaporator Coil:
   a. Coil shall be designed for use with R-454B refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and aluminum end casings. Fin design shall be sine wave rippled.
   b. Coil shall be standard (6 row high) capacity.
   c. Coil shall be helium or hydrogen leak tested.

d. Coil shall be furnished with a factory installed thermostatic (electronic) expansion valve.

F. Refrigeration System:

1. Unit shall be factory charged with R-454B refrigerant.
2. Compressor shall be scroll type with thermal overload protection, and carry a 5 year non-prorated warranty, from the date of original equipment shipment from the factory.
3. Compressor shall be mounted in an isolated service compartment which can be accessed without affecting unit operation. Lockable hinged compressor access doors shall be fabricated of double wall, rigid polyurethane foam insulated panels to prevent the transmission of noise outside the cabinet.
4. Compressor shall be isolated from the base pan with the compressor manufacturer's recommended rubber vibration isolators, to reduce any transmission of noise from the compressors into the building area.
5. Each refrigeration circuit shall be equipped with thermostatic (electronic) expansion valve type refrigerant flow control.
6. Each refrigeration circuit shall be equipped with automatic reset low pressure and manual reset high pressure refrigerant safety controls, Schrader type service fittings on both the high pressure and low pressure sides, and factory installed liquid line filter drier.
7. Unit shall include infinite stages of capacity control through variable speed.
8. Options to be provided with the unit serving the Rare Books Room:
    a. Unit shall include an inverter driven, variable speed digital scroll compressor that shall be capable of modulating refrigerant capacity.
    b. Unit shall include factory provided and installed compressor sound jackets on all compressors.
    c. Refrigeration circuit shall be provided with hot gas reheat coil, modulating valves, electronic controller, supply air temperature sensor and a dehumidification control signal terminal which allow the unit to have a dehumidification mode of operation, which includes supply air temperature control to prevent supply air temperature swings and overcooling of the space.

d. Unit shall be configured as a cold climate air-source heat pump. Refrigeration circuit shall each be equipped with a factory installed liquid line filter drier with check valve, reversing valve, accumulator, and electronic expansion valves on both the indoor and outdoor coils. Reversing valve shall energize during the heat pump cooling mode of operation.

e. Refrigeration circuit shall be equipped with a liquid line sight glass.

f. Refrigeration circuit shall be equipped with suction and discharge compressor isolation valves.

g. Each capacity stage shall be equipped with a 5 minute off, delay timer to prevent compressor short cycling.

h. Unit shall be provided with an adjustable compressor lockout.

i. Unit shall be provided with a power factor correction capacitor on the compressor. The maximum correction factor is 0.9.

j. Refrigeration circuit shall be equipped with flooded condenser low ambient head pressure control to allow operation down to 0°F. Option includes adjustable on/off condenser fan cycling and an adjustable compressor lockout.

k. Refrigeration circuit shall be provided with an adjustable temperature sensor freeze stat which shuts down the cooling circuits when the evaporator coil tubing falls below the setpoint.

G. Condenser:

1. Air-Cooled Condenser:

a. Condenser fan shall be vertical discharge, axial flow, direct drive fan.

b. Coil shall be designed for use with R-410A refrigerant.

c. Heat pump outdoor coil shall be constructed of copper tubes with aluminum fins mechanically bonded to the tubes and aluminum end casings. Fin design shall be sine wave rippled.

d. Coil shall be designed for a minimum of 10°F of refrigerant sub-cooling.

e. Options to be provided: Condenser fan shall be high efficiency electrically commutated motor driven with multiple speeds which are controlled with a fan cycle switch based on head pressure and allow matching condenser airflow with cooling capacity steps.

H. Electric Heating:
    1. Unit shall include an include electric heater consisting of electric heating coils, fuses, and a high temperature limit switch, with capacities as shown on the plans.
    2. Unit shall include SCR Control
    3. Electric heating coils shall be located in the reheat position downstream of the supply fans.
    4. Options to be provided for the Rare Books Room Unit: Electric heater shall have full modulation capacity controlled by an SCR (Silicon Controlled Rectifier). A 0-10 VDC heating control signal shall be field provided to control the amount of heating.

I. Filters:
    1. Options to be included:
        a. Unit shall include 4 inch thick, pleated panel filters with an ASHRAE MERV rating of 13, upstream of the cooling coil. Unit shall also include 2 inch thick, pleated panel pre filters with an ASHRAE MERV rating of 8, upstream of the 4 inch standard filters.
        b. Unit shall include a clogged filter switch.
        c. Unit shall include a Magnehelic gauge mounted in the controls compartment.

J. Outside Air/Economizer: None desired

K. Controls:
    1. Factory Installed and Factory Provided Controller:
        a. Unit controller shall be capable of controlling all features and options of the unit. Controller shall be factory installed in the unit controls compartment and factory tested.
        b. Controller shall be capable of standalone operation with unit configuration, set point adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling available without dependence on a building management system.
        c. Controller shall have an onboard clock and calendar functions that allow for occupancy scheduling.
        d. Controller shall include non-volatile memory to retain all programmed values, without the use of an external battery, in the event of a power failure.

e. Constant Volume Controller:

1) Unit shall modulate cooling with constant airflow to meet space temperature cooling loads.

2) With modulating hot gas reheat, unit shall modulate cooling and hot gas reheat as efficiently as possible, to meet space humidity loads and prevent supply air temperature swings and overcooling of the space.

3) Unit shall modulate heating with constant airflow to meet space temperature heating loads. With staged heating, capacity shall modulate based on space temperature. With modulating heating, capacity shall modulate based on supply air temperature.

4) Controls shall consist of a discharge air temperature controller downstream of the cooling coil, and upstream of the SCR Electric Reheat coil. The digital scroll shall modulate to provide precise discharge air control to provide dehumidification for the rare books room. The room thermostat shall control the SCR reheat coil, independent of the cooling, for both temperature and humidity control.

f. Options to be provided: Unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling shall be accomplished with connection to interface module with LCD screen and input keypad, interface module with touch screen, or with connection to PC with free configuration software. Controller shall be capable of connection with other factory installed and factory provided unit controllers with individual unit configuration, setpoint adjustment, sensor status viewing, and occupancy scheduling available from a single unit. Connection between unit controllers shall be with a modular cable. Controller shall be capable of communicating and integrating with BACnet network via the Orion Controls System.

2. Field Installed DDC Controls INTERFACE: Units shall interface via color graphics with the existing Johnson Controls Metasys system. Remote setpoint adjust from the JCI system shall be included. Also include annunciation of all alarms and maintenance messages into the JCI system. All gateway points in the local controller shall be mapped into the JCI system via BACnet MS/TP.

a. Isolation relays shall be factory installed.

2.3 CURBS

A. Curbs shall to be fully gasketed between the curb top and unit bottom with the curb providing full perimeter support, cross structure support and air seal for the unit. Curb gasket shall be furnished within the control compartment of the rooftop unit to be mounted on the curb immediately before mounting of the rooftop unit.

B. Knockdown curbs (with duct support rails) shall be factory furnished for field assembly.

C. Solid bottom curb shall be factory assembled and fully lined with 1 inch fiberglass insulation and include a wood nailer strip. (Curb shall be adjustable up to 3/4 inch per foot to allow for sloped roof applications.)

PART 3 - EXECUTION

3.1 INSTALLATION, OPERATION, AND MAINTENANCE

A. Installation, Operation and Maintenance manual shall be supplied with the unit.

B. Installing contractor shall install unit, including field installed components, in accordance with Installation, Operation and Maintenance manual instructions.

C. Start up and maintenance requirements shall be complied with to ensure safe and correct operation of the unit.

END OF SECTION 237100

SECTION 262726 – WIRING DEVICES

PART 1 – GENERAL

1.1 NOTE

A. The general provisions of the Contract including Uniform General Conditions and Supplementary General Conditions, Special Conditions and General Requirements (Division 01), apply to the work specified in this section.

1.2 SUBMITTALS

A. Submit product data sheets for all wiring devices.

1.3 SCOPE

A. Furnish and install in suitable outlet boxes, the wiring devices indicated complete with coverplates. All shall be properly connected to conductors so as to be operable.

1.4 QUALITY ASSURANCE

A. Referenced Standards: Provide products that comply with the referenced standards. These Standards are incorporated into this Specification by reference.

1. National Fire Protection Association (NFPA)
   - No. 70 National Electrical Code (NEC)
2. National Electrical Manufacturers Association (NEMA)
   - WD 1 General Requirements for Wiring Devices
   - WD 6 Wiring Devices – Dimensional requirements
3. Underwriters Laboratories (UL)
   - UL 20 General-Use Snap Switches

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to project requirements, products manufactured by (but not limited to) the following companies are acceptable:

1. Hubbell
2. Leviton
3. Pass & Seymour
4. Bryant

2.2 CLASSIFICATION

A. All wiring devices shall be UL listed.

B. All wiring devices shall be specification grade.

2.3 COLORS

A. All devices shall have **white** finish. ~~where mounted in walls finished in light colors and a brown finish where mounted in walls finished in dark colors.~~

2.4 SWITCHES

A. Refer to Section 260943.13, DIGITAL-NETWORK LIGHTING CONTROLS.

2.5 RECEPTACLES

A. The catalog numbers listed are of Hubbell manufacture. Equivalent devices from listed manufacturers are acceptable. Furnish receptacles in colors specified even though the numbers listed may not contain the correct suffix.

1. Duplex receptacle: 20 amp, 125 volt, grounding (NEMA 5-20R) – No. 5362.
2. Ground Fault Interrupter Receptacle (GFI) – No. GF-5362.
3. Special Receptacles: Furnish devices in the NEMA configuration listed on the drawings.

2.6 WEATHERPROOF DEVICES

A. Provide the specified device in weatherproof cast box with gasketed coverplate.

2.7 COVERPLATES

A. Provide coverplates for all wiring devices, including telephone, signal outlets and other devices. Coverplates shall be one piece single or multi-gang type as required.

B. Indoor Flush Devices:

1. Type 302 stainless steel.
2. Where installed in masonry walls, use jumbo plates.

C. Indoor Surface Devices: For indoor devices use zinc-coated metal with rounded or beveled edges, same size as the box.

D. Outdoor devices: TayMac

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install wiring devices plumb and level.

B. Install SPST wall switches with OFF position down.

C. Wall switches shall be installed on the strike side of the door as finally hung.

D. Install receptacles with grounding pole on top.

E. Install devices within outlet boxes to allow coverplates to be in full contact with the wall on all sides.

F. After connection of each wiring device, install two full wraps of electrical insulating tape around the side terminals prior to installation in the box.

G. Replace broken devices and plates with new.

H. Clean all paint, plaster and dirt from wiring devices and plates.

3.2 MOUNTING HEIGHTS

A. Where mounting heights are indicated on the drawings, the device shall be installed with the centerline of the device at the indicated height.

B. Devices noted to be installed above counters or millwork shall be installed above the backsplash.

C. Unless otherwise noted on the drawings, or directed by architect, install devices at the following heights above finished floor:

DEVICE	MOUNTING HEIGHT
Wall switch	46”
Receptacle	18”
Wall dimmer switch	46”
Telephone outlet	18”
Data Outlet	18”

3.3 IDENTIFICATION

A. At each wiring device mark the inside of the coverplate with the panel and circuit number to which the device is finally connected. Use black indelible marker.

3.4 FIELD TESTING

A. Energize lighting circuits and operate each wall switch to verify proper operation.

B. Energize receptacle circuits and test each receptacle with circuit tester to verify the device is energized and has correct polarity.

C. Test TRIP and RESET buttons on GFI receptacles. In addition, test GFI receptacles with a GFI tester to verify it trips at 4ma of ground current.

END OF SECTION 262726