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SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

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

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

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project. Amount of alternate prices shall include cost of coordination, cost of overhead and profit, and cost of modifications or adjustments to adjacent work due to integration of alternate.

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. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Landscape Seating Wall.

1. Base Bid: Provide landscape seating wall consisting of reinforced masonry, cast stone copings and concrete footings.
2. Alternate: Provide landscape seating wall consisting of precast concrete elements without concrete footings.
3. Refer to Landscape Drawings for additional requirements.
4. Refer to the following Specifications for additional requirements:

    a. Section 04 22 00 for concrete unit masonry.
    b. Section 04 72 00 for cast stone masonry.

END OF SECTION 01 23 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units (CMUs).
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry-joint reinforcement.
5. Ties and anchors.
6. Embedded flashing.
7. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:

1. Cast stone masonry.
2. Steel shelf angles for supporting unit masonry.
3. Cavity wall insulation.

C. Related Requirements:

1. Section 07 62 00 "Sheet Metal Flashing and Trim" for sheet metal flashing installed in masonry joints.
2. Section 07 92 00 "Joint Sealants" for joint treatments at provisions for thermal movement in masonry.

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Submit for reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.

C. Samples for Verification: For each type and color of the following:

1. CMUs.

2. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of the following:

1. Masonry units: Include data on material properties or material test reports substantiating compliance with requirements.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
4. Grout mixes. Include description of type and proportions of ingredients.
5. Reinforcing bars.
6. Anchors, ties, and metal accessories.

B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109 for compressive strength, ASTM C1506 for water retention, and ASTM C91 for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

A. Quality Standard: Masonry construction shall comply with applicable requirements of the following:

1. ACI 530/ASCE 5/TMS 402: *Building Code Requirements for Masonry Structures*.
2. ACI 530.1/ASCE 6/TMS 602: *Masonry Structures*.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 degrees F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. When ambient temperature exceeds 100 degrees F, or 90 degrees F with a wind velocity greater than 8 mph, do not spread mortar beds more than 48 inches ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

2.3 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119.
2. Provide masonry units that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
2. Provide square-edged units for outside corners unless otherwise indicated.

B. Concrete Masonry Units (CMUs): ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
2. Density Classification: Lightweight, unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions indicated on Drawings.
4. Exposed Decorative Faces:

a. Pattern and Texture: Standard pattern, split-face finish.
b. Provide color, aggregate and texture matching appearance of exposed decorative concrete masonry elements on Campus.

2.5 MORTAR AND GROUT MATERIALS

A. Colored Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
2. Provide natural color or white cement as required to produce mortar colors indicated.
3. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979.

    a. Use only pigments with a record of satisfactory performance in masonry mortar.
    b. Pigments shall not exceed 10 percent of portland cement by weight.

4. Products: Subject to compliance with requirements, provide one of the following:

    a. Essroc; Riverton Portland Cement Lime Custom Color.
    b. Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
    c. Lafarge North America Inc.; Eaglebond Portland & Lime.
    d. Lehigh Hanson, HeidelbergCement Group; Lehigh Custom Color Portland/Lime Cement.

B. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

C. Aggregate for Grout: ASTM C404.

D. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Euclid Chemical Company (The); Accelguard 80.
    b. Grace Construction Products, W. R. Grace & Co. - Conn.; Morset.

E. Water: Potable.

2.6 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A615 or ASTM A996, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

C. Masonry-Joint Reinforcement: ASTM A951; ladder or truss type with single pair of side rods.

1. Exterior Walls: Hot-dip galvanized carbon steel.
2. Wire Size for Side Rods: 0.187-inch diameter, unless otherwise indicated.
3. Wire Size for Cross Rods: 0.187-inch diameter, unless otherwise indicated.
4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches on center.
5. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
6. Manufacturers: Provide products complying with requirements and made by one of the following:

    a. Heckmann Building Products Inc.
    b. Hohmann & Barnard, Inc.

2.7 TIES AND ANCHORS

A. Manufacturers: Provide products complying with requirements and made by one of the following:

1. Heckmann Building Products Inc.
2. Hohmann & Barnard, Inc.

B. Materials: Provide ties and anchors made from materials that comply with the following unless otherwise indicated:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82, with ASTM A153, Class B-2 coating.
2. Steel Sheet, Galvanized after Fabrication: ASTM A1008, Commercial Steel, with ASTM A153, Class B coating for exterior walls.
3. Galvanized-Steel Sheet: ASTM A653, Commercial Steel, G60 zinc coating for interior walls.

C. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.

D. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.

1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units.

2.8 EMBEDDED FLASHING MATERIALS

A. Metal Flashing: Provide products specified in Section 076200.

2.9 MISCELLANEOUS MASONRY ACCESSORIES

A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

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

2.10 MASONRY CLEANERS

A. Job-Mixed Detergent Solution: Solution of 1/2-cup dry measure tetrasodium polyphosphate and 1/2-cup dry measure laundry detergent dissolved in 1 gallon of water.

2.11 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Limit cementitious materials in mortar to portland cement and lime.
2. Do not use calcium chloride in mortar or grout.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

1. Use preblended, Portland cement-lime mortar mix for all masonry applications.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Limit cementitious materials in mortar to portland cement and lime. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type M.
2. For reinforced masonry, use Type S.
3. For exterior, above-grade applications where another type is not indicated, use Type N.

D. Grout for Unit Masonry: Comply with ASTM C476.

1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C476, Table 1.
3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143.

2.12 SOURCE QUALITY CONTROL

A. Concrete Masonry Unit Tests: Test units according to ASTM C 140.

PART 3 - EXECUTION

3.1 EXAMINATION

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

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping or conduit systems to verify actual locations of connections.

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

3.2 INSTALLATION, GENERAL

A. Thickness: Build masonry construction to full thickness shown, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

I. Fill cores in hollow concrete masonry units with grout for all reinforced masonry.

3.4 MORTAR BEDDING AND JOINTING

A. Lay CMUs as follows:

1. Bed face shells in mortar and make head joints of depth equal to bed joints.
2. Bed webs in mortar in all courses of piers, columns, and pilasters.
3. Bed webs in mortar in grouted masonry, including starting course on footings.
4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

C. Set cast stone units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes. Comply with requirements specified in Section 04 72 00.

D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

E. Cut joints flush where indicated to receive waterproofing or air barriers, unless otherwise indicated.

3.5 MASONRY-JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches on center.
2. Space reinforcement not more than 8 inches on center in foundation walls.
3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, pipe enclosures, and other special conditions.

3.6 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form control joints in concrete masonry using one of the following methods, unless otherwise indicated on Drawings:

1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
2. Install preformed control-joint gaskets designed to fit standard sash block.
3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

3.7 FLASHING

A. General: Install embedded flashing materials where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 07 92 00 "Joint Sealants" for application indicated.
3. Install metal drip edges with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 07 92 00 "Joint Sealants" for application indicated.

3.8 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

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

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than 60 inches.

3.9 TOLERANCES

A. General: Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and as indicated. In case of conflicting requirements, the most restrictive provisions shall govern.

B. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

C. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.

2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.

D. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.10 REPAIRING AND POINTING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

3.11 CLEANING

A. Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.12 MASONRY WASTE DISPOSAL

A. Waste Management: As specified in Section 01 74 19 "Construction Waste Management and Disposal."

B. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 04 22 00

SECTION 04 72 00 - CAST STONE MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cast stone copings and trim.

B. Related Sections:

1. Section 042200 "Concrete Unit Masonry" for mortar materials and installing cast stone units in unit masonry.
2. Section 076200 "Sheet Metal Flashing and Trim" for flashing materials.
3. Section 079200 "Joint Sealants" for sealing joints in cast stone.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. For cast stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages, and indication of finished faces.

C. Samples for Verification: Submit 6-inch-square representative samples for cast stone units.

1.3 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C 1364, including tests for resistance to freezing and thawing.

1. Test reports based on testing within previous two years will be acceptable.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of cast stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, that is a producer member of the Cast Stone Institute or plant certified by the Cast Stone Institute.

B. Source Limitations for Cast Stone: Obtain cast stone units through a single source from a single manufacturer.

C. Source Limitations for Mortar Materials: Comply with requirements specified in Section 042200 "Concrete Unit Masonry."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of cast stone with unit masonry work to avoid delaying the Work and to minimize the need for on-site storage.

B. Pack, handle, and ship cast stone units in suitable packs or pallets.

1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units, if required, using dollies with wood supports.
2. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

C. Store installation materials on elevated platforms, under cover, and in a dry location.

1.6 PROJECT CONDITIONS

A. General: Comply with requirements specified in Section 042200 "Concrete Unit Masonry."

B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in ACI 530.1/ASCE 6/TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 degrees F and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.

C. Hot-Weather Requirements: Comply with hot-weather construction requirements in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 CAST STONE MANUFACTURERS

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

1. Continental Cast Stone East; Russell, Inc.
2. Corinthian Cast Stone, Inc.
3. David Kucera, Inc.
4. Sun Precast Company.
5. Any other producer member of the Cast Stone Institute.

2.2 CAST STONE MATERIALS

A. General: Comply with ASTM C 1364 and requirements indicated.

B. Portland Cement: ASTM C 150, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C 114. Provide natural color or white cement as required to produce cast stone color indicated.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C 33; gradation and colors as needed to produce required cast stone textures and colors.

D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C 33, gradation and colors as needed to produce required cast stone textures and colors.

E. Color Pigment: ASTM C 979, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

F. Admixtures: Use only admixtures specified or approved in writing by Architect.

1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
3. Air-Entraining Admixture: ASTM C 260, add to mixes for units exposed to the exterior; comply with manufacturer's prescribed mixing rate that will result in an air content sufficient to achieve specified freeze-thaw resistance, except do not add to zero-slump concrete mixes.
4. Water-Reducing Admixture: ASTM C 494, Type A.
5. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.
6. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E.

G. Reinforcement: Deformed steel bars complying with ASTM A 615, Grade 60. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast stone material.

1. Epoxy Coating: ASTM A 775.
2. Galvanized Coating: ASTM A 767.

H. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 240, ASTM A 276, or ASTM A 666, Type 304.

2.3 CAST STONE UNITS

A. Provide cast stone units complying with ASTM C 1364 using either the vibrant dry tamp or wet-cast method.

1. Physical requirements:

a. Compressive Strength: 6,500 psi minimum at 28 days (ASTM C 1194)
b. Absorption (Cold Water): 6 percent maximum at 28 days (ASTM C 1195, Method A).

c. Absorption (Boiling Water): 10 percent maximum at 28 days (ASTM C 1195, Method B).
d. Air Content: 4 percent to 6 percent (ASTM C 173 or ASTM C 231).
e. Freeze-Thaw Resistance: Provide units that are resistant to freezing and thawing as determined by laboratory testing according to ASTM C 666, Procedure A, as modified by ASTM C 1364. Cumulative percent mass loss (CPWL) shall be less than 5 percent after 300 cycles.
f. Linear Drying Shrinkage: 0.065 percent maximum (ASTM C 426).

B. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements unless otherwise indicated.

C. Fabrication Tolerances:

1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater.
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 1/4 inch on unformed surfaces.

D. Cure units as follows:

1. Cure units in enclosed moist curing room at 95 to 100 percent relative humidity and temperature of 100 degrees F for 12 hours or 70 degrees F for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:

a. No fewer than five days at mean daily temperature of 70 degrees F or above.
b. No fewer than six days at mean daily temperature of 60 degrees F or above.
c. No fewer than seven days at mean daily temperature of 50 degrees F or above.
d. No fewer than eight days at mean daily temperature of 45 degrees F or above.

E. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

F. Color and Texture: Match Architect's control sample for fine-grained texture and buff color resembling Indiana limestone.

2.4 MORTAR MATERIALS

A. Provide mortar materials that comply with Section 042200 "Concrete Unit Masonry."

2.5 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A 240, ASTM A 276, or ASTM A 666.

B. Dowels: 1/2-inch diameter, round bars, fabricated from Type 304 stainless steel complying with ASTM A 240, ASTM A 276, or ASTM A 666.

C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cast stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

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

a. Diedrich Technologies, Inc.
b. ProSoCo, Inc.

2.6 MORTAR MIXES

A. Comply with requirements in Section 042200 "Concrete Unit Masonry" for mortar mixes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

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

3.2 SETTING CAST STONE IN MORTAR

A. General: Install cast stone units to comply with requirements in Section 042200 "Concrete Unit Masonry."

B. Set cast stone as indicated on Drawings. Set units accurately in locations indicated with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Coordinate installation of cast stone with installation of flashing specified in other Sections.

C. Wet joint surfaces thoroughly before applying mortar or setting in mortar.

D. Set units in full bed of mortar with full head joints unless otherwise indicated.

1. Set units with joints 3/8-inch wide unless otherwise indicated.
2. Build anchors and ties into mortar joints as units are set.
3. Fill dowel holes and anchor slots with mortar.
4. Fill collar joints solid as units are set.
5. Build concealed flashing into mortar joints as units are set.
6. Keep head joints in coping and other units with exposed horizontal surfaces open to receive sealant.
7. Keep joints at shelf angles open to receive sealant.

E. Rake out joints for pointing with mortar to depths of not less than 3/4 inch. Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.

F. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

G. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

H. Provide sealant joints at copings and other horizontal surfaces, at expansion, control, and pressure-relieving joints, and at locations indicated.

1. Keep joints free of mortar and other rigid materials.
2. Build in compressible foam-plastic joint fillers where indicated.
3. Form joint of width indicated, but not less than 3/8-inch.
4. Comply with applicable requirements in Section 079200 "Joint Sealants" for joint preparation and application of sealants.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet maximum.

B. Variation from Level: Do not exceed 1/8 inch in 10 feet, 1/4 inch in 20 feet maximum.

C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.

D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except where variation is due to warpage of units within tolerances specified.

3.4 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean cast stone as work progresses.

1. Remove mortar fins and smears before tooling joints.
2. Remove excess sealant immediately, including spills, smears, and spatter.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
5. Clean cast stone by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Cast stone may be cleaned with proprietary acidic cleaner applied according to cast stone and cleaner manufacturer's written instructions.

END OF SECTION 04 72 00

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes interior architectural woodwork:

1. Wood casework.
2. Wood paneling.
3. Wood frames.
4. Wood doors.
5. Wood standing and running trim.
6. Plastic-laminate cabinets.
7. Plastic-laminate countertops.
8. Closet and utility shelving.
9. Hardware components for architectural woodwork.
10. Shop finishing of interior woodwork.

B. Related Sections:

1. Section 061000 "Rough Carpentry" for wood blocking and miscellaneous supports required for installing woodwork and concealed within other construction.
2. Section 099100 "Painting" for field-applied finishes.
3. Section 123661 "Simulated Stone Countertops" for countertop materials.

1.2 ACTION SUBMITTALS

A. Product Data: Submit product data for each material and product specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

1. Hardware and accessories.
2. Finishing materials and processes.
3. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Submit shop drawings showing locations of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

1. Elevations shall be drawn at a scale of not less than 1/2" = 1'-0" (1:20).
2. Show details at not less than half size.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for fixtures, equipment and other items installed in architectural woodwork.
5. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples for Verification: Submit samples of the following:

1. Wood veneer for transparent finish:

a. Five veneer leaves representative of and selected from each flitch to be used for transparent-finished woodwork.
b. Three 12 inch by 12 inch sample sets containing a minimum of two or more samples of transparent finished wood-veneer panel products, fabricated from each core product, for each veneer specified and demonstrating the proposed full range of appearance characteristics to be expected in completed work. Include at least one face-veneer seam in each sample.

2. Panel products for shop-applied opaque finish: 12-inch-square representative samples finished on 1 side and at least two edges.
3. Lumber species for transparent finish: 12-inch long samples in required profiles.
4. Plastic laminates: 8 by 10 inches, for each type, color, pattern, and surface finish.
5. Exposed cabinet hardware and accessories: One unit for each type and finish.
6. Metal trim components: 6-inch long samples for each type in required profiles.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: Submit data suitable for inclusion in maintenance manuals for adjusting, repairing, and replacing components, and recommended maintenance.

1.4 QUALITY ASSURANCE

A. Single-Source Manufacturing and Installation Responsibility: Engage a qualified Manufacturer, acceptable to the Architect, to assume undivided responsibility for woodwork specified in this Section, including fabrication, finishing, and installation. The manufacturer shall have a minimum of 15 years successful experience in the custom fabrication and installation of architectural woodwork comparable to that shown and specified, be a member of the AWI, maintain an organized quality control program, perform its own in-house veneer lay-up work, and who retains facilities with sufficient capacity and quality to produce the required architectural woodwork without causing delay to the Project.

B. Quality Standard: Fabricate and install all architectural woodwork in accordance with the applicable requirements of Architectural Woodwork Standards, 2nd edition, published jointly by AWI, AWMAC, and WI, unless more stringent requirements are specified or shown.

C. Fire Performance Characteristics: Provide materials identical to those tested for the following fire performance characteristics per ASTM test methods indicated by UL or other testing and inspecting organizations acceptable to authorities having jurisdiction. Identify treated lumber with classification marking of inspecting and testing organization in the form of separable paper label or, where required by authorities having jurisdiction, of imprint on lumber surfaces that will be concealed from view after installation.

1. Surface Burning Characteristics for Concealed Blocking, Furring, and Door Subframing: Not exceeding a flame spread of 25, and smoke developed of 50 when tested per ASTM E 84 for 30 minutes.

2. The fire performance finish requirements for all exposed interior wall and ceiling woodwork (including the paneling but not limited to paneling) substrates in fully sprinklered spaces shall be as follows which has been taken from the Florida Building Code, Table 803.9.

Use Group	Exit Enclosures and Exit Passageways	Corridors	Rooms and Enclosed Spaces
A-1, and A-2	Class B	Class B	Class C
A-3	Class B	Class B	Class C
B, E, M, R-1	Class B	Class C	Class C
S	Class C	Class C	Class C

Class B: Flame spread 26-75, smoke developed 0-450 when tested in accordance with ASTM E 84.

Class C: Flame spread 76-200, smoke developed 0-450 when tested in accordance with ASTM E 84.

1.5 PRE-INSTALLATION COORDINATION MEETING

A. Meet at the Project site, prior to installation of architectural woodwork, to review the substrate preparation, installation and coordination with other trades, special details and conditions, and other topics related to the architectural woodwork. The preinstallation meeting shall include the Architect, the Contractor, architectural woodworker, and any subcontractors affected by the architectural woodwork installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration. Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

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

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify actual dimensions of other construction by accurate field measurements before fabrication of woodwork; and indicate measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on shop drawings.

2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.8 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of the AWS quality standard for each type of woodwork and quality grade specified.

B. Composite Wood Products: Products shall be made using ultra-low-emitting formaldehyde resins as defined in the California Air Resources Board's "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products" or shall be made with no added formaldehyde.

C. Lumber Standards: Comply with applicable provisions for grading and workmanship of AWS Architectural Woodwork Standards, Section 3, and the requirements shown and specified; where standards conflict the more stringent shall apply. Provide lumber surfaced 4 sides (S4S) and fabricated to profiles shown. All lumber shall be kiln dried to the moisture content indicated in AWS, Section 2.

1. Furring, Blocking, Shims: No. 1 Common; Southern Pine.
2. Door Subframes: No. 1 Common Southern Pine, fire retardant treated to reduce combustibility.
3. Solid Hardwood for Opaque Finish: Plain sawn Yellow Poplar, free from checks, splits, sound knots.
4. Solid Hardwood for Transparent Finish: As indicated on Drawings and Finish Schedules.

D. Wood Veneers:

1. Comply with AWS, Section 4.
2. Species and Cut: As indicated on Drawings and Finish Schedules.
3. Matching: As specified.
4. Minimum 5 inch width leaves, complying with HPVA HP-1, Grade AA.

E. Wood Panel Products:

1. Medium-Density Fiberboard (non-moisture resistant): A sustainable, medium density fiberboard (MDF) panel manufactured from 100 percent post industrial recycled wood fiber complying with ANSI A208.2, having a minimum 48 pcf density except that

minimum for screw holding capacity on face shall be 300 pounds; an ASTM E 84 minimum Class C flame spread rating, minimum 3/4 inch thick, edged and faced as specified, fabricated with binder containing no added urea formaldehyde.

a. SierraPine Composite Solutions; NAUF FSC Certified Medite II.
b. Panel Source International; Purekor NAUF Platinum MDF.

2. Medium-Density Fiberboard (moisture resistant): A sustainable, moisture-resistant, medium density fiberboard (MDF) panel manufactured from 100 percent post industrial recycled wood fiber complying with ANSI A208.2, having a minimum 48 pcf density except that minimum for screw holding capacity on face shall be 300 pounds respectively; an ASTM E 84 Class C flame spread rating, minimum 3/4 inch thick, edged and faced as specified, fabricated with binder containing no added urea formaldehyde.

a. SierraPine Composite Solutions; NAUF FSC Certified Medex.
b. Panel Source International; Purekor NAUF Platinum MDF.

3. Medium-Density Fiberboard (fire rated): A sustainable, fire rated, medium density fiberboard (MDF) panel manufactured from 100 percent post industrial recycled wood fiber complying with ANSI A208.2, having a minimum 48 pcf density except that minimum for screw holding capacity on face shall be 230 pounds; an ASTM E 84 Class A flame spread rating, minimum 3/4 inch thick, edged and faced as specified, fabricated with binder containing no added urea formaldehyde.

a. SierraPine Composite Solutions; NAUF FSC Certified Medite FR.
b. Panel Source International; Pyroblock NAUF Platinum Grade MDF.

4. Medium Density Particleboard: A medium density particleboard (MDP) panel manufactured from 100 percent post industrial recycled wood residuals complying with ANSI A208.1, Grade M-3-with a minimum 45 pcf density except that minimum for screw holding capacity on face shall be 247 pounds, an ASTM E 84 minimum Class C flame spread rating; minimum 3/4 inch thick, edged and faced as specified and manufactured with binder containing no added urea-formaldehyde.

a. SierraPine Composite Solutions; NAUF FSC Certified Encore.
b. Panel Source International; Purekor NAUF Platinum Particleboard.
c. Potlatch Forest Products Corporation, Forest Products Div., Terramica.

5. Hardboard: ANSI A135.4.
6. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde. Available Products:

a. Nordus Scandinavian Collection.
b. Panel Source International, Inc.; PureKor.

F. Thermoset Decorative Overlay (Melamine): Particleboard or medium-density fiberboard with surface of thermally fused, melamine-impregnated decorative paper complying with the recommendations of the Composite Panel Association's Technical Bulletin "Laminating Composite Panels."

G. High-Pressure Decorative Laminate: Complying with NEMA LD 3 for Horizontal General Purpose Grade (HGS) typically and Vertical General Purpose Grade (VGS) where specified.

1. Nominal thickness for HGS and VGS laminates to be 0.048 inches +/- 0.005 inches and 0.028 inches +/- 0.004 inches, respectively.
2. Backing Sheets: Non-decorative, high pressure laminate, NEMA LD3, Grade, types and thickness to match face sheets and equalize pull.
3. Provide factory applied protective peel coat to prevent surface damage during fabrication and handling. Remove protective peel coat after installation in accordance with the manufacturer's recommendations.
4. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following:

    a. Abet Laminati, Inc.
    b. Formica Corporation.
    c. Laminart.
    d. Nevamar Company, LLC; Decorative Products Div.
    e. Wilsonart International; Div. of Premark International, Inc.

5. Basis of design: Provide products indicated on Drawings and Finish Schedules.

H. Glazing: Provide products specified in Division 9 Section "Glazing."

I. Simulated Stonework and Solid Surfacing Materials: Provide products specified in Division 12 Section "Simulated Stone Countertops."

J. Stainless Steel Trim: Custom fabricate stainless steel trim shapes to the sizes, shapes and profiles shown from the following materials. Provide in standard commercial tempers and hardness, as required for fabrication, strength and durability from Type 304 or Type 316 alloy. Form exposed work true to line and level, with flush surfaces and accurate angles. Ease exposed edges to a radius of approximately 1/32 inch radius, unless otherwise shown. Miter exposed corner joints and machine fit to a hairline joint. All sheet goods shall be provided finished one side only. Finish designation shown on the Drawings are NAAMM nomenclature.

1. Bars and Shapes: ASTM A 276, Type 304 or 316.
2. Strip, Plate, and Flat Bar: ASTM A 666, Type 304 or 316.
3. Finish: No. 4 finish directional satin finish.

    a. Remove tool and die marks and stretch lines or blend into finish.
    b. Grind and polish surfaces to produce uniform finish indicated, free of cross scratches.
    c. Run grain of directionally textured finishes with long dimension of each piece.

K. Aluminum Trim: Custom fabricate aluminum trim shapes to the sizes, shapes and profiles indicated. Fabricate in alloy and temper as required for strength and durability. Form exposed work true to line and level, with flush surfaces and accurate angles. Miter exposed corner joints and machine fit to a hairline joint.

1. Aluminum Sheet: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than strength and durability properties of Alloy 5005-H15.

2. Extruded Aluminum: ASTM B 221, Alloy 6061-T6 or Alloy 6063-T5, T6, or T52 as standard with manufacturer.
3. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where indicated, use materials impregnated with fire-retardant chemical formulations indicated by a pressure process or other means acceptable to authorities having jurisdiction to produce products with fire-test-response characteristics specified.

1. Do not use treated material that does not comply with requirements of referenced woodworking standard.
2. Do not use twisted, warped, bowed, discolored, or otherwise damaged or defective lumber or panel products.
3. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
4. Treat only door subframing, blocking and furring items.

B. Fire-Retardant-Treated Lumber: Materials impregnated with fire-retardant chemical formulations to comply with AWPA U1, Use Category UCFA. Kiln-dry material after treatment to levels required for untreated woodwork.

C. Fire-Retardant Particleboard: Panels made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture and complying with fire-test-response characteristics specified.

D. Fire-Retardant Fiberboard: ANSI A208.2 medium-density fiberboard panels made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture and complying with fire-test-response characteristics specified.

2.3 HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials for a complete installation of architectural woodwork, except for items specified in Section 08 71 00 "Door Hardware."

B. Hardware Standard: Comply with BHMA A156.9 for items indicated by referencing BHMA numbers or items referenced to this standard.

C. Frameless Concealed Hinges for Cabinet Doors (European Type): Concealed all-metal furniture hinges shall be Grass Tiomos Series or equal with free swing only at cabinet doors that are provided with magnetic latches, adaptable or engineered for 35 mm hinge cup boring pattern, with minimum 165 degree opening angle, 3 dimensional hinge having adjustments located in the steel hinge arm, steel or die-cast zinc hinge cups, and plastic insertion dowels to receive hinge screws. Automatic closing shall engage only in the last 10 degrees of swing. All hinge pins and linkages shall be hardened. Complying with BHMA A156.9, B01602. Bright nickel finish (US15).

1. Hinge Quantity: Provide hinge quantity as recommended by hinge manufacturer based on cabinet door width, weight, thickness, door material, and hinge cup selection.
2. Metal Furniture Hinge Manufacturers: One of the following:

    a. Grass America, Inc.
    b. Blum USA

D. Wire Pulls: Back mounted, 4 inches long, 5/16 inches in diameter fabricated from satin finished stainless steel (BHMA 630), complying with BHMA A156.9, B52011, unless otherwise indicated.

E. Round Top Bar Pulls: Back mounted, 6-11/16 inches long, 13/32 inch in diameter, finish as indicated below, complying with BHMA A156.9, B52011, unless otherwise indicated.

1. DP128; Doug Mockett and Co., Inc.
2. Finish: Satin finished stainless steel.

F. Edge Pulls: Full mortised, solid, bronze or brass door edge pull, with 1/2 inch finger clearance, 1/4 inch diameter roll diameter, having nominal overall roll length dimension of 3 inches long, with backbend drilled and countersunk to receive 2 screw fasteners; form for full mortise application; satin finished chrome (BHMA 626); one of the following:

1. SRO Style Edge Pull; Tydix Products, Inc.
2. DP3A Tab Drawer Pull; Doug Mockett and Co., Inc.

G. Catches: Magnetic, complying with BHMA A156.9, B03141 for single doors and B03161 for double doors.

1. For Single Doors: CD41 Single Magnetic Cabinet Catch; Stanley Commercial Hardware.
2. For Double Doors:

    a. 901; Rockwood Manufacturing Company.
    b. CD45 Double Magnetic Cabinet Catch; Stanley Commercial Hardware.

H. Cabinet Shelf Rests: Nickel plated brass or stainless steel, minimum 6 mm diameter shelf support pegs in sockets, complying with BHMA A156.9, B04013.

1. Hafele 282.01.701 x 282.50.704; Hafele America, Co.
2. K-10S with K-2 Sleeve; Brusso, Inc.
3. 331 Series Flat Top Shelf Support Pin with 325 Series Insert Grommet; Knape and Vogt.

I. Adjustable Shelf Standards and Brackets for Wall-Hung Open-Shelving:

1. Standards: Model No. 87ANO Extra Heavy Duty 87-187 Series for lengths indicated; by Knape and Vogt.
2. Brackets: Model No. 187 LL ANO for 12- to 24-inch deep shelves by Knape and Vogt.
3. Shelf Rests: Model No. 210 ANO End Rest and Model No. 211 ANO Center Rest with Model No. 129 RUB Rubber Cushions.

J. Drawer Slides:

1. Pencil Drawer Slides: Similar to Accuride 2006 having 3/4 extension carburized steel ball bearing, side mounting, 45 lbs. capacity medium duty load rating, cold rolled steel slide members and ball retainers, bright electro zinc plate finish.
2. Drawers less than 4 inches deep: Similar to Accuride 7432 having full extension carburized steel ball bearing, side mounting, 100 lb. capacity medium duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
3. Drawers greater than 4 inches but less than 8 inches deep: Similar to Accuride 7432 having full extension carburized steel ball bearing, side mounting, 100 lb. capacity medium duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
4. Drawers greater than 8 inches deep: S imilar to Accuride 4032 having full extension carburized steel ball bearing, rail mounting, 150 lb. capacity heavy duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, detent-in, progressive action, positive stop, bright electro zinc plate finish.
5. Refuse Cabinets: Similar to Accuride 3600-201 having full extension carburized steel ball bearing, bottom mounting, 175 lb. capacity heavy duty load rating, cold rolled steel slide members and ball retainers, cushioned in and outstops, progressive action, positive stop, bright electro zinc plate finish.

K. Silencers: Provide rubber silencers on jamb and/or head and sill strike areas of all cabinet doors; 2 for paired doors, and 3 for single doors. Silencers shall be approximately 1/4-inch diameter, color compatible with adjacent finish.

L. Door and Drawer Locks: All cabinet doors and drawers shall be furnished with locks. Finish exposed portions of locks to match cabinet pull finish. Furnish 2 keys with each lock and key all locks inside one room alike and provide masterkey for all locks in Project.

1. Drawers: Provide one of the following lock assemblies:

   a. Cam lock similar to Hafele 235.12.261, chrome plated, with Offset Cam 219.13.9xx, sized to fit opening; Hafele America, Co.
   b. Cam lock similar to Hafele 235.12.221, chrome plated, with surface-mounted strike 251.60.703; Hafele America, Co.

2. Single Doors: Provide one of the following lock assemblies:

   a. Cam lock similar to Hafele 235.12.261, chrome plated, with Offset Cam 219.13.9xx, sized to fit opening; Hafele America, Co.
   b. Cam lock similar to Hafele 235.12.221, chrome plated, with surface-mounted strike 251.60.703; Hafele America, Co.

3. Pairs of Doors: Provide the following:

   a. At inactive leaf, Furniture bolt similar to Hafele 252.02.644, polished chrome, with strike 251.60.703; Hafele America, Co.
   b. At active leaf, provide Single Door lock assembly.

M. Grommets for Cable Passage through Countertops: 2-inch (51-mm) OD, black to receive plastic laminate, molded-plastic grommets and matching plastic caps with slot for wire passage.

N. Exposed Hardware Finishes: Unless otherwise indicated, finish for all exposed hardware shall comply with BHMA A156.18 for BHMA finish number indicated.

1. Satin Stainless Steel: BHMA 630.

O. For concealed hardware, provide manufacturer's standard corrosion resistant finish that complies with product class requirements in BHMA A156.9 and that is suitable for service exposure.

2.4 MISCELLANEOUS MATERIALS

A. Door Hardware: At full sized doors, provide door hardware as scheduled under Section 08 71 00 "Door Hardware."

B. Steel Reinforcing: Carbon steel shapes, tubes and plates complying with ASTM A 36 (shapes and plates), and ASTM A 500 or A 501 (for tubes).

1. Shop Primer for Concealed Steel Reinforcing: Provide fast curing, lead and chromate free, universal modified alkyd primer complying with performance requirements in FS TT-P-664.
2. Electrodes for Concealed Steel Reinforcing: Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded.

C. Hanging (Zee Clip) Strips: Extruded aluminum zee type interlocking clips; type, size and quantity for the condition of use.

D. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1.

E. Nails, Wire, Brads, and Staples: Select material, type, size, and finish required for each use.

1. ASTM F 1667 for driven fasteners such as nails, spikes and staples.
2. ASTM F 547 for nails used with wood and wood based products.

F. Blind Splines: Specialty devices, as required for tight butt joining, types and size as recommended by woodwork fabricator.

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

1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts where required for corrosion resistance.
2. Provide toothed-steel or lead-expansion sleeves for drilled-in-place anchors.

H. Adhesives, General: Use only low emitting VOC adhesives that leave no glue lines on finished surfaces of architectural woodwork. Do not use adhesives that contain urea formaldehyde.

1. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Wood Glues: 30 g/L.
b. Contact Adhesives: 80 g/L.

2. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.5 FABRICATION, GENERAL

A. Interior Woodwork Grade: Provide the following grades complying with the referenced quality standard for woodwork items indicated:

1. Wood casework: Premium.
2. Wood paneling: Premium.
3. Wood frames: Premium.
4. Wood doors: Premium.
5. Wood standing and running trim: Custom.
6. Plastic laminate cabinets: Custom.
7. Plastic-laminate countertops: Custom.
8. Closet and utility shelving: Custom.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Complete fabrication, including assembly, finishing, and hardware application, before shipment to Project site to the maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting. The width of scribe and filler panels shall not exceed 1/2 inch, or 1/2 inch clear dimension from adjacent wall to outside face of cabinet door in a 90 degree position, whichever is greater.

D. Fabricate woodwork to dimensions, profiles, and details indicated.

1. Edges of solid-wood (lumber) members and rails to 1/16 inch radius.
2. Reinforcing shown is minimum. Provide additional steel and lumber reinforcing as required to sustain imposed loads and to ensure a rigid assembly.
3. Exposed surfaces shall be free from dents, tool marks, warpage, buckle, glue and open joints, or other defects affecting serviceability or appearance.
4. Accurately fit all joints, corners and miters.
5. Conceal all fasteners. Make threaded connections up tight so that threads are entirely concealed.

E. Shop cut openings to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.6 WOOD CABINETS AND CASEWORK

A. Wood Cabinets and Casework for Transparent Finish:

1. AWS Type of Cabinet Construction: Flush overlay.
2. Core Materials: Particleboard or medium density fiberboard.
3. Wood Veneer Species and Matching:

   a. Veneer Species: As indicated on Drawings and Finish Schedules.
   b. Cut: As indicated on Drawings and Finish Schedules.
   c. Panel-Matching Method: In each separate area, use blueprint sequence matched panels for contiguous woodwork elements. Provide continuous match where veneers are interrupted perpendicular to the grain.
   d. Matching of Adjacent Veneer Leaves: As indicated on Drawings.
   e. Assembly of Veneer Leaves on Panel Faces: Balance and center match.
   f. Grain Matching: Run and match grain as indicated on the Drawings.

4. Finish: Shop-applied transparent finish.

2.7 WOOD PANELING

A. Wood Veneer Paneling for Transparent Finish:

1. Provide panels consisting of wood veneer and fire-retardant core materials with a flame-spread index of 75 or less and smoke-developed index of 450 or less per ASTM E 84.
2. Core Materials: Particleboard or medium density fiberboard.
3. Wood Veneer Species and Matching:

   a. Veneer Species: As indicated on Drawings and Finish Schedules.
   b. Cut: As indicated on Drawings and Finish Schedules.
   c. Panel-Matching Method: In each separate area, use blueprint sequence matched panels for contiguous woodwork elements. Provide continuous match where veneers are interrupted perpendicular to the grain.

      1) Panel matching between vertical panels: End matched.

   d. Matching of Adjacent Veneer Leaves: As indicated on Drawings.
   e. Assembly of Veneer Leaves on Panel Faces: Balance and center match.
   f. Grain Matching: Run and match grain as indicated on the Drawings.

4. Edge Detail: Edge veneer banded with continuous hardwood strips matching face veneer. Panel joints to be flush type unless otherwise shown.
5. Finish: Shop-applied transparent finish.

2.8 WOOD DOOR FRAMES

A. Wood Species: Refer to Drawings and Finish Schedules for species of wood frames to receive transparent finish.

B. Profiles and Dimensions: Comply with requirements indicated on Drawings.

C. Frames shall be constructed in accordance with AWS requirements for interior standards, grade as indicated, provided in sizes as shown. In addition, comply with the following:

1. Construct in accordance with AWS Sections 3, 6, and 12.
2. Frames shall be provided in single piece lengths of solid stock hardwood lumber. Form frames with dadoes or rabbeted joints, plant assembled for paint finish.
3. Subframing shall be fabricated from solid lumber stock as hereinbefore specified; fire retardant treated.

D. Finish: Field-applied transparent finish.

2.9 WOOD DOORS

A. Construction complying with AWS Woodwork Quality Standards: PC-5 ME particleboard core doors with minimum 1/16 inch thick, properly dried low density hardwood or high density hardboard crossbanding and transparent finished wood face veneers of the specie and cut indicated.

1. Door Thickness: As indicated on Drawings.
2. Wood Veneer Species and Matching:

    a. Veneer Species: As indicated on Drawings and Finish Schedules.
    b. Cut: As indicated on Drawings and Finish Schedules.
    c. Matching of Adjacent Veneer Leaves: As indicated on Drawings.
    d. Assembly of Veneer Leaves on Door Faces: Balance and center match.
    e. Grain Direction: Run and match grain as indicated on the Drawings.

3. Vertical and Top Edges: Same species as face, lumber or veneer, sanded eased edges, without visible joints in lock or hinge edges and free of knife and saw marks.
4. Core: Single thickness slab of particleboard complying with ANSI A208.1, 1-LD-2, hot pressed with synthetic resin glue.
5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering. Glue lines between the stiles and rails shall be minimum Type II complying with the performance requirements of WDMA TM-6.
6. Crossbanding materials shall extend full width of door with grain running horizontally, tapeless spliced without voids or show through (telegraphing), and directly glued to core and blocking. Sand crossbanding before application of face veneer. Face veneer shall extend full height of door with grain running vertically, tapeless spliced without voids or show through (telegraphing), and directly glued to crossband. Glue lines between the face veneer, crossbanding and blocking shall be of a type to comply with specified warranty using the hot plate process.
7. Finish: Shop-applied transparent finish.

B. Prefitting: Fit wood doors to suit frame opening sizes indicated. Comply with the following:

1. Jamb and Head Clearance: 1/8 inch.
2. Paired Door Openings Meeting Edge: 3/16 inch less than nominal door size for each leaf.
3. Sill Clearance: 1/4 inch from finished floor.

C. Machining: Machine wood doors, paneling and frames, for hardware. Comply with final hardware schedules, shop drawings, and hardware templates.

2.10 WOOD STANDING AND RUNNING TRIM

A. General: Complying with AWS Sections 3, 6, and 12, fabricated from solid hardwood with scarfed joints, profiles as indicated, finishes as indicated.

B. Wood Species: Refer to Drawings and Finish Schedules for locations of the following:

1. Wood trim to receive transparent finish.
2. Wood trim to receive opaque finish.

C. Profiles and Dimensions: Comply with requirements indicated on Drawings.

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

2.11 PLASTIC-LAMINATE CABINETS

A. AWS Type of Cabinet Construction: Flush overlay.

B. Core Material: Particleboard or medium-density fiberboard.

C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:

1. Horizontal Surfaces Other Than Tops: Grade HGS.
2. Postformed Surfaces: Grade HGP.
3. Vertical Surfaces: Grade VGS.
4. Edges: PVC edge banding, 0.12 inch thick, matching laminate in color, texture, and finish.
5. Colors, Textures, and Finishes: Match Architect's control samples.

D. Materials for Semiexposed Surfaces:

1. High-pressure decorative laminate, Grade VGS, unless otherwise indicated.
2. Edges of Plastic-Laminate Shelves: PVC edge banding, 0.12 inch thick, matching laminate in color, texture, and finish.
3. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL, unless otherwise indicated.

2.12 PLASTIC-LAMINATE COUNTERTOPS

A. Core Material: Particleboard or medium-density fiberboard.

1. Core Material at Sinks: Particleboard made with exterior glue or exterior-grade plywood.

B. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:

1. Horizontal Surfaces: Grade HGS.
2. Postformed Surfaces: Grade HGP.
3. Vertical Surfaces: Grade VGS.
4. Edge Treatment: Same as laminate cladding on horizontal surfaces.
5. Colors, Textures, and Finishes: Match Architect's control samples.

C. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL, on underside of countertop substrate, unless otherwise indicated.

2.13 CLOSET AND UTILITY SHELVING

A. Plastic-Laminate Shelving:

1. Panel Products: Minimum 3/4-inch particleboard or medium-density fiberboard.
2. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate.

a. High-Pressure Decorative Laminate Grade: HGS.
b. Colors, Textures, and Finishes: Match Architect's control samples.

3. Edge Treatment: Same as laminate cladding on horizontal surfaces.
4. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of shelving substrate.
5. Cleats: 3/4-inch solid lumber.

2.14 SHOP FINISHING

A. Finish architectural woodwork at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.

B. Priming of interior architectural woodwork for field-applied finish required to be performed at fabrication shop are specified in this Section. Refer to Section 09 91 00 "Painting" for field-applied coating systems for architectural woodwork.

C. Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.

1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative overlay.
2. Gluing of face veneers shall, where possible, be by the hot plate method; glued surfaces shall be in close contact throughout. Glue stains will not be permitted.

3. Grain of all transparent finished wood shall run in the direction shown, or if not shown, as accepted on the shop drawings.

D. Exposed Surfaces:

1. Shop-Applied Transparent Finish:

a. Grade: Premium.
b. AWS System 5: Conversion Varnish.
c. Staining: Match Architect's control sample.
d. Sheen: Match Architect's control samples.

2. Plastic Laminate Finish: Gluing of plastic laminate surfacing materials shall be by the hot plate method, glued surfaces shall be in close contact throughout. Glue stains shall not be permitted.

E. Unexposed Wood Finish: Alkyd type primer-sealer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas.

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

3.2 INSTALLATION

A. General: Install woodwork to comply with referenced quality standard for same grade specified in this Section for type of woodwork involved.

1. Install woodwork level, plumb, true, with no distortions, and with no variations in flushness of adjoining surfaces. Shim as required with concealed shims.
2. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces and repair damaged finish at cuts.

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

C. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 96 inches long, except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.

1. Fill gaps, if any, between top of base and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.
2. Install wall railings on indicated metal brackets securely fastened to wall framing.
3. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

D. Cabinets: Install without distortion so doors fit openings properly and are accurately aligned. Adjust hardware to center doors in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

1. Install cabinets without sag, bow, or other variation from a straight line.
2. Maintain veneer sequence matching of cabinets with transparent finish.
3. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches on center with No. 10 wafer-head screws sized for 1-inch penetration into wood blocking, or hanging strips or with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

E. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Calk space between backsplash and wall with silicone sanitary sealant specified in Section 07 92 00 "Joint Sealants."

F. Paneling: Anchor paneling to supporting substrate with concealed panel-hanger clips, by blind nailing on backup strips, splined connection strips, and associated trim and framing. Do not use face fastening. Space panels so that reveals are parallel and of widths indicated.

G. Doors Frames:

1. Coordinate installation with the work of other trades to ensure exact fit and perfect alignment. Verify dimensions before proceeding and obtain measurements at job site for work required to be accurately fitted to other construction.
2. Do not install door frames until interior wet work, such as tile, terrazzo, and wallboard work are complete and dried.
3. Do not subject door frames to abnormal humidity, dryness or heat. Do not expose door frames to sudden changes in temperature such as forced heat.
4. Hardware Installation: Install hardware in accordance with the instructions of the door hardware manufacturer; refer to Section 08 71 00 "Door Hardware."

H. Doors:

1. Coordinate installation with the work of other trades to ensure exact fit and perfect alignment. Verify dimensions before proceeding and obtain measurements at job site for work required to be accurately fitted to other construction.
2. Do not install wood doors until interior wet work, such as tile, terrazzo, and wallboard work are complete and dried in the areas to receive the wood doors.
3. Do not subject wood doors to abnormal humidity, dryness or heat. Do not expose doors to sudden changes in temperature such as forced heat.
4. Hang wood doors within frames. Align in frames for uniform clearance at each edge matching clearances specified for factory prefitting.

5. Hardware Installation: Install hardware in accordance with the instructions of the door hardware manufacturer; refer to Section 08 71 00 "Door Hardware."

I. Complete the finishing work specified in this Section to extent not completed at shop or before installation of woodwork.

J. Refer to Section 088000 "Glazing" for installation of glass panels and glazing accessories.

K. Refer to Section 099100 "Painting" for final finishing of installed architectural woodwork indicated to receive field-applied coated finish.

L. Refer to Section 123661 "Simulated Stone Countertops" for installation requirements for countertops fabricated from solid-surface and quartz surfacing materials.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces. Touchup shop-applied finishes to restore damaged or soiled areas.

3.4 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer, that ensures that woodwork will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 06 40 23

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Solid-core ~~doors~~ flush wood doors.
~~1.~~2. Factory finishing wood doors.
~~2.~~3. Shop priming flush wood doors.
~~3.~~4. Factory fitting flush wood doors to frames and factory machining for hardware.
~~4.~~5. The integration of a security system into the flush wood door work is required. The Contractor shall be responsible for the total and complete coordination of the security system components into the Work.

B. Related Requirements:

1. Section 08 11 13 "Hollow Metal Doors and Frames."
2. Section 08 71 00 "Door Hardware."
~~2.~~3. Section 08 80 00 "Glazing."
~~3.~~4. Section 09 91 00 "Painting" for field finishing doors.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory finishing specifications.

B. Shop Drawings: Drawings indicating location, size, thickness, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; use same reference numbers for details and openings indicated on Architectural Drawings. Coordinate with final Door Hardware Schedule. Include the following:

1. Details of each different wall opening condition.
2. Identification of hardware sets.
3. Dimensions and locations of blocking.
4. Dimensions and locations of mortises and holes for hardware.
5. Dimensions and locations of cutouts.
6. Undercuts.
7. Indicate requirements for veneer matching.
~~6.~~8. Indicate factory finish requirements.
9. Shop priming requirements.
~~7.~~10. Indicate glazing requirements.

C. Samples for Verification: For factory finished doors.

1. Factory finishes applied to corner section of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.
2. Frames for light openings, 6 inches long, for each material, type, and finish required.

1.3 CLOSEOUT SUBMITTALS

A. Warranty.

1.4 QUALITY ASSURANCE

A. Quality Standard: Comply with the applicable provisions and recommendations of Architectural Woodwork Standards, 2nd edition, published jointly by AWI, AWMAC, and WI, unless more stringent requirements are specified or shown.

B. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252, and UL 10C "Standard for Positive Pressure Fire Tests of Door Assemblies." Fire classification labels at all doors with fire ratings greater than 20 minutes shall indicate the temperature rise developed on the unexposed surface of the door after the first 30 minutes of fire exposure.

1. Provide metal labels permanently fastened on each door which is within the size limitations established by the labeling authority having jurisdiction.
2. Temperature-Rise Rating: Where indicated, provide doors that have a temperature-rise rating of 450 degrees F maximum in 30 minutes of fire exposure.

1.5 DELIVERY, STORAGE, AND HANDLING

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

B. Package doors individually in plastic bags or cardboard cartons.

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

1.6 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 ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

1.7 WARRANTY

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

1. Failures include, but are not limited to, the following:

    a. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
    b. 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.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Algoma Hardwoods, Inc.
2. Eggers Industries.
3. Marshfield Door Systems, Inc.
4. Oshkosh Door Company.
5. VT Industries Inc.

2.2 FLUSH WOOD DOORS~~, GENERAL~~

A. General:

1. Comply with referenced quality standard.
2. Low-Emitting Materials: Provide doors made with adhesives and composite wood products that do not contain added formaldehyde.

B. Fire-Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Grade: Custom.
2. Face Veneer: Medium-density overlay.
3. Thickness: 1-3/4 inch, unless otherwise indicated.
4. Temperature-Rise Limit: At vertical exit enclosures provide doors that have a maximum transmitted temperature end point of not more than 450 degrees F above ambient after 30 minutes of standard fire-test exposure.
5. Cores: Provide mineral core as needed to provide fire-protection rating indicated.
6. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.
7. Pairs: 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.
8. Construction: Five or seven plies.

C. Mineral-Core Doors:

1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire-protection rating indicated.
2. Blocking: Provide composite blocking, of same thickness as core, with improved screw-holding capability approved for use in doors of fire-protection ratings indicated as needed to eliminate through-bolting hardware and as follows:

    a. 5-1/2 inch wide minimum top-rail blocking consisting of minimum 1/2 inch wide single length mill option hardwood outer band and single length lumber inner band fabricated of same materials as vertical edges.
    b. Provide either two 4-1/2 inch by 18 inch minimum sized lock blocks on each door stile or a single 10 inch high continuous lock rail located on lockcase body center-lines.

3. Vertical Edge Construction: Provide manufacturer's standard laminated-edge construction meeting label requirements, with intumescent seals concealed by outer stile matching face veneer, and meeting or exceeding the specified direct screw withdrawal, split resistance, cycle slam, and hinge loading criteria. Finish outer bands to match door faces without joints.

    a. Split Resistance: Not less than 696 pounds when tested in accordance with WDMA TM-5; or, not less than 1305 pounds when tested in accordance with ASTM D 143.
    b. Cycle/Slam: Not less than 200,000 cycles with no loosening of hinge screws or other visible signs of failure when tested in accordance with the requirements of WDMA TM-7; or, not less than 502,000 cycles when tested in accordance with ANSI A151.1
    c. Direct Screw Withdrawal: Not less than 700 pounds when tested in accordance with WDMA TM-10; or, not less than 877 pounds when tested in accordance with ASTM D 1037 using #12 x 1-1/4 steel screws, threaded to the head with either A or AB wood threads.
    d. Hinge Loading: Not less than 684 pounds average when tested in accordance with WDMA TM-8.

D. Doors for Transparent Finish:

1. Grade: Custom.
2. Face Veneer Species and Cut: Match Architect's samples.
3. Match between Veneer Leaves: Match Architect's samples.
4. Assembly of Veneer Leaves on Door Faces: Center balance match.
5. Pair and Set Match: Provide for doors hung in same opening.
6. Thickness: 1-3/4 inch (45-mm) unless otherwise indicated.
7. Materials:

    a. Particleboard Core Material: Complying with ANSI A208.1, Grade 1-LD-1 or 1-LD-2.
    b. Blocking: 5-1/2 inch (138-mm) wide minimum top-rail blocking at doors with closers and bottom rail blocking at doors with kickplates consisting of minimum 1/2 inch (13-mm) wide single length structural composite lumber (SCL) outer band and single length SCL inner band.

c. Vertical Edges: 1-3/8 inch (35-mm) wide minimum prior to fitting, 2 ply laminated wood construction consisting of a single piece hardwood outer band, without fingerjoints, and an inner band of SCL. Outer band to match face veneer for transparent finished veneered-faced doors. Trim non-rated door width equally on both jamb edges.
d. Crossbanding: Minimum 1/16 inch (1.5-mm) thick, low density hardwood, composite, or high density hardboard.

8. Construction: AWS Section 9, PC-5 ME. Stiles, rails, and blocking bonded to core then entire unit abrasive planed before veneering. Crossbanding materials shall extend full width of door with grain running horizontally, tapeless spliced without voids or show through (telegraphing), and directly glued to core and blocking. Sand cross banding before application of face veneer. Face veneer shall extend full height of door with grain running vertically, tapeless spliced without voids or show through (telegraphing), and directly glued to cross band. Glue lines between face veneer, crossbanding, and blocking shall be of a type to comply with the specified warranty using the hot plate process.

E. Doors for Opaque Finish:

1. Grade: Custom.
2. Face Veneer: Medium-density overlay.
3. Thickness: 1-3/4 inch (45-mm) unless otherwise indicated.
4. Materials:

a. Particleboard Core Material: Complying with ANSI A208.1, Grade 1-LD-1 or 1-LD-2.
b. Blocking: 5-1/2 inch (138-mm) wide minimum top-rail blocking at doors with closers and bottom rail blocking at doors with kickplates consisting of minimum 1/2 inch (13-mm) wide single length structural composite lumber (SCL) outer band and single length SCL inner band.
c. Vertical Edges: 1-3/8 inch (35-mm) wide minimum prior to fitting, 2 ply laminated wood construction consisting of a single piece hardwood outer band, without fingerjoints, and an inner band of SCL. Trim non-rated door width equally on both jamb edges.
d. Crossbanding: Minimum 1/16 inch (1.5-mm) thick, low density hardwood, composite, or high density hardboard.

5. Construction: AWS Section 9, PC-5 CE. Stiles, rails, and blocking bonded to core then entire unit abrasive planed before veneering. Crossbanding materials shall extend full width of door with grain running horizontally, tapeless spliced without voids or show through (telegraphing), and directly glued to core and blocking. Sand crossbanding before application of face veneer. Face veneer shall extend full height of door with grain running vertically, tapeless spliced without voids or show through (telegraphing), and directly glued to cross band. Glue lines between face veneer, crossbanding, and blocking shall be of a type to comply with the specified warranty using the hot plate process.

2.3 LIGHT FRAMES

A. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in

doors of fire-protection rating indicated. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated. Include finish nails for removable stops sized as required for fire rating indicated.

B. Wood Beads for Light Openings in Non-Rated Doors: Manufacturer's standard flush designed, solid wood, rectangular shaped, back beveled or quirked, beads matching veneer species of door faces. Include glazing compounds or tapes sized for back bevel or quirk provided. Include finish nails for removable stops sized in accordance with wood door manufacturer's recommendations.

2.4 FABRICATION

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

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

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08 80 00 "Glazing."

2.5 SHOP PRIMING

A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 09 91 00 "Painting."

1. Surfaces shall be clean and dry before priming.
2. Apply primer/sealer uniformly without bare spots, runs, or sags.

2.6 FACTORY FINISHING

A. General: Finish doors at factory that are indicated to receive transparent finish.

B. Grade: Custom.

C. Finish: Manufacturer's standard finish with performance meeting or exceeding either AWS System 5 conversion varnish or AWS System 11 catalyzed polyurethane.

D. Staining: Prepare door faces, stiles, rails, and cutouts, with toners, or stains, prior to the application of finish to match Architect's sample.

E. Effect and Sheen: Match Architect's sample.

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. Hardware: Apply hardware to new doors in accordance with hardware manufacturer's instructions and Section 08 71 00 "Door Hardware." For particleboard core doors drill pilot holes of proper size for installing hinge screws. Adjust hardware items just prior to final inspection. Leave work in complete and proper operating condition.

1. Factory wrapping shall be maintained on new doors during construction period, and all hardware shall be installed by cutting the factory wrapping at the mounting location of the hardware item.

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

1. Install fire-rated doors in accordance with NFPA 80.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge, matching clearances specified for factory prefitting, and to contact stops uniformly. Field cutting, fitting or trimming, if required, shall be executed in a workmanlike manner.

1. Clearances for fire-rated doors: Comply with NFPA 80.
2. Clearances for non-rated doors: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4 inch (6.4 mm) from bottom of door to top of threshold.

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

~~D.~~E. Field Painting: Comply with requirements for field-applied coatings specified in Section 09 91 00 "Painting."

3.3 ADJUSTING

A. Rehang or replace doors that do not swing or operate freely.

B. Replace doors that are damaged, warped, twisted, demonstrate core show through, are not true in plane, cannot be refinished to the satisfaction of the Architect or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

C. Protection: Protect wood doors to ensure that the wood door work will be without damage or deterioration until final acceptance.

END OF SECTION 08 14 16

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes door hardware.

B. Related Sections include the following:

1. Division 08 Section "Automatic Door Operators."

1.2 ACTION SUBMITTALS

A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

C. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

a. Organize door hardware sets in same order as in the Door Hardware Schedule.

3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail conditions requiring custom extended lip strikes, or other special or custom conditions.
    g. Door and frame sizes and materials.
    h. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

        1) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

D. Card and Keying Schedule: Submit keying schedule prepared by or under the supervision of supplier, detailing Owner's final card and keying instructions for locks. Include schematic card and keying diagram and index each to unique door designations.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: Submit maintenance data for each type of door hardware.

B. Warranties: Submit special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three projects over the last five years which were similar in material, design and extent to that indicated for the project and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant (AHC), available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

    1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Source Limitations: Obtain each type of door hardware from a single manufacturer, unless otherwise indicated.

D. Regulatory Requirements: Comply with the following:

1. Accessible Design Standards:

   a. New Jersey Barrier-Free Subcode including technical standard ICC/ANSI A117.1.
   b. U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG).

2. Building Subcode: Comply with applicable provisions for means of egress doors.
3. Electrified Door Hardware: Listed and classified by Underwriters Laboratories, Inc. or by a testing agency acceptable to authorities having jurisdiction, as suitable for the purpose indicated.

1.5 PRE-INSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to electrified door hardware including, but not limited to, the following:

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

1.6 DELIVERY, STORAGE, AND HANDLING

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

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.7 COORDINATION

A. Coordinate layout and installation of recessed pivots and closers in existing floor construction.

B. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

C. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to, power supplies, fire alarm system and detection devices, access control system, security system, building control system.

D. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.8 WARRANTY

A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of door hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal use.
4. Electrical component defects and failures within the systems operation.

B. Warranty for Electromechanical Locks: Seven years from date of Substantial Completion.

C. Warranty for Electrified Cylindrical Locks: Seven years from date of Substantial Completion.

D. Warranty Period for Electromagnetic Locks: Seven years from date of Substantial Completion.

E. Warranty Period for Electrified Exit Devices: Seven years from date of Substantial Completion.

F. Warranty Period for Manual Closers: Ten years from date of Substantial Completion.

G. Warranty Period for Concealed Floor Closers: Five years from date of Substantial Completion.

H. Warranty Period for Other Hardware: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section including Door Hardware Sets, and Door Schedule indicated on Drawings.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.
2. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

B. Basis of Design: Provide products specified and indicated in Door Hardware Sets.

2.2 HINGES AND PIVOTS

A. Butt Hinge Products:

1. Standard Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8112.

a. Basis of Design: TA2714; McKinney Products Company (MCK).

2. Standard Weight, Ball Bearing, 5 Knuckle, Steel, Concealed Electric 24V, 4 Wire: Complying with BHMA A156.1 A8112.

a. Basis of Design: TA2714 x CC-4; McKinney Products Company (MCK).

3. Heavy Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8111.

a. Basis of Design: T4A3786; McKinney Products Company (MCK).

4. Heavy Weight, Ball Bearing, 5 Knuckle, Steel, Concealed Electric 24V, 4 Wire: Complying with BHMA A156.1 A8111.

a. Basis of Design: T4A3786 x CC-4; McKinney Products Company (MCK).

B. Center Pivots: Mortised mounted, non-handed, center pivot set and composed of a head mounted top pivot and floor mounted bottom pivot. Furnish with extended spindles. Complying with BHMA A156.4 C07032.

1. Basis of Design: Model 370 Center Hung Pivot Set; Rixson-Firemark, Inc. (RIX).

C. Hinge Characteristics: Full mortise type with square corners. All butt hinges are to have non-rising pins. Provide only steel bodied butt and pivot hinges at labeled doors. All butt hinges shall be furnished with button tips. Provide heavy weight, ball bearing, hinges at doors 40 inches and greater in width.

D. Electrified Functions for Hinges and Pivots: Furnish fully concealed circuit, tamper resistant, wired hinges and pivots at doors requiring power transfer or door monitoring from jamb to door. All electrified hinges and pivots shall be rated for the in-rush amperage of the door mounted device being electrified.

E. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2.3 LOCKS AND LATCHES

A. Bored Lock and Latch Sets: Extra heavy duty, commercial, cylindrical bodies complying with BHMA A156.2 Series 4000, Grade 1. Furnish cylindrical type, field reversible, lock and latch sets with deadlocking brass or stainless steel latch bolts having a minimum 1/2 inch throw together with guard (auxiliary) latch added to bolt, 2-3/4 inches backset, and UL listed for 3 hour single doors. Furnish latch bolts having a minimum 3/4 inch throw together with guard (auxiliary) latch added to bolt, and UL listed for labeled pairs of fire doors. All lock and latch

sets, to be furnished complete with heavy gage steel zinc dichromate coated cylindrical bodies, trim, 2-1/4 inches by 1-1/8 inches beveled square cornered fronts, and 6 pin tumbler key in lever core. Provide wrought steel, aluminum, or black plastic, box strikes for each lock and latch set with curved lips of sufficient length to protect frames. Provide plated cast zinc levers with plated wrought brass or bronze roses. Where electro-mechanical locksets are scheduled provide transformers properly sized for conversion of power supply to the power characteristics of the electromechanical locksets. Where electro-mechanical locksets are scheduled provide request to exit (REX) monitoring feature.

1. Basis of Design Manufacturer: BEST Group, dormakaba USA Inc. (BEST).
2. Provide products indicated in Door Hardware Sets.

2.4 EXIT DEVICES

A. Exit Devices: Exit devices and exit device accessories shall conform to BHMA A156.3, Grade 1. Trim shall be wrought construction and commercial plain design with straight, beveled or smoothly rounded sides, corners and edges. Keyed devices shall be furnished less cylinders. Cylinders shall be as herein specified keyed to building system.

1. Basis of Design Manufacturer: PRECISION Group, dormakaba USA Inc. (PHI)
2. Provide products indicated in Door Hardware Sets.

2.5 ELECTROMAGNETIC LOCKS

A. Exposed, Surface Applied Type: Surface mount application with a minimum 1500 pound holding force at 24 V, provide complete with all cabling, rectifier kits, holding force sensors, adjustable time delay, and mounting hardware, complying with BHMA A156.23, Grade 1, high security, fail-safe operation.

1. Basis of Design Manufacturer: BEST Group, dormakaba USA Inc. (BEST)
2. Provide products indicated in Door Hardware Sets.

2.6 CYLINDERS AND KEYING

A. Cores for Bored Cylindrical Locksets: Provide key-in lever 6 pin cores for all bored cylindrical locksets, keyed into base building system, as manufactured by the bored lockset manufacturer.

B. Cylinders: Full faced cylinders with square shouldered (not tapered) compression rings, 6 pin cylinders, standard threaded, keyed into building system, with cams to suit lock functions. Provide cylinders for installation into all locks.

C. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the Owner. Supplier and Contractor shall meet with the Owner and obtain final instructions in writing. Provide two nickel silver keys for each lock, and six keys for each grandmaster and masterkey system. Provide two blank keys for each lock for the Owner's convenience in making additional keys.

1. Temporary Cylinders: Provide temporary cylinders in locks during construction and as may be necessary for security or as may be requested by the Owner. All temporary cylinders shall be individually keyed as required and subject to a single master key.

D. Key Control System: Furnish a key control system with complete accessories including key gathering envelopes, labels, reserve pattern key tags with self-locking key clips, key receipt forms, key receipt holders, 3-way visible card index, temporary key markers and permanent key markers.

2.7 STRIKES

A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article 'Locks and Latches.'

2.8 OPERATING TRIM (PUSHES AND PULLS)

A. Pulls: Fabricate push pulls for back to back mounting from 1 inch diameter stainless steel bar or tube stock in finish as scheduled. Custom fabricate push pulls to length indicated with minimum 3-inch projection, minimum 2 inch clearance with bases centered on door stiles and anchored to top and bottom rails. Furnish spacers threaded to accept concealed throughbolt attachment including provision for spanner tightening of bolts of assembly. Do not provide baseplates at stile to pull interface.

1. Basis of Design: RM3300 Type 13HD (Back-to-Back Mounting); Rockwood Manufacturing Company (RM).
2. Pull Height: As indicated on Drawings.

2.9 CLOSERS

A. Surface-Mounted Closers: Closers shall be certified by ETL laboratories and the manufacturer to a minimum of 8,000,000 cycles and meet BHMA A156.4, Grade 1. Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Closers shall have adjustable spring power, full rack and pinion, independent closing speed and latch regulating V-slotted valves, fully hydraulic with a high strength cast iron cylinder and solid forged steel arms, bore diameter of 1-1/2 inches, pinion shaft diameter of 5/8 inches, adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled. Provide metal covers of clean line design with plated or primed for paint finish as scheduled and that require removal in order to make adjustments to closer.

1. Basis of Design:

a. Closer with Track Arms: 4011T; LCN Closers (LCN).

b. Closers without Track Arms: 4110/4010; LCN Closers (LCN).

B. Overhead Concealed Closers, Butt and Offset Hung: Closers shall meet BHMA A156.4, Grade 1. Properly detail closers to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Provide manufacturer's standard cover plate finished to match exposed portions of butts or pivots provided.

1. Basis of Design: RTS 88-BI Series, Offset Slide Arm, barrier free function; Dorma.

C. Overhead Concealed Closers, Center Hung: Closers shall meet BHMA A156.4, Grade 1. Properly detail closers to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Provide manufacturer's standard cover plate finished to match exposed portions of pivots provided. Provide with manufacturer's standard top arm and pivot to suit conditions indicated.

1. Basis of Design: RTS 88-BI Series, End Loaded Arm, barrier free function; Dorma.

D. Floor Closers: Closer sizes shall be as recommended by the manufacturer for size of door, stack pressure conditions, and anticipated frequency of use with special details as follows:

1. Special Details:

a. Closer Cover Pan: Where stone or ceramic tile flooring is indicated at door thresholds and a special dress plate is not indicated or scheduled, furnish metal pan specially constructed and designed to be installed below and to support removable sections of finished flooring.
b. Extended Spindles: Furnish extended spindles.
c. All floor closers shall be manufactured with separate independent valves for closing adjustment, latching adjustment, and backchecking adjustment.
d. All floor closers shall be provided with a built-in positive deadstop to prevent doors from swinging beyond the desired opening degree.

2. Center Hung, Single Acting, Heavy Duty: 28 Series; with special machined fully concealed arm, non-hold open (NHO), Checkmate No. 1 holders, physically handicapped (PH), delayed action (DA), sealed units (SC).
3. Basis of Design Manufacturer: Rixson-Firemark, Inc. (RIX).

2.10 STOPS AND HOLDERS

A. Roller Latch Angle Stops: Special angle stop BHMA A156.16 Type E19111, fabricated from brass or bronze, for single doors without stops and having a minimum of two rubber silencers per stop, minimum 1-1/2 inches wide x 4-1/2 inches long base for mortising into the head of door frame, 9/16 inch maximum stop face projection, adjustable roller latch and ramp roller strike; finish as scheduled.

1. Basis of Design: RL1152; Ives (IVS).

B. Concealed Overhead Door Holders: Heavy duty, concealed mounting, full mortised, bronze bodied, slide track design, with heavy shock absorber spring providing 5 to 7 degree compression before deadstop, non-metal slide and shock blocks, 110 degree maximum opening, complying with BHMA A156.8 Type C11511 for hold open and Type C11541 for stop function. Provide stop, or hold open, functions as scheduled.

1. Basis of Design: 100 Series; Glynn-Johnson (GJ).

C. Floor Stops: Cast half dome design with rubber bumper, finish as scheduled. Provide manufacturer's standard riser heights as required for carpeted areas in conjunction with the floor bumpers scheduled. Unless otherwise scheduled, provide floor stops at each door leaf where partition construction does not allow the door to swing greater than 90 degrees.

1. For Doors with Standard 3/8 inch Clearance: Comply with BHMA 156.16 Type L12161, L02141 or L12141.
2. For Thresholds, Carpet and/or Undercut Doors: Comply with BHMA 156.16 Type L12161, L02161 or L12141.
3. Basis of Design: FS436; Ives (IVS).

D. Wall Stops: Cast disc type with concave rubber bumper, having a minimum of 2-1/8 inch diameter base with nominal 1 inch projection and concealed attachment to substrate. Unless otherwise scheduled, provide wall stops at each door leaf where partition construction does not allow the door to swing greater than 90 degrees.

1. For Attachment to Masonry: Complying with BHMA A156.16, Type L12251 or L12101.
2. For Attachment to Gypsum Wallboard: Complying with BHMA A156.16, Type L12251 or L12101.
3. Basis of Design Manufacturer: Ives (IVS).

E. Silencers for Wood Door Frames: BHMA A156.16, Type L03021; grey rubber. Provide two silencers for each pair of doors, three silencers for each single door.

1. Basis of Design: SR65; Ives (IVS).

F. Silencers for Metal Door Frames: BHMA A156.16, Type L03011; grey rubber. Provide two silencers for each pair of doors, three silencers for each single door.

1. Basis of Design: SR64; Ives (IVS).

2.11 MISCELLANEOUS DOOR HARDWARE

A. Boxed Power Supplies: Provide modular units complying with NEMA ICS 6, electrified for Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; and listed and labeled for use with fire alarm systems.

2.12 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturer's labels, names, or designs.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry.

1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed throughbolting of hardware items. Doors installed with exposed throughbolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.
2. Existing Doors: Where existing blocking and reinforcements are unknown, do not use throughbolts, except where specifically approved in advance and in writing by the Architect.

2.13 FINISHES

A. Standard: Designations used in the Hardware Sets, Drawings, and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Designations: The abbreviations used to schedule hardware finishes are generally BHMA designations. Comply with base material and finish requirements represented by BHMA designations for the following:

1. BHMA 626 (US26D): Satin chromium plated, for interior applications only.
2. BHMA 630 (US32D): Satin stainless steel, for exterior and interior applications.

C. Appearance of Finished Work: Finishes of the same designation, that come from two or more sources, shall match when the items are viewed at arm's length and approximately 24 inches apart. Unless otherwise scheduled, match each hardware item in a single hardware set with the scheduled latch or lock set finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights indicated on Drawings and in the following applicable publications, unless specifically indicated otherwise or required to comply with regulatory requirements:

1. Comply with accessible design standards.
2. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. All wall stops shall be installed with reinforced blocking in wallboard construction. Drywall anchors are not an acceptable means of reinforcement/blocking. Provide intermediate steel plates or channel reinforcement backing at wall stops mounted in wallboard construction.

C. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and approved shop drawings.

D. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of the Owner's representative, permanent key all lock cylinders. Record and file all keys in the key control system, and turn system over to Owner for sole possession and control.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended. Adjust door control devices to compensate for building stack pressures, final operation of forced air mechanical equipment and to comply with referenced accessibility requirements.

1. Test each electrical hardware item to determine if devices are properly functioning. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in wiring shall be eliminated.
2. Coordinate with electrical installation for interface and connection with life safety and security systems.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS (Continued on next page)

3.8 DOOR HARDWARE SETS

Hardware Set 1 (**HW1**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electrified Exit Device	PHI	Apex 2000 Series MLR	
1	Lever Trim	PHI		
1	Closer			
1	Concealed Overhead Stop			
Additional Items:				
	Automatic Door Operator (One Leaf Only)			
	Door Actuators/Wall Plates (Exterior/Interior)			
	Card Reader			
	Door Position Sensors			
	Request to Exit Device			
	Power Transfer Device			
	Power Supplies			

Note: Automatic door operator controls must be integrated with door access control.

Hardware Set 2 (**HW2**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electrified Exit Device	PHI	Apex 2000 Series	
1	Lever Trim	PHI		
1	Closer			
1	Concealed Overhead Stop			
3	Silencers			
Additional Items:				
	Card Reader			
	Door Position Sensors			
	Request to Exit Device			
	Power Transfer Device			
	Power Supplies			

Hardware Set 3 (**HW3**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
1	Top Pivot			
1	Bottom Pivot/Floor Closer			
1	Electromagnetic Lock (Pair)	BEST	MultiMag BML-8320DSSSCS	
1	Armature Plate/Holder			
1 Set	Full Height Pulls			
1	Electric Hold Open Device			

Additional Items:
Card Reader
Door Position Sensors
Request to Exit Device
Proximity/Motion Sensor release of Electromagnetic Lock
Power Transfer Device
Power Supplies

Note: Provide electromagnetic lock release by a signal from the Fire Alarm System.

Hardware Set 4 (**HW4**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
1	Top Pivot			
1	Bottom Pivot/Floor Closer			
1 Set	Full Height Pulls			
1	Concealed Overhead Stop			

Hardware Set 5 (**HW5**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
3	Hinges			
1	Pull			
1	Push Plate			
1	Closer			
1	Electric Hold Open Device			
3	Silencers			

Additional Items:
Power Supplies

Note: Provide electric hold open release by a signal from the Fire Alarm System.

Hardware Set 6 (**HW6**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electrified Exit Device	PHI	Apex 2000 Series	
1	Lever Trim	PHI		
1	Closer			
1	Electric Hold Open Device			
3	Silencers			

Additional Items:
Card Reader
Door Position Sensors
Request to Exit Device
Power Transfer Device
Power Supplies

Note: Provide electric hold open release by a signal from the Fire Alarm System.

Hardware Set 7 (**HW7**)

Single Door: Provide each single door with the following.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electromechanical Lock	BEST	IDH MAX 9KM3-7-DDEU -15-MS-S3-626-TR K2-1300	
1	Closer			
1	Concealed Overhead Stop			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 8 (**HW8**)

Single Door: Provide each single door with the following.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electromechanical Lock	BEST	IDH MAX 9KM3-7-DDEU -15-MS-S3-626-TR K2-1300	
1	Floor Stop (Except Door F002)			
1	Concealed Overhead Stop (Only Door F002)			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 9 (**HW9**)

Single Door: Provide each single door with the following.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electronic Cylindrical Lock	BEST	BASIS V 93KBV-7-DV-15-MS-S3-626-8CE	
1	Concealed Overhead Stop			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 10 (**HW10**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges (Active Leaf)			
1	Electrified Hinge (Active Leaf)			
3	Hinges (Inactive Leaf)			
1	Electromechanical Lock (Active Leaf)	BEST	IDH MAX 9KM3-7-DDEU -15-MS-S3-626-TR K2-1300	
1	Automatic Flush Bolt (Inactive Leaf)			
1	Coordinator			
1	Closer			
1	Concealed Overhead Stop			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 11 (**HW11**)

Pair of Doors: Provide each door with the following, except as otherwise noted.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges (Active Leaf)			
1	Electrified Hinge (Active Leaf)			
3	Hinges (Inactive Leaf)			
1	Electromechanical Lock (Active Leaf)	BEST	IDH MAX 9KM3-7-DDEU -15-MS-S3-626-TR K2-1300	
1	Automatic Flush Bolt (Inactive Leaf)			
1	Coordinator			
1	Concealed Overhead Stop			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 12 (**HW12**)

Single Door: Provide each single door with the following.

Qty	Description	Mfr	Catalog Number	Finish
2	Hinges			
1	Electrified Hinge			
1	Electromechanical Lock	BEST	IDH MAX 9KM3-7-DDEU -15-MS-S3-626-TR K2-1300	
1	Closer			
1	Floor Stop			
3	Silencers			
Additional Items:				
	Power Supply			

Hardware Set 13 (**HW13**)

Sliding Glass Partition. Provide door opening with the following.

Qty	Description	Mfr	Catalog Number	Finish
1	Lock Cylinder			

END OF SECTION 08 71 00

SECTION 08 71 13 - AUTOMATIC DOOR OPERATORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes power door operators for swing doors.

1. Security system components may be incorporated into the door and frame openings indicated to receive power door operators at the Owner's option. Cooperate with the Owner's security system contractors if the Owner chooses to incorporate security system components during the course of the Work.

B. Related Sections include the following:

1. Division 08 Section "Aluminum-Framed Entrances."
2. Division 08 Section "Glazed Aluminum Curtain Wall."
3. Division 08 Section "Door Hardware."

1.2 DEFINITIONS

A. Activation Device: A device that, when actuated, sends a signal to an automatic door operator to open a door.

B. Safety Device: Device that prevents a door from opening or closing.

1.3 COORDINATION

A. Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing power door operators. Check shop drawings of adjacent work to confirm that adequate provisions are made for locating and installing power door operators to comply with indicated requirements.

B. Electrical System Roughing In: Coordinate layout and installation of power door operators with connections to power supplies and security access control systems (if any).

1.4 ACTION SUBMITTALS

A. Product Data: Submit product data for each door operator type required. Include manufacturer's standard details, material descriptions, dimensions of individual components and profiles, certified performance reports, installation instructions, and parts lists.

B. Shop Drawings: Submit shop drawings showing fabrication and installation details for automatic door operators. Include locations and elevations of door openings indicating activation and safety devices.

1. Wiring Diagrams: Detail wiring for power operator, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring.

C. Samples: Submit 3 inch square samples for each exposed finish required.

1.5 INFORMATIONAL SUBMITTALS

A. Reports: Submit field adjustment test reports.

B. Warranties: Submit specified warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: Submit maintenance, emergency, and operation data for power door operators.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Engage a factory trained installer, with a minimum of 3 years successful experience in the installation of power door operators and, who is an authorized representative of the product manufacturer for both installation and maintenance of power door operators required for this Project.

B. Source Limitations: Obtain automatic door operators through one source from a single manufacturer.

C. BHMA Standard: Provide and install power door operators that comply with applicable requirements of BHMA A156.19, "Power Assist and Low Energy Power Operated Doors."

D. UL Standard: Provide power door operators that comply with UL 325. All electrical components, devices, and accessories shall be listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to the authorities having jurisdiction, and marked for intended use.

E. Standards for Accessible Design: For hardware and other operating devices, comply with requirements of the following:

1. Chapter 11 of the Building Code incorporating the technical standards of ICC/ANSI A117.1.
2. U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG) and 2010 ADA Standards for Accessible Design..

1.8 FIELD CONDITIONS

A. Field Measurements: Verify dimensions of supporting structure by field measurements before fabrication so that the power door operator work will be accurately fabricated and fitted to the

structure. Indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work. Use Contractor's lines and benchmarks as a basis for measurements.

1.9 WARRANTY

A. Special Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace components of the power door operator system that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Faulty or sporadic operation of operator or activation and safety devices.
2. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.

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

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

A. Transom Mounted Power Door Operator: Provide electromechanical, transom mounted, power door operators complying with BHMA A156.19 and UL 325.

1. Basis of Design: "M-Force" Series Low Energy Automatic Door Operator; Stanley Access Technologies.
2. Substitutions will not be considered.

2.2 GENERAL DOOR OPERATOR REQUIREMENTS

A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.

1. Provide door operators with features for field adjustment of opening speed, closing speed, back check, hold open time, opening force, and acceleration during opening and recycling for soft start.
2. Provide door operators with precision machined gear systems, and motors, especially engineered and fabricated by the power door operator manufacturer for the use indicated. Fabricate gear systems and motors complete with sealed bearings, all weather lubricants and fluids, and vibration and noise isolation to provide long term, quiet and smooth service.
3. Provide door operators with microprocessor controls to accommodate site specific security system interface conditions such as required for card reader access, electric strike delay timers, electric strike power functions, electromechanical locks, and electromagnetic locks.
4. Provide door arm assemblies finished to match exposed housing.

B. Exposed Housing: Extruded aluminum cover, concealing all operating parts except arms and manual control switches, with provisions for maintenance access. Provide with fasteners concealed when door is in closed position. Provide exposed housing in manufacturer's standard natural anodized finish complying with NAAMM AA-M12C22A31 (Architectural Class II Clear Anodized Coating) unless otherwise indicated.

2.3 SWINGING DOOR OPERATORS

A. Electromechanical Operators for Swinging Doors: Manufacturer's standard electromechanical unit with doors power opened and spring closed, with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, and with easy manual operation including spring closing when power is off. Provide operator action as indicated and mounting as follows:

1. Operator Mounting Type: Surface-mounted overhead operator.
2. Power-Assisted and Low-Energy Operators: Provide power-assisted and low-energy operators meeting requirements of BHMA A156.19 and ADA's "Accessibility Guidelines for Buildings and Facilities" (ADAAG) for "Automatic Doors and Power-Assisted Doors."

2.4 OPERATOR CONTROLS

A. Wall Push-Plate Switches (Actuators): Manufacturer's standard semiflush, wall-mounted, door-control switch plate for operation by touch. Install a wall push plate actuator in proximity to automatic swinging entrance door at location indicated on Drawings.

B. Provide each push button actuator with a decal to be applied adjacent to the actuator instructing the user as to the operation and function of the door.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances, door and frame supports, and other conditions affecting performance of power door operators. Examine roughing-in for electrical and security services to verify actual locations of connections, and to verify that the proper types of electrical and security services have been provided, before power door operator installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install complete power door operator system according to manufacturer's written instructions and BHMA A156.19, including activation and safety devices, control wiring, and remote power units.

1. Install components and accessories to comply with accessible design standards.
2. Do not install damaged components.

3.3 ADJUSTING

A. Adjust power door operators and activation and safety devices to operate smoothly, easily, and properly, quietly, and for a safe operation and weathertight closure without binding, scraping, and excessive noise. Adjust doors with low energy door operators to function according to BHMA A156.19.

B. Lubricate operators, hardware and other moving parts.

C. Repair damaged exposed component finishes after completing power door operator installation.

END OF SECTION 08 71 13

SECTION 09 54 26 – WOOD PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes decorative wood panels and suspension systems for ceilings.

B. Related Sections:

1. Section 09 51 13 "Acoustical Panel Ceilings."

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Coordinate Drawings: Reflected ceiling plans drawn to scale and coordinating openings, penetrations and ceiling-mounted items. Show the following:

1. Ceiling suspension members, trim components, and installation accessories.
2. Method of attaching hangers to building structure.
3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, and special details.
4. Minimum Drawing Scale: 1/2 inch = 1 foot.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Ceiling Panels: Set of 12-inch-square Samples demonstrating the proposed full range of appearance characteristics to be expected in completed work.
2. Suspension System Members, Moldings, and Trim: Set of 12-inch-long Samples of each type, finish, and color.

1.3 CLOSEOUT SUBMITTALS

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

1.4 QUALITY ASSURANCE

A. Source Limitations:

1. Ceiling Panels: Obtain each type through one source from a single manufacturer.
2. Suspension System, Trim Components and Accessories: Obtain each type through one source from a single manufacturer.

B. Surface-Burning Characteristics: Provide ceiling panels with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials, as determined by testing identical products per ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

C. Seismic Standard: Provide ceilings designed and installed to withstand the effects of earthquake motions according to applicable requirements of the following:

1. CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver ceiling products, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they are protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing ceiling products, permit them to reach room temperature and a stabilized moisture content in accordance with manufacturer’s requirements.

C. Handle ceiling products and accessories carefully to avoid damaging units and finishes in any way.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use, except as otherwise required by manufacturer.

1.7 COORDINATION

A. Coordinate layout and installation of ceiling panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.8 EXTRA 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. Ceiling Panels: Full-size units equal to 3.0 percent for each type of ceiling product installed.

2. Suspension System Components: 2 boxes of each exposed component.
3. Lift Clips and Safety Clips: 12 units each.

PART 2 - PRODUCTS

2.1 DECORATIVE WOOD CEILING PANELS

A. Wood Ceiling Panels: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264, Type XX.

1. Basis of Design: "WoodWorks Tegular"; Armstrong World Industries, Inc.

    a. Comparable products of other manufacturers may be considered.

2. Ceiling Panel Construction: Wood-veneer-faced panels.
3. Panel Core: 100 percent recycled wood fiber board.
4. Panel Edges: Tegular or kerfed with metal inserts.
5. Edge Banding: Lumber or veneer construction matching species, cut, grain and color of face veneer.
6. Panel Size: 24 inches by 24 inches square.
7. Thickness: 3/4 inch.
8. Surface Texture: Smooth with Type W2 micro-perforations.
9. Finish: Factory-applied transparent finish.

B. Wood Veneer Requirements:

1. Veneer-Faced Panel Products: HPVA HP-1, made with adhesive containing no urea formaldehyde.
2. Wood Veneer Grade: Grade AA.
3. Wood Species and Cut for Transparent Finish: As indicated on Drawings and Finish Schedule.
4. Matching of Adjacent Veneer Leaves: Book match.
5. Veneer Matching within Panel Face: Balance and center match.
6. Panel-Matching Method: Arrange for consistency in color, grain, and aesthetic appearance.

2.2 METAL SUSPENSION SYSTEMS

A. Manufacturers:

1. Armstrong World Industries, Inc.
2. Chicago Metallic Corporation.
3. USG Interiors, Inc.

B. Metal Suspension-System Standard: Provide ceiling manufacturer's recommended metal suspension system of type required for ceiling panels and project conditions that comply with applicable ASTM C 635 requirements. Provide systems complete with main runners, cross runners or beams, splice sections, connector clips, alignment clips, leveling clips, hangers,

molding, trim, web covers, load-resisting struts, fixture filler pans, clips and adapters, and other suspension components required to support ceiling panels and other ceiling-supported construction.

1. Fabricate main and cross runners from roll formed cold-rolled steel sheet, with prefinished metal caps on flanges.
2. Structural Classification: Heavy-duty system.
3. End Condition of Cross Runners: Override (stepped) or butt-edge type.
4. Face Design: Flat, flush.
5. Cap Material:

    a. Normal environments: Steel or aluminum cold-rolled sheet.
    b. High-humidity environments: Aluminum or hot-dip galvanized cold-rolled sheet.

6. Cap Finish: Painted.

C. Attachment Devices: Size for 5 times the design load indicated in ASTM C 635, Table 1, Direct Hung, unless otherwise indicated.

1. Postinstalled Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 5 times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

    a. Type: Postinstalled expansion or postinstalled chemically bonded anchors.
    b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC service condition (mild).

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing agency.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times hanger design load (indicated in ASTM C 635, Table 1, Direct Hung) is less than yield stress of wire, but provide not less than 0.135-inch diameter wire.

E. Installation Accessories: Manufacturer’s standard units for the following:

1. Lift Clips.
2. Safety Clips.
3. Clip Fasteners: Type recommended by manufacturer for project applications; non-corroding.

F. Exposed Metal Edge Moldings, Covers, Trim, and Fixture Filler Panels: Provide exposed members as indicated or required to conceal edges of and penetrations through ceiling, to

conceal edges of beams, to cover runner webs, for fixture trim and adapters, for fasciae at changes in ceiling height, and for other conditions; of metal and finish matching suspended decorative grids unless otherwise indicated.

1. Fabricate edge moldings to required diameters and shapes to fit penetrations precisely.

G. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with the following requirements:

1. Basis of design: "Axiom Perimeter Trim"; Armstrong World Industries, Inc.

   a. Profiles and dimensional requirements: As indicated on Drawings.

2. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for alloy and temper 6063-T5.
3. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
4. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.

   a. Organic Coating: Thermosetting, primer/topcoat system with a minimum dry film thickness of 0.8 to 1.2 mils.

H. Shop-Applied Finishes: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

1. Normal environments: Prepainted, electrolytically zinc coated or hot-dip galvanized according to ASTM A 653, not less than G30 coating designation.
2. High-humidity environments: Hot-dip galvanized according to ASTM A 653, not less than G60 coating designation
3. Color-Coated Finish: Manufacturer's standard powder-coat or baked enamel finish for exposed or semi-exposed elements; comply with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.
4. Color: Match Architect's control samples.

2.3 ACOUSTICAL SEALANT

A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in

building construction as demonstrated by testing representative assemblies according to ASTM E 90.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which suspended ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of ceilings.

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

3.2 PREPARATION

A. Measure each ceiling area and establish layout of suspended ceilings to balance border widths at opposite edges of each space. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install suspended ceilings to comply with approved shop drawings, ASTM C 636 and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
4. Secure hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for structure to which hangers are attached and for hanger type involved.
5. When existing structure or framing does not permit installation of hanger at spacing required, install carrying channels or other supplemental support for attachment of hangers.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical anchors, or power-actuated fasteners that extend through forms into concrete.

7. Do not attach hangers to steel deck tabs.
8. Do not attach hangers to steel roof deck. Attach hangers to structural members only.
9. Space hangers not more than 48 inches on center along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of each ceiling area to comply with requirements indicated on Drawings and where necessary to conceal edges of ceiling assemblies.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches on center and not more than 3 inches from ends, level with ceiling system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install ceiling panels in coordination with suspension system and exposed moldings and trim.

1. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
2. Install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. Align joints in adjacent courses to form uniform, straight joints to comply with layout indicated on Drawings.
4. Fit adjoining units to form flush, tight joints.

F. Clip Accessories: Install units to comply with ceiling panel manufacturer's recommendations and instructions.

3.4 CLEANING

A. Clean exposed surfaces of ceilings, including trim, edge moldings, and suspension system components. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 54 26

SECTION 10 31 00 – MANUFACTURED GAS FIREPLACES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manufactured indoor, ventless gas fireplace.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for exposed components. Include rated capacities, operating characteristics, and furnished specialties and accessories.

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

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Samples for Verification: For each type of exposed material and finish prepared on Samples of size indicated below:

1. Metal Finishes: 6-inch-long sections of exposed frames and trim materials.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For fireplace to include in maintenance manuals. Include data for operating components.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer; experienced in installing gas fireplaces similar in material, design, and extent to those indicated for this Project; and whose work has resulted in installations with a record of successful in-service performance.

B. Product Standards: Comply with applicable requirements of the following:

1. ANSI Z21.91 – Ventless Firebox Enclosures for Gas-Fired Decorative Type Unvented Room Heaters.
2. UL 127 - Standard for Factory-Built Fireplaces.

3. UL 907 - Standard for Fireplace Accessories.
4. National Fireplace Institute (NFI).

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

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

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

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handle products to avoid damage.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

B. Field Measurements: Verify actual dimensions of wall openings and construction contiguous with gas fireplaces by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 INDOOR, VENTLESS GAS FIREPLACES

A. Gas Fireplace: Manufacturer's standard, ventless gas fireplace designed for indoor applications; furnish with components and accessories required for a complete installation; and complying with the following requirements:

1. Basis of Design: "Boulevard Model VFLB72FP"; Empire Comfort Systems, Inc.

a. Comparable products of other manufacturers will be considered.

2. Fireplace characteristics:

a. Gas type: Natural gas.
b. Heat output: 40,000 BTUs maximum.

c. Open concept: No glass barrier.
d. Flame pattern: Traditional, logset burner; concealed.
e. Nominal piping size: 1/2-inch.
f. Ignition system: Intermittent pilot type.

3. Components and accessories:

a. LED lighting.
b. Variable remote control thermostat
c. In-wall lighting control module and battery back-up module with control switch and stainless steel faceplate.
d. Fine mesh barrier screen.
e. Firebox media: Driftwood log and rock set.
f. Firebox liner: Black reflective glass.
g. Decorative front: Nominal 1-1/2 inch matte black frame.

PART 3 - EXECUTION

3.1 EXAMINATION

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

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

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions, approved shop drawings, and product standards unless project conditions require extra precautions for performance of the work.
2. Comply with manufacturer's guidelines for minimum clearances to combustible materials, walls, and finishes.
3. Do not install damaged components.
4. Fit joints to produce hairline joints free of distortion.
5. Install operable components and accessories.

3.4 CONNECTIONS

A. Comply with requirements for gas piping and electrical connections indicated on Engineering Drawings.

3.5 FIELD QUALITY CONTROL

A. Upon completion of installation, visually inspect all exposed surfaces.

B. Test for proper operation, including control and safety devices.

3.6 ADJUSTING

A. Adjust hardware and operating parts to function smoothly as recommended by manufacturer.

3.7 PROTECTION

A. Protect installed products until Substantial Completion.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gas fireplace.

1. Review data in operation and maintenance manuals.
2. Schedule training with Owner with at least 10 days' advance notice.

END OF SECTION 00 00 01

SECTION 113100 – PANTRY APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all pantry appliances included on the Drawings and Appliance Schedule.

1.2 ACTION SUBMITTALS

A. Product Data: Submit product data and roughing in diagrams for each type of appliance required indicating compliance with requirements. Include complete operating characteristics, dimensions of individual appliances, and finishes for each appliance.

B. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.3 INFORMATIONAL SUBMITTALS

A. Warranties: Special warranties specified in this Section.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For each pantry appliance to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with provisions of the following product certifications:

1. NFPA: Provide electrical components, devices and accessories for appliances that are listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
2. UL and NEMA: Provide electrical components required as part of appliances that are listed and labeled by UL and that comply with applicable NEMA standards.

B. AHAM Standards: Provide appliances that comply with the following AHAM standards:

1. Refrigerators and Freezers: AHAM HRF-1.

C. Energy Ratings: Provide appliances that carry labels indicating energy-cost analysis (estimated annual operating costs) and efficiency information as required by the FTC Appliance Labeling Rule.

1. Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

1.6 DELIVERY

A. Deliver appliances only after construction in spaces to receive appliances is substantially complete and ready for installation.

1.7 WARRANTY

A. Special Warranty, Not A Standard Manufacturer's Warranty: Provide Special Extended Service Agreement in which the manufacturer agrees to repair or replace appliance that fails in materials and workmanship within specified warranty period for the intended light commercial use.

B. Microwave Oven: Limited warranty including parts and labor for first year and parts thereafter for on-site service on the magnetron tube.

1. Warranty Period: 5 years from date of Substantial Completion.

C. Refrigerator/Freezer, Sealed System: Limited warranty including parts and labor for first year and parts thereafter for on-site service on the product.

1. Warranty Period for Sealed Refrigeration System: 5 years from date of Substantial Completion.
2. Warranty Period for Other Components: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Provide products complying with requirements and manufactured by one of the following:

1. Amana; a division of Whirlpool Corporation.
2. BOSCH Home Appliances.
3. Frigidaire Appliance Company.
4. General Electric Company (GE).
5. LG Appliances.
6. Miele, Inc.
7. Samsung.
8. Sharp Electronics Corporation.
9. Whirlpool Corporation.

2.2 APPLIANCE SCHEDULE – BASIS OF DESIGN

A. Refrigerator: Model FCRS181RQB; Frigidaire Appliance Company.

B. Microwave: Café Series Model CEB1599SJSS; General Electric Company (GE).

C. Comparable products of other specified manufacturers will be considered.

2.3 FINISHES, GENERAL

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

1. Provide appliances with manufacturer's standard finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, color, gloss, and minimum dry film thickness for coated finishes.
2. Grind and polish stainless-steel surfaces for uniform, directionally textured finish.

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

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of appliances.

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

3.2 INSTALLATION, GENERAL

A. General: Comply with manufacturer's written instructions.

B. Freestanding Appliances: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.3 ADJUSTING AND CLEANING

A. Test each item of appliances to verify proper operation. Make necessary adjustments.

B. Verify that accessories required have been furnished and installed.

C. Remove packing material from appliances and leave units in clean condition, ready for operation.

3.4 DEMONSTRATION

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

END OF SECTION 11 31 00