Specifications are identified by the individual disciplines in accordance with the following list. Signatures and seals indicate professional responsibility for those sections.

Legend	Discipline	Consultant	Design Professional
AR	Architecture	DAG Architects	Roger Godwin, AIA
STR	Structural	Schaefer	John Heck, PE
MP	Mechanical/ Plumbing	Jordan & Skala Engineers, Inc.	Jeremy Waits, PE
EL	Electrical	Jordan & Skala Engineers, Inc.	Shawn Haines, PE
ID	Interiors	HLG	Roger Godwin, AIA
LA	Landscape Architecture	HGOR	Jennifer Teasley, RLA
LUX	Lighting Designer	Lux Et Veritas Design, Inc	Michael Marvin

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32 13 73	CONCRETE PAVEMENT JOINT SEALANTS	LA	8/21/2023	
32 14 13	CONCRETE UNIT PAVING - UNGROUTED	LA	8/21/2023	
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32 90 00	EXTERIOR LANDSCAPE	LA	8/21/2023	

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SECTION 034500 - PRECAST ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Precast architectural concrete units.
2. Mold materials.
3. Reinforcing materials.
4. Prestressing tendons.
5. Concrete materials.
6. Steel connection materials.
7. Grout materials.

B. Related Sections
1. Section 042613 Masonry Veneer.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**. Include General Contractor, Architect, Installer, Waterproofing applicator and other trades whose work may be affected by this section.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Provide project specific details of fabrication and installation of architectural precast concrete units. Provide specific details for corner conditions, including dowels, tiebacks and similar items
2. Indicate locations, plans, elevations, dimensions, shapes, and cross sections of each unit.
3. Indicate joints, reveals, drips, chamfers, and extent and location of each surface finish.
4. Indicate details at building corners.

C. Samples: Design reference samples for initial verification of design intent, for each type of finish indicated on exposed surfaces of architectural precast concrete units, in sets of three, representative of finish, color, and texture variations expected; approximately 12 by 12 by 2 inches (300 by 300 by 50 mm).

D. Sample Panels: After sample approval and before fabricating architectural precast concrete units, produce a minimum of **two** sample panels approximately**16 sq. ft. (1.5 sq. m)** in area for review by Architect. Incorporate full-scale details of architectural features, finishes, textures,

and transitions in sample panels. Sample panels shall be part of the Brick/ CMU masonry panels described in Section 042613.

1. Locate panels where indicated or, if not indicated, as directed by Architect.
2. Damage part of an exposed-face surface for each finish, color, and texture, and demonstrate adequacy of repair techniques proposed for repair of surface blemishes.
3. After acceptance of repair technique, maintain one sample panel at manufacturer's plant and one at Project site in an undisturbed condition as a standard for judging the completed Work.
4. Demolish and remove sample panels when directed.

E. Delegated Design Submittals: For architectural precast concrete indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Show governing panel types, connections, types of reinforcement, including special reinforcement, and concrete cover on reinforcement. Indicate location, type, magnitude, and direction of loads imposed on the building structural frame from architectural precast concrete.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Provide locations, setting diagrams, templates, instructions, and directions, as required, for furnishing and installation of loose connection hardware and anchorage items to be embedded in or attached to other construction.

B. Welding certificates.

C. Material test reports.

D. Source Quality-Control Reports: For <**Insert product**> [**aggregate**] [**cementitious materials**].

E. Qualification Statements: For [**fabricator**] [**Installer**] [**testing agency**].

1.5 CLOSEOUT SUBMITTALS

A. General Contractor/Construction Manager Project Survey: Complete the survey form, providing feedback of the certified precast producer's performance in accordance with PCI's Architectural Certification Program. Submit to PCI as directed on form; provide a copy to Architect.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm that assumes responsibility for engineering architectural precast concrete units to comply with performance requirements. This responsibility includes preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

1. Designated as a PCI-certified plant for **Category AA** and/or **Category AD** or Category AT, **or designated as an APA-certified plant for production of architectural precast concrete products**.

B. Installer Qualifications: A precast concrete erector who has retained a "PCI-Certified Field Auditor" to conduct a field audit of a project in same category as this Project and who can produce an Erectors' Post-Audit Declaration.

C. Delegated Design Engineer Qualifications: A professional engineer who is legally qualified to practice in the State of Florida where Project is located and who is experienced in providing engineering services of the type indicated.

D. Welding Qualifications: Qualify procedures and personnel in accordance with the following welding codes:

1. AWS D1.1/D1.1M.
2. AWS D1.4/D1.4M.
3. AWS D1.6/D1.6M.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver architectural precast concrete units in such quantities and at such times to limit unloading units temporarily on the ground or other rehandling.

B. Store units with adequate dunnage and bracing, and protect units to prevent contact with soil, prevent staining, and prevent cracking, distortion, warping, or other physical damage.

C. Place stored units so identification marks are clearly visible, and units can be inspected.

D. Handle and transport units in a manner that avoids excessive stresses that cause cracking or damage.

E. Lift and support units only at designated points indicated on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design architectural precast concrete units.

B. Design Standards: Comply with ACI 318 and design recommendations of PCI MNL 120 applicable to types of architectural precast concrete units indicated.

C. Structural Performance: Provide architectural precast concrete units and connections capable of withstanding the indicated design loads within limits and under conditions indicated:

2.2 PRECAST ARCHITECTURAL CONCRETE UNITS

A. Provide unit types as indicated on Drawings, including **trim units**.

B. Fabricators: Subject to compliance with requirements, **available fabricators offering products that include, but are not limited to, the following**]:

1. Gate Precast.

2. Spring Precast LLC

C. Source Limitations: Obtain precast architectural concrete units from single fabricator.

2.3 MOLD MATERIALS

A. Molds: Rigid, dimensionally stable, nonabsorptive material, warp and buckle free, that provides continuous and true precast concrete surfaces within fabrication tolerances indicated; nonreactive with concrete and suitable for producing required finishes.

B. Form-Release Agent: Commercially produced form-release agent that does not bond with, stain, or adversely affect precast concrete surfaces and does not impair subsequent surface or joint treatments of precast concrete.

2.4 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A615/A615M, Grade 60 (Grade 420), deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, fabricated from [**as-drawn**][**galvanized-**]steel wire into flat sheets.

D. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.

E. Supports: Suspend reinforcement from back of mold. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place may only be used if they are not visible in the finished face.

2.5 CONCRETE MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type III.

1. For surfaces exposed to view in finished structure, use cement color as selected by the Architect and, of same type, brand, and mill source.

a. Standard gray cement is acceptable for use where not exposed to view.

B. Supplementary Cementitious Materials:

1. Fly Ash: ASTM C618, Class C or F, with maximum loss on ignition of 3 percent.
2. Metakaolin: ASTM C618, Class N.
3. Silica Fume: ASTM C1240, with optional chemical and physical requirement[**, white**].
4. Ground Granulated Blast-Furnace Slag: ASTM C989/C989M, Grade 100 or 120.

C. Normal-Weight Aggregates: Except as modified by PCI MNL 117, ASTM C33/C33M, with coarse aggregates complying with Class 5S. Stockpile fine and coarse aggregates for each type of exposed finish from a single source (pit or quarry) for Project.

1. Face-Mixture-Coarse Aggregates: Selected, hard, and durable; free of material that reacts with cement or causes staining; to match approved finish sample.

a. Gradation: **To match design reference sample**.

2. Face-Mixture-Fine Aggregates: Selected, natural or manufactured sand compatible with coarse aggregate; to match approved finish sample.

D. Water: Potable; free from deleterious material that may affect color stability, setting, or strength of concrete and complying with chemical limits of PCI MNL 117[**and ASTM C1602/C1602M**].

E. Air-Entraining Admixture: ASTM C260/C260M, certified by manufacturer to be compatible with other required admixtures.

F. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and to not contain calcium chloride, or more than 0.15 percent chloride ions or other salts by weight of admixture.

2.6 STEEL CONNECTION MATERIALS

A. Carbon Steel Shapes and Plates: ASTM A36/A36M.

B. Carbon Steel-Headed Studs: ASTM A108, Grades 1010 through 1020, cold finished, AWS D1.1/D1.1M, Type A or Type B, with arc shields and with minimum mechanical properties of PCI MNL 117, Table 3.2.3.

C. Carbon Steel Plate: ASTM A283/A283M, Grade C.

D. Malleable Iron Castings: ASTM A47/A47M, Grade 32510 or Grade 35028.

E. Carbon Steel Castings: ASTM A27/A27M, Grade 60-30 (Grade 415-205).

F. High-Strength, Low-Alloy Structural Steel: ASTM A572/A572M.

G. Carbon Steel Structural Tubing: ASTM A500/A500M, Grade B or Grade C.

H. Wrought Carbon Steel Bars: ASTM A675/A675M, Grade 65 (Grade 450).

I. Deformed-Steel Wire or Bar Anchors: ASTM A1064/A1064M or ASTM A706/A706M.

J. Carbon Steel Bolts and Studs: ASTM A307, Grade A, or ASTM F1554, Grade 36; carbon steel, hex-head bolts and studs; carbon steel nuts, ASTM A563 (ASTM A563M); and flat, unhardened steel washers, ASTM F844.

K. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325 (Grade A325M), Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, (ASTM A563M, Class 10S) heavy-hex carbon steel nuts; and ASTM F436/F436M, Type 1, hardened carbon steel washers.

L. Zinc-Coated Finish: For exterior steel items**, steel in exterior walls,** and items indicated for galvanizing, apply zinc coating by **hot-dip process in accordance with ASTM A123/A123M or ASTM A153/A153M**.

1. For steel shapes, plates, and tubing to be galvanized, limit silicon content of steel to less than 0.03 percent or to between 0.15 and 0.25 percent, or limit sum of silicon and 2.5 times phosphorous content to 0.09 percent.
2. Galvanizing Repair Paint: High-zinc-dust-content paint with dry film containing not less than 94 percent zinc dust by weight, and complying with MIL-P-21035B or SSPC-Paint 20.

2.7 GROUT MATERIALS

A. Sand-Cement Grout: Portland cement, ASTM C150/C150M, Type I, and clean, natural sand, ASTM C144 or ASTM C404. Mix at ratio of 1 part cement to 2-1/2 to 3 parts sand, by volume, with minimum water required for placement and hydration. Water-soluble chloride ion content is to be less than 0.06 percent by weight of cement when tested in accordance with ASTM C1218/C1218M.

2.8 CONCRETE MIXTURES

A. Prepare design mixtures for each type of precast concrete required.

1. Use a single design mixture for units with more than one major face or edge exposed.
2. Where only one face of unit is exposed, use either a single design mixture or separate mixtures for face and backup.

B. Limit use of fly ash and ground granulated blast-furnace slag to 20 percent of portland cement by weight; limit metakaolin and silica fume to 10 percent of portland cement by weight.

C. Design mixtures may be prepared by a qualified independent testing agency or by qualified precast plant personnel at architectural precast concrete fabricator's option.

D. Limit water-soluble chloride ions to maximum percentage by weight of cement permitted by ACI 318 or PCI MNL 117 when tested in accordance with ASTM C1218/C1218M.

E. Normal-Weight Concrete Mixtures: Proportion [**face mixtures**] [**face and backup mixtures**] [**full-depth mixture**] [**face and backup mixtures or full-depth mixtures, at fabricator's option**] by either laboratory trial batch or field test data methods in accordance with ACI 211.1, with materials to be used on Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28 Days): 5000 psi (34.5 MPa) minimum.
2. Maximum Water-Cementitious Materials Ratio: 0.45.

F. Water Absorption: Six percent by weight or 14 percent by volume, tested in accordance with ASTM C642, except for boiling requirement.

G. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content complying with PCI MNL 117.

H. When included in design mixtures, add other admixtures to concrete mixtures in accordance with manufacturer's written instructions.

2.9 FABRICATION OF MOLDS

A. Molds: Accurately construct molds, mortar tight, of sufficient strength to withstand pressures due to concrete-placement operations and temperature changes. Coat contact surfaces of molds with release agent before reinforcement is placed. Avoid contamination of reinforcement and prestressing tendons by release agent.

B. Maintain molds to provide completed architectural precast concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances specified.

1. Form joints are not permitted on faces exposed to view in the finished Project.
2. Edge and Corner Treatment: As detailed on the drawings.

2.10 FABRICATION OF PRECAST ARCHITECTURAL CONCRETE

A. Cast-in Anchors, Inserts, Plates, Angles, and Other Anchorage Hardware: Fabricate anchorage hardware with sufficient anchorage and embedment to comply with design requirements. Accurately position for attachment of loose hardware, and secure in place during precasting operations. Locate anchorage hardware where it does not affect position of main reinforcement or concrete placement.

1. Weld-headed studs and deformed bar anchors used for anchorage in accordance with AWS D1.1/D1.1M and AWS C5.4.

B. Furnish loose hardware items, including steel plates, clip angles, seat angles, anchors, dowels, cramps, hangers, and other hardware shapes for securing architectural precast concrete units to supporting and adjacent construction.

C. Cast-in reglets, slots, holes, and other accessories in architectural precast concrete units, as indicated on the Drawings.

D. Reinforcement: Comply with recommendations in PCI MNL 117 for fabricating, placing, and supporting reinforcement.

E. Reinforce precast architectural concrete units to resist handling, transportation, and erection stresses and specified in-place loads.

F. Comply with requirements in PCI MNL 117 and requirements in this Section for measuring, mixing, transporting, and placing concrete. After concrete batching, no additional water may be added.

G. Place face mixture to a minimum thickness after consolidation of the greater of 1 inch (25 mm) or 1.5 times the maximum aggregate size, but not less than the minimum reinforcing cover specified.

H. Place concrete in a continuous operation to prevent cold joints or planes of weakness from forming in precast concrete units.

1. Place backup concrete mixture to ensure bond with face-mixture concrete.

I. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items, and minimize pour lines, honeycombing, or entrapped air voids on surfaces. Use equipment and procedures complying with PCI MNL 117.

1. Place self-consolidating concrete without vibration in accordance with PCI TR-6. Ensure adequate bond between face and backup concrete, if used.

J. Comply with PCI MNL 117 for hot- and cold-weather concrete placement.

K. Identify pickup points of architectural precast concrete units and orientation in structure with permanent markings, complying with markings indicated on Shop Drawings. Imprint or permanently mark casting date on each architectural precast concrete unit on a surface that does not show in finished structure.

L. Cure concrete, in accordance with PCI MNL 117, by moisture retention without heat or by accelerated heat curing using low-pressure live steam or radiant heat and moisture. Cure units until compressive strength is high enough to ensure that stripping does not have an effect on performance or appearance of final product.

M. Discard and replace architectural precast concrete units that do not comply with requirements, including structural, manufacturing tolerance, and appearance, unless repairs comply with requirements in PCI MNL 117 and Architect's approval.

2.11 FABRICATION TOLERANCES

A. Fabricate architectural precast concrete units to shapes, lines, and dimensions indicated so each finished unit complies with **PCI MNL 117** and PCI **Category AA**, **Category AD, Category AT** product tolerances as well as position tolerances for cast-in items.

2.12 FINISHES

A. Exposed faces to be free of joint marks, grain, and other obvious defects. Corners, including false joints to be uniform, straight, and sharp. Finish exposed-face surfaces of architectural precast concrete units to match **sample panels** and as follows:
1. PCI's "Architectural Precast Concrete - Color and Texture Selection Guide," of plate numbers indicated.

2. As-Cast Surface Finish: Provide surfaces to match approved sample for acceptable surface, air voids, sand streaks, and honeycomb.

B. Finish exposed **top** surfaces of architectural precast concrete units **to match face-surface finish**.

C. Finish unexposed surfaces of architectural precast concrete units with as-cast finish.

2.13 SOURCE QUALITY CONTROL

A. Quality-Control Testing: Test and inspect precast concrete in accordance with PCI MNL 117 requirements. If using self-consolidating concrete, also test and inspect in accordance with PCI TR-6, ASTM C1610/C1610M, ASTM C1611/C1611M, ASTM C1621/C1621M, and ASTM C1712.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRECAST ARCHITECTURAL CONCRETE UNITS

A. Install clips, hangers, bearing pads, and other accessories required for connecting architectural precast concrete units to supporting members and backup materials.

B. Erect architectural precast concrete level, plumb, and square within specified allowable tolerances. Provide temporary supports and bracing as required to maintain position, stability, and alignment of units until permanent connections are completed.

1. Maintain horizontal and vertical joint alignment and uniform joint width as erection progresses.
2. Unless otherwise indicated, maintain uniform joint widths of 3/4 inch (19 mm).

C. Connect architectural precast concrete units in position by bolting, welding, grouting, or as otherwise indicated on Shop Drawings. Remove temporary shims, wedges, and spacers as soon as practical after connecting and grouting are completed.

D. Welding: Comply with applicable requirements in AWS D1.1/D1.1M and AWS D1.4/D1.4M for welding, welding electrodes, appearance, quality of welds, and methods used in correcting welding work.

E. At bolted connections, use lock washers, tack welding, or other approved means to prevent loosening of nuts after final adjustment.

3.2 ERECTION TOLERANCES

A. Erect architectural precast concrete units level, plumb, square, and in alignment without exceeding the noncumulative erection tolerances of PCI MNL 135 and in accordance with PCI **Category AA, Category AD** and **Category AT**.

3.3 REPAIR

A. Repair architectural precast concrete units if permitted by Architect. Architect reserves the right to reject repaired units that do not comply with requirements.

B. Mix patching materials and repair units so cured patches blend with color, texture, and uniformity of adjacent exposed surfaces and show no apparent line of demarcation between original and repaired work, when viewed in typical daylight illumination from a distance of 20 ft. (6 m).

C. Prepare and repair damaged galvanized coatings with galvanizing repair paint in accordance with ASTM A780/A780M.

D. Wire brush, clean, and paint damaged prime-painted components with same type of shop primer.

E. Remove and replace damaged architectural precast concrete units when repairs do not comply with requirements.

3.4 CLEANING

A. Clean surfaces of precast concrete units exposed to view.

B. Clean mortar, plaster, fireproofing, weld slag, and other deleterious material from concrete surfaces and adjacent materials immediately.

C. Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.

1. Perform cleaning procedures, if necessary, in accordance with precast concrete fabricator's recommendations. Protect other work from staining or damage due to cleaning operations.
2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes or damage adjacent materials.

END OF SECTION 034500

SECTION 042613 - MASONRY VENEER

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Brick.
2. Concrete face brick.
3. Mortar materials.
4. Ties and anchors.
5. Embedded flashing.
6. Accessories.
7. Mortar mixes.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type and color of **brick and colored mortar**.

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of product.

1.4 MOCKUPS

A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.

1. Build sample panels for **typical exterior wall** in sizes approximately **48 inches (1219 mm)** long by **48 inches (1219 mm)** high **by full thickness**.

1.5 FIELD CONDITIONS

A. 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.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work **and will be within 20 ft. (6 m) vertically and horizontally of a walking surface**.

2.2 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units.

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Clay Face Brick: H**ollow brick complying with ASTM C652, Class H40V (void areas between 25 and 40 percent of gross cross-sectional area)**, **Grade SW**, **Type FBS**.

1. Cherokee Brick – Augusta – Norma size. (No substitutions).
2. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested in accordance with ASTM C67/C67M.
3. Efflorescence: Provide brick that has been tested in accordance with ASTM C67/C67M and is rated "not effloresced."

2.3 MORTAR MATERIALS

A. Preblended Dry Mortar Mix: Packaged blend made from **masonry cement**, sand, **mortar pigments** and admixtures and complying with ASTM C1714/C1714M.

1. Preblended Dry Masonry Cement Mortar Mix:

a. Manufacturer’s:
1) ARGOS – Ivory Buff (No substitutions)

B. Water: Potable.

2.4 TIES AND ANCHORS

A. Refer to the structural specifications, on the drawings, for CMU reinforcing with integral adjustable brick ties.

2.5 EMBEDDED FLASHING

A. Flexible Flashing: Use **one of**] the following unless otherwise indicated:

1. Copper Fabric Flashing: **5 oz./sq. ft. (1.5 kg/sq. m)** copper sheet bonded between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.

a. Manufacturers include but are not limited to:
1) Hohman and Barnard
2) Wire Bond

B. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

C. Termination Bars for Flexible Flashing: **Stainless steel** steel bars **0.075 inch by 1 inch (1.9 mm by 25 mm)**.

2.6 ACCESSORIES

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

B. Weep/Vent Products: Use **one of** the following unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3.2 mm) less than depth of outer wythe, in color selected from manufacturer's standard.

a. Manufacturers include but are not limited to:
1) Advance Building Products - Mortar Maze.
2) Hohman and Barnard – QV Quadro Vent.
3) Wire-Bond – Cell Vent (#3601).

C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Mortar Deflector: Strips, **full depth of cavity** that prevent clogging with mortar droppings.
a. Manufacturers include but are not limited to:
1) Advanced Building Products - Mortar Break DT.
2) Hohman and Barnard – Mortar Trap.
3) Mortar Net – Wall Defender

D. Proprietary Acidic Masonry Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

1. Manufacturers include but are not limited to:
   a. Prosoco – Sure Kleen 600

2.7 MORTAR 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. Do not use calcium chloride in mortar or grout.

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.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. 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.

B. 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.

C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested in accordance with ASTM C67/C67M. Allow units to absorb water so they are damp but not wet at time of laying.

3.2 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (13 mm) or minus 1/4 inch (6.4 mm).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (13 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6.4 mm) in a story height or 1/2 inch (13 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), or 1/2-inch (13-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 ft. (3.2 mm in 3 m), 1/4 inch in 20 ft. (6.4 mm in 6 m), or 1/2-inch (13-mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), 3/8 inch in 20 ft. (10 mm in 6 m), or 1/2-inch (13-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 ft. (3.2 mm in 3 m), 1/4 inch in 20 ft. (6.4 mm in 6 m), or 1/2-inch (13-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft. (6.4 mm in 3 m), 3/8 inch in 20 ft. (10 mm in 6 m), or 1/2-inch (13-mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3.2 mm), with a maximum thickness limited to 1/2 inch (13 mm).
2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3.2 mm). **Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3.2 mm).**

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 (102-mm) horizontal face dimensions at corners or jambs.

3.4 MORTAR BEDDING AND JOINTING

A. Lay 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.

B. Exposed joints shall be flush.

3.5 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to **concrete and masonry backup** with masonry-veneer anchors to comply with the following requirements:

1. Fasten anchors **to concrete and masonry backup** with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.

2. Embed **tie sections** in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 18 inches (457 mm) o.c. vertically and 24 inches (610 mm) o.c. horizontally, with not less than one anchor for each 2 sq. ft. (0.2 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 8 inches (203 mm), around perimeter.

B. Provide not less than **2 inches (51 mm)** of airspace between back of masonry veneer and face of **insulation**.

3.6 FLASHING, WEEP HOLES, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. **Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and 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. Extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches (203 mm); with upper edge tucked under **air barrier**, lapping at least 4 inches (102 mm).
3. At lintels and shelf angles, extend flashing 6 inches (152 mm) minimum**, to edge of next full unit** at each end. At heads and sills, extend flashing 6 inches (152 mm) minimum**, to edge of next full unit** and turn ends up not less than 2 inches (51 mm) to form end dams.
4. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal drip edge.

C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.

1. Use **specified weep/cavity vent products** to form weep holes.
2. Space weep holes 24 inches (610 mm) o.c. unless otherwise indicated.

D. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Accessories" Article.

E. Install vents in head joints in exterior wythes at spacing indicated. Use **specified weep/cavity vent products** to form vents.

1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements will be at Contractor's expense.

B. Inspections: Special inspections in accordance with Level 2 in TMS 402.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.

C. Testing Prior to Construction: One set of tests.

D. Clay Masonry Unit Test: For each type of unit provided, in accordance with ASTM C67/C67M for compressive strength.

E. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140/C140M for compressive strength.

F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.

3.8 CLEANING

A. In-Progress Cleaning: 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. 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.
2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
4. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.9 MASONRY WASTE DISPOSAL

A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches (457 mm) of finished grade.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042613

SECTION 064118 – HIGH DENSITY POLYETHYLENE (HDPE) ARCHITECTURAL CABINETS

1.1 SUMMARY

A. Section Includes:

1. High density polyethylene (hdpe) architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing architectural cabinets that are not concealed within other construction.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at **Project site**. Attendees shall include General Contractor, Architect, Installer, any other trades whose work is affected or requires coordination with this work.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Obtain field measurements prior to submitting shop drawings. Include project specific details, plans, elevations, sections, and attachment details.
2. Apply [**AWI Quality Certification**] [**WI Certified Compliance**] Program label to Shop Drawings.

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

1.4 INFORMATIONAL SUBMITTALS

Qualification Data: For **manufacturer and Installer**. Manufacturer shall be capable of producing HDPE cabinets. ***Use of marine grade polymer or polymer is not acceptable for this project.***

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Manufacturer of products, or certified by manufacturer to install their products..

1.6 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until, adjacent wet-work is complete,

PART 2 - PRODUCTS

2.1 HIGH DENSITYY POLYETHYLENE (HDPE) ARCHITECTURAL CABINETS MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, **provide products by the following**]:

1. Werever Outdoor Cabinets – No Substitutions permitted.
   a. Outdoor Kitchen Cabinets Custom Built | Werever Outdoor Cabinets

B. Type of Construction: Refer to the drawings.

C. Door and Drawer-Front Style: Refer to the drawings. See image below.

V-Groove (Front)

D. Exposed Surfaces: High Density Polyethylene.
1. Edges: Manufacturer’s standard.
2. Drawer Construction: Edges: Manufacturer’s standard.

E. Colors,
1. As selected by Architect.

2.2 CABINET HARDWARE AND ACCESSORIES

A. Cabinet Hardware: Provide cabinet hardware and accessory materials associated with architectural cabinets.]
1. Frameless Concealed Hinges Manufacturer’s standard.

B. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
1. Wire Pulls: Back mounted, solid **metal**. See image beelow

2. Catches: Manufacturer’s standard.
3. Shelf Standards and Supports: Manufacturer’s standard.
4. Drawer Slides: Manufacturer’s standard.
5. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): [**Side mount**] [**Undermount**].
6. Type: [**Full**] [**Full overtravel**] [**Partial**] extension. Manufacturer’s standard.
7. Material: Manufacturer’s standard.
   a. slides.
   b. Motion Feature: **Push to open and Soft close dampener** [**Self-closing mechanism**.

C. Door Locks: ANSI/BHMA A156.11, E07121.

D. Drawer Locks: ANSI/BHMA A156.11, E07041.

E. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

F. BOD, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Color: As selected by Architect.

G. Exposed Hardware Finishes: As selected by Architect.

H. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: [**Softwood or hardwood lumber**] [**Fire-retardant-treated softwood lumber**], kiln-dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.4 FABRICATION

A. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

B. Shop-cut openings to maximum extent possible to receive hardware, appliances, 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.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

B. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c. with **No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish**, **toggle bolts through metal backing or metal framing behind wall finish**.

END OF SECTION 064116

SECTION 087100 - DOOR HARDWARE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following:
1. Hinges
2. Continuous hinges
3. Key control system
4. Lock cylinders and keys
5. Lock and latch sets
6. Bolts
7. Exit devices
8. Push/Pull units
9. Closers
10. Overhead holders
11. Miscellaneous door control devices
12. Door trim units
13. Protection plates
14. Weatherstripping for exterior doors
15. Sound stripping for interior doors
16. Automatic drop seals (door bottoms)
17. Astragals or meeting seals on pairs of doors
18. Thresholds

C. Products furnished but not installed under this Section to include:
1. Cylinders for locks on entrance doors.
2. Final replacement cores and keys to be installed by Owner.

1.3 REFERENCES

A. Standards of the following as referenced:
1. American National Standards Institute (ANSI)
2. Door and Hardware Institute (DHI)
3. Factory Mutual (FM)
4. National Fire Protection Association (NFPA)
5. Underwriters' Laboratories, Inc. (UL)
    a. UL 10C - Fire Tests Door Assemblies
6. Warnock Hersey

B. Regulatory standards of the following as referenced:
1. Department of Justice, Office of the Attorney General, *Americans with Disabilities Act*, Public Law 101-336 (ADA).
2. CABO/ANSI A117.1: *Providing Accessibility and Usability for Physically Handicap People*,

1992 edition.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.

B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements. For items other than those scheduled in the Headings of Section 3, provide catalog information for the specified items and for those submitted.

C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
   1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into vertical format "hardware sets" indicating complete designations of every item required for each door or opening. Use specification Heading numbers with any variations suffixed a, b, etc. Include the following information:
      a. Type, style, function, size, and finish of each hardware item.
      b. Name and manufacturer of each item.
      c. Fastenings and other pertinent information.
      d. Location of each hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
      e. Explanation of all abbreviations, symbols, and codes contained in schedule.
      f. Mounting locations for hardware.
      g. Door and frame sizes and materials.
      h. Keying information.
      i. Cross-reference numbers used within schedule deviating from those specified.
         1) Column 1: State specified item and manufacturer.
         2) Column 2: State prior approved substituted item and its manufacturer.
   2. Submittal Sequence: Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
   3. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

D. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

E. Contract closeout submittals:
   1. Operation and maintenance data: Complete information for installed door hardware.
   2. Warranty: Completed and executed warranty forms.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced detailer who is available to parties to the Contract, at reasonable times during the course of the Work, for consultation.
   1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
   2. Require supplier to meet with installer prior to beginning of installation of door hardware.

C. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not. All hardware shall comply with standards UBC 7-2 (1997) and UL 10C.
   1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors UL labels indicating Fire Door to be equipped with Fire Exit Hardware) provide UL label on exit devices indicating Fire Exit Hardware.

1.6 PRODUCT HANDLING

A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.

B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).

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

1.7 WARRANTY

A. Special warranties:
   1. Hinges: Lifetime
   2. Door Closers: Ten year period
   3. Exit Devices: Three year period
   4. Automatic Door Operators: Two year period
   5. Locks and Cylinders: Three year period

1.8 MAINTENANCE

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

B. Parts kits: Furnish manufacturers' standard parts kits for locksets, exit devices, and door closers.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

(* Denotes manufacturer referenced in the Hardware Headings)

A. Hinges:
1. Acceptable manufacturers:
   a. Bommer
   b. Hager Hinge Company
   c. PBB*
2. Characteristics:
   a. Templates: Provide only template-produced units.
   b. Screws: Provide Phillips flat-head screws complying with the following requirements:
      1) For metal doors and frames install machine screws into drilled and tapped holes.
      2) For wood doors and frames install threaded-to-the-head wood screws.
      3) For fire-rated wood doors install #12 x 1-1/4 inch, threaded-to-the-head steel wood screws.
      4) Finish screw heads to match surface of hinges or pivots.
   c. Hinge pins: Except as otherwise indicated, provide hinge pins as follows:
      1) Out-Swing Exterior Doors: Non-removable pins.
      2) Out-Swing Corridor Doors with Locks: Non-removable pins.
      3) Interior Doors: Non-rising pins.
      4) Tips: Flat button and matching plug. Finished to match leafs.
   d. Size: Size hinges in accordance with specified manufacturer's published recommendations.
   e. Quantity: Furnish one pair of hinges for all doors up to 5'0" high. Furnish one hinge for each additional 2-1/2 feet or fraction thereof.

B. Continuous Hinges:
1. Acceptable manufacturers:
   a. ABH
   b. Select Products*
   c. Zero
2. Characteristics:
   a. Continuous gear hinges to be manufactured of extruded 6063-T6 aluminum alloy with anodized finish, or factory painted finish as scheduled.
   b. All hinges are to be manufactured to template. Uncut hinges shall be non-handed and shall be a pinless assembly of three interlocking extrusions applied to the full height of the door and frame without mortising.
   c. Vertical door loads shall be carried on chemically lubricated polyacetal thrust bearings. The door and frame leaves shall be continually geared together for the entire hinge length and secured with a full cover channel. Hinge to operate to a full 180°.
   d. Hinges to be milled, anodized and assembled in matching pairs. Fasteners supplied shall be 410 stainless steel, plated and hardened.
   e. Provide UL listed continuous hinges at fire doors. Continuous hinges at fire doors (suffix -FR) shall meet the required ratings without the use of auxiliary fused pins or studs.

C. Cylinders:
1. Acceptable manufacturers:
   a. PDQ Manufacturing
   b. Sargent
   c. Schlage
2. Characteristics:

a. Standard System: Except as otherwise indicated, provide new master key system for Project.
b. Furnish final cores and keys for installation by Owner.
c. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
d. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock that is not designated to be keyed alike with a group of related locks.
    1) Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE."
e. Provide construction keying for use during construction period. After Date of Substantial Completion, void construction keying with Owner’s permanent keying.
f. Key Material: Provide keys of nickel silver only.
g. Key Quantity: Furnish 3 change keys for each lock, 5 master keys for each master system, 5 grandmaster keys for each grandmaster system, and 5 control keys for interchangeable core series.
    1) Furnish one extra blank for each lock.
    2) Deliver keys to Owner.

D. Locksets, Latchsets, Deadbolts:
1. Acceptable manufacturers:
    a. Accurate Lock
    b. Inox*
    c. PDQ Manufacturing
2. Mortise Locksets and Latchsets: as scheduled.
    a. Chassis: cold-rolled steel, handing field-changeable without disassembly.
    b. Latchbolts: 3/4-inch throw stainless steel anti-friction type.
    c. Lever Trim: through-bolted, accessible design, cast or solid rod lever as scheduled. Spindles: independent break-away.
    d. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
    e. Deadbolts: stainless steel 1-inch throw.
    f. Electric operation: Manufacturer-installed continuous duty solenoid.
    g. Strikes: 16 gage curved stainless steel, bronze or brass with 1" deep box construction, lips of sufficient length to clear trim and protect clothing.
    h. Scheduled Lock Series and Design: Inox MC7000 series XSE320 design.
    i. Certifications:
        1) ANSI A156.13, 1994, Grade 1 Operational, Grade 2 Security. ANSI/ASTM F476-84 Grade 30 UL Listed.
3. Access control locks: Refer to Hardwrae Headings.

E. Exit Devices:
1. Acceptable manufacturers:
    a. Monarch/Falcon
    b. Von Duprin, 88 Series
2. Characteristics:
    a. Exit devices shall be "UL" listed for life safety. All exit devices for fire rated openings shall have "UL" labels for "Fire Exit Hardware."
    b. Exit devices mounted on labeled wood doors shall be thru-bolted mounted on the door per the door manufacturer’s requirements.
    c. Trim shall be thru-bolted to the lock stile case.

d. Exit devices shall be made of brass, bronze, stainless steel, or aluminum material, plated, anodized, or powder coated to the standard architectural finishes to match the balance of the door hardware.
e. Provide glass bead conversion kits to shim exit devices on doors with raised glass beads.
f. Exit devices shall be one manufacturer. No deviation will be considered.
g. Exit devices shall be non-handed. Touchpad shall extend a minimum of 1/2 of the door width and shall be a minimum of 2-3/16" in height. Plastic touchpads are not acceptable. Latchbolts to be the deadlocking type. Latchbolts shall have a self-lubricating coating to reduce wear. Plated or plastic coated latchbolts are not acceptable. Plastic linkage and "dogging" components are not acceptable.
h. When removable mullions are listed, provide the type controlled by key cylinder under the master key system (keyed removable mullion).
i. Surface vertical rod devices shall be UL labeled for fire door applications without the use of bottom rod assemblies. Where bottom rods are required for security applications, the devices shall be UL labeled for fire doors applications with rod and latch guards by the device manufacturer.

F. Floor Closers and Pivots:
1. Acceptable manufacturers:
a. Dorma
b. Rixson*
2. Characteristics: Refer to Hardware Headings.

G. Closers and Door Control Devices:
1. Acceptable manufacturers:
a. LCN Closers
b. Sargent
2. Characteristics:
a. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UBC 7-2 (1997) and UL 10C.
b. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed and back check.
c. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped. Provide adjustable units complying with ADA and ANSI A-117.1 provisions for door opening force.
d. Closers to be installed to allow door swing as shown on plans. Doors swinging into exit corridors shall provide for corridor clear width as required by code. Where possible, mount closers inside rooms.
e. Powder coating finish to be certified to exceed 100 hours salt spray testing by ETL, an independent testing laboratory used by BHMA for ANSI certification.

H. Overhead Door Holders:
1. Acceptable manufacturers:
a. ABH Manufacturing*
b. Glynn Johnson
c. Rixson Firemark
2. Characteristics:
a. Provide heavy duty and medium duty door holders surface mounting of brass, bronze or stainless steel.

b. Surface holders to be installed with the jamb bracket mounted on the stop.

I. Floor Stops and Wall Bumpers:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Trimco
2. Characteristics: Refer to Hardware Headings.

J. Door Bolts/Coordinators:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Trimco
2. Characteristics:
a. Flush bolts to be forged brass 6-3/4" x 1", with 1/2" diameter bolts. Plunger to be supplied with milled surface one side that fits into a matching guide.
b. Automatic flush bolts to be UL listed as top and bottom bolts on a pair of classified fire doors. Bolt construction to be of rugged steel and brass components.
c. Self-latching flush bolts to be UL listed as top and bottom bolts on a pair of classified fire doors. Bolt construction to be of rugged steel and brass components.
d. Coordinator to be soffit mounted non-handed fully automatic UL listed coordinating device for sequential closing of paired doors with or without astragals.
e. Provide filler piece to close the header. Provide brackets as required for mounting of soffit-applied hardware.

K. Push Plates:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Trimco
2. Characteristics:
a. Exposed Fasteners: Provide manufacturers standard exposed fasteners.
b. Material to be wrought stainless steel, per the Hardware Headings.
c. Provide plates sized as shown in Hardware Headings.

L. Door Pulls & Pull Plates:
1. Acceptable manufacturers:
a. Burns*
b. Rocky Mountain*
c. Trimco
2. Characteristics:
a. Provide concealed thru-bolted trim on back to back mounted pulls, but not for single units.
b. Material to be extruded forged/ cast, brass/ bronze/ aluminum/ stainless steel.
c. Provide units sized as shown in Hardware Headings.

M. Push Pull Sets:
1. Acceptable manufacturers:
a. Burns*

b. Rocky Mountain*
c. Trimco

2. Characteristics:
a. Provide mounting systems as shown in hardware sets.
b. Material to be stainless steel.
c. Provide Push/Pull sets sized as shown in Hardware Headings.

N. Protective Plates:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Trimco
2. Characteristics:
a. Provide manufacturers standard exposed fasteners for door trim units consisting of either machine screws or self-tapping screws.
b. Materials:
1) Metal Plates: ~~Stainless Steel,~~Brass/Bronze .050 inch (U.S. 18 gage).
c. Fabricate protection plates not more than 2 inches less than door width on hinge side and not more than 1 inch less than door width on pull side.
d. Heights:
1) Kick plates to be 8 inches in height.
2) Mop plates to be 8 inches in height.
3) Armor plates to be 30 inches in height. Armor plates on fire doors to comply with NFPA 80.

O. Thresholds:
1. Acceptable manufacturers:
a. National Guard Products, Inc.*
b. Reese Industries
c. Zero Weatherstripping Co., Inc.
2. Types: Indicated in Hardware Headings.

P. Door Seals/Gasketing:
1. Acceptable manufacturers:
a. National Guard Products, Inc.*
b. Reese Industries
c. Zero Weatherstripping Co., Inc.
2. Types: Indicated in Hardware Headings.

Q. Silencers:
1. Acceptable manufacturers:
a. Burns*
b. Ives
c. Trimco
2. Three for each single doors; four for pairs of doors.

2.2 MATERIALS AND FABRICATION

A. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser

(commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

B. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
   1. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated. Self-tapping screws are not an acceptable installation method.
   2. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
   3. Coordinate with wood doors and metal doors and frames where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt fastener.

2.3 HARDWARE FINISHES

A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).

B. Provide finishes that match those established by ANSI or, if none established, match the design professional's sample.

C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.

D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."

E. The designations used to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
   1. Continuous Hinges: DKB Anodized
   2. Hinges (Interior doors):640/641 Dark Bronze over Steel
   3. Floor Closers & Pivots: 613 Dark Bronze
   4. Flush Bolts: 613 Dark Bronze
   5. Cylindrical Locks: 630 (US32D) Satin Stainless Steel back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas
   6. Exit Devices: 630 (US32D) Satin Stainless back of house, ~~605 (US3) Bright Brass Plated~~613 (US10B) Dark Bronze public areas
   7. Door Closers: Powder Coat to match adjacent hardware
   8. Push Plates: 630 (US32D) Satin Stainless Steel back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas
   9. Pull Plates: 630 (US32D) Satin Stainless Steel back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas

10. Protective Plates: 630 (US32D) Satin Stainless Steel back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas
11. Door Stops: 626 (US26D) Satin Chrome Plated Brass/Bronze back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas
12. Overhead Holders: 630 Satin Stainless Steel and 689 Powder Coated Steel (as scheduled) back of house, ~~605 (US3) Bright Brass~~613 (US10B) Dark Bronze public areas
13. Thresholds/Weatherstripping: 627/628 (US27/US28) Aluminum back of house, ~~605 Polished Brass~~Dark Bronze Anodized public areas

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by design professional.
   1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.

C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Where both floor stops and wall stops are specified in headings, select the proper stop based upon conditions at each opening in that heading. Use a floor stop only when conditions would prohibit using a wall stop.

F. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Section 07 9200 Joint Sealers.

G. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
   1. Where door hardware is installed more than one month prior to acceptance or occupancy of a

space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to function properly with final operation of heating and ventilating equipment.

B. Clean adjacent surfaces soiled by hardware installation.

C. Door Hardware Supplier's Field Service
   1. Inspect door hardware items for correct installation and adjustment after complete installation of door hardware.
   2. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.
   3. File written report of this inspection to design professional.

D. Prior to project completion, representatives of the lock, exit device and overhead closer manufacturers shall inspect and adjust all units and certify that all units are installed in accordance with the manufacturer's instructions, and are regulated properly and functioning correctly. A written report shall be provided to the design professional as to the inspection and shall include appropriate certificates.

3.3 HARDWARE SCHEDULE

HEADING #1

EACH PAIR TO HAVE:

2	CONTINUOUS HINGES	SL-24HD
~~2~~	~~EXIT DEVICES~~	~~9927L-F-BE X LBR~~
1	COORDINATOR	7600
1	SET AUTO FLUSHBOLTS	7962
1	PASSAGE SET	XSE320MC7010
2	CLOSERS	2010
2	KICKPLATES	KP X B4E
2	DOOR STOPS	522
~~1~~	~~THRESHOLD~~	~~425E~~
~~1~~	~~SET DOOR SEALS~~	~~134NA~~
~~2~~	~~DOOR BOTTOM SEALS~~	~~200NA~~
~~1~~	~~ASTRAGAL SEAL~~	~~125NA X 125NA~~

HEADING #2

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PASSAGE SET	XSE320MC7010
1	DOOR CLOSER	2010
1	KICKPLATE	KP X B4E
1	DOOR STOP	575
~~1~~	~~SET DOOR SEALS~~	~~5075~~

HEADING #3

EACH DOOR TO HAVE:

1	CONTINUOUS HINGE	SL-18HD
1	LOCKSET	XSE320MC7080
1	CYLINDER	
1	CLOSER	4041-H-CUSH
1	KICKPLATE	KP X B4E
1	DOOR STOP	522
~~1~~	~~THRESHOLD~~	~~425E~~
~~1~~	~~SET DOOR SEALS~~	~~134N~~
~~1~~	~~DOOR BOTTOM SEAL~~	~~200N~~

HEADING #4

EACH DOOR TO HAVE:

4	HINGES	BB81
1	LOCKSET	XSE320MC7070
1	CYLINDER	
1	OVERHEAD STOP	4420 SERIES

HEADING #5

EACH DOOR TO HAVE:

4	HINGES	BB81
1	LOCKSET	XSE320MC7453
1	CYLINDER	
1	DOOR STOP	575

HEADING #6

EACH DOOR TO HAVE:

4	HINGES	BB81
1	LOCKSET	XSE320MC7070
1	CYLINDER	
1	DOOR STOP	575

HEADING #7

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PRIVACY SET	XSE320MC7040
1	OVERHEAD STOP	4420 SERIES

HEADING #8

EACH PAIR TO HAVE:

6	HINGES	BB81
1	SET FLUSHBOLTS	7960
1	COORDINATOR	7600
1	LOCKSET	ISC-HPK734-CY6153
1	CYLINDER	
2	CLOSERS	2010
2	WALL STOPS	575

HEADING #9

EACH PAIR TO HAVE:

1	CONTINUOUS HINGE	SL-18HD
1	CONTINUOUS HINGE	SL-18HD X ATW4
1	SET FLUSHBOLTS	7962
1	COORDINATOR	7600
1	LOCKSET	XSE320MC7080EU X RX
2	CLOSERS	4040-S-H-CUSH
1	ACCESS CONTROL	HID PROX
2	KICKPLATES	KP X B4E
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
2	DOOR BOTTOM SEALS	200N
1	ASTRAGAL SEAL	125N

NOTE: COORDINATE INSTALLATION OF SECURITY HARDWARE WITH ELECTRICAL AND SECURITY SYSTEMS
DOOR TO MEET FBC ASSEMBLY

HEADING #10

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PASSAGE SET	XSE320MC7010
1	DOOR STOP	575

HEADING #11

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PRIVACY SET	XSE320MC~~7040~~7096
1	CLOSER	4041
1	KICKPLATE	KP X B4E
1	DOOR STOP	575/522 (AS CONDITIONS REQUIRE)

HEADING #12

EACH PAIR TO HAVE:

8	HINGES	BB81
2	SETS PULLS	ROCKY MOUNTAIN TBD BTB
2	CLOSERS	2010-H
2	KICKPLATE	KP X B4E
2	OVERHEAD STOPS	4420 SERIES
1	THRESHOLD	413
1	SET DOOR SEALS	5075
2	AUTO DOOR BOTTOMS	4448S
1	ASTRAGAL SEAL	143P

HEADING #13

EACH PAIR TO HAVE:

2	SETS PIVOTS AND FLOOR CLOSER	27-90
2	INTERMEDIATE PIVOTS	M19
1	SET FLUSHBOLTS	BY DOOR MANUFACTURER
1	DEADBOLT	BY DOOR MANUFACTURER
1	CYLINDER	
2	PULLS	ROCKY MOUNTAIN TBD BTB
2	OVERHEAD STOPS	N9020 SERIES
2	KICKPLATES	KP X B4E
1	THRESHOLD	1X428E
1	SET DOOR SEALS	134N
2	DOOR BOTTOM SEALS	200N
1	ASTRAGAL SEAL	143P

NOTE: DOOR TO MEET FBC ASSEMBLY

HEADING #14

EACH DOOR TO HAVE:

4	HINGES	BB81
1	LOCKSET	ISC-HPK734-CY6153
1	CYLINDER	
1	CLOSER	2010
1	KICKPLATE	KP X B4E X CSK
1	DOOR STOP	575

HEADING #15

EACH DOOR TO HAVE:

4	HINGES	BB81
1	LOCKSET	ISC-HPK734-CY6153
1	CYLINDER	
1	CLOSER	2010
1	OVERHEAD STOP	4420
1	KICKPLATE	KP X B4E X CSK

HEADING #16

EACH PAIR TO HAVE:

2	SETS PIVOTS AND FLOOR CLOSER	27-90
2	INTERMEDIATE PIVOTS	M19
1	SET FLUSHBOLTS	BY DOOR MANUFACTURER
1	DEADBOLT	BY DOOR MANUFACTURER
1	CYLINDER	
1	MAGNETIC LOCK	1511DB
1	ACCESS CONTROL	HID PROX
1	PASSIVE INFRARED	D31
1	PUSHBUTTON	423M
2	PULLS	ROCKY MOUNTAIN TBD BTB
2	KICKPLATES	KP X B4E
1	THRESHOLD	1X428E
1	SET DOOR SEALS	134N
2	DOOR BOTTOM SEALS	200N
1	ASTRAGAL SEAL	143P

NOTE: COORDINATE INSTALLATION OF SECURITY HARDWARE WITH ELECTRICAL, FIRE AND SECURITY SYSTEMS
FLUSHBOLTS AND DEADBOLT TO MEET FBC ASSEMBLY AND ONLY FOR EMERGENCY BACKUP. DOOR NORMALLY PUSH-PULL WITH MAGLOCK PROVIDING SECURITY
DOOR TO MEET FBC ASSEMBLY

HEADING #17

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PASSAGE SET	XSE320MC7010
1	DOOR STOP	575
1	THRESHOLD	413
1	SET DOOR SEALS	5075
1	AUTO DOOR BOTTOM	4448S

HEADING #18

EACH DOOR TO HAVE:

1	SET PIVOTS AND FLOOR CLOSER	27-90
1	INTERMEDIATE PIVOT	M19
1	EXIT DEVICE	55NL-OP
1	CYLINDER	
1	PULL	ROCKY MOUNTAIN TBD
1	OVERHEAD STOP	N9020 SERIES
1	KICKPLATE	KP X B4E
1	THRESHOLD	1X428E
1	SET DOOR SEALS	134N
1	DOOR BOTTOM SEAL	200N

NOTE: DOOR TO MEET FBC ASSEMBLY

HEADING #19

EACH DOOR TO HAVE:

1	CONTINUOUS HINGE	SL-18HD
1	LOCKSET	XSE320MC7080
1	CYLINDER	
1	CLOSER	4041-H-CUSH
1	KICKPLATE	KP X B4E
1	DOOR STOP	522
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
1	DOOR BOTTOM SEAL	200N

NOTE: DOOR TO MEET FBC ASSEMBLY

HEADING #20

EACH DOOR TO HAVE:

1	CONTINUOUS HINGE	SL-18HD X ATW4
1	LOCKSET	XSE320MC7080EU X RX
1	CLOSER	4041-H-CUSH
1	ACCESS CONTROL	HID PROX
1	KICKPLATE	KP X B4E
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
1	DOOR BOTTOM SEAL	200N

NOTE: COORDINATE INSTALLATION OF SECURITY HARDWARE WITH ELECTRICAL AND SECURITY SYSTEMS
DOOR TO MEET FBC ASSEMBLY

HEADING #21

EACH DOOR TO HAVE:

1	CONTINUOUS HINGE	SL-18HD
1	EXIT DEVICE	99L-NL
1	CYLINDER	
1	CLOSER	4041-H-CUSH
1	KICKPLATE	KP X B4E
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
1	DOOR BOTTOM SEAL	200N

NOTE: DOOR TO MEET FBC ASSEMBLY

HEADING #22

EACH PAIR TO HAVE:

2	CONTINUOUS HINGES	SL-18HD
1	EXIT DEVICE	9927EO
1	EXIT DEVICE	9927L-NL
1	CYLINDER	
2	CLOSERS	4041-H-CUSH
2	KICKPLATES	KP X B4E
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
2	DOOR BOTTOM SEALS	200N
1	ASTRAGAL SEAL	125N X 125N

NOTE: DOOR TO MEET FBC ASSEMBLY

HEADING #23

EACH DOOR TO HAVE:

4	HINGES	4B81
1	PUSH-PULL SET	ROCKY MOUNTAIN TBD BTB
1	DOOR CLOSER	2010
1	KICKPLATE	KP X B4E
1	DOOR STOP	575

HEADING #24

EACH DOOR TO HAVE:

4	HINGES	BB81
1	EXIT DEVICE	99EO-F
1	CYLINDER	FOR PULL SIDE ACCESS
1	DOOR CLOSER	2010
1	KICKPLATE	KP X B4E
1	DOOR STOP	575

HEADING #25

EACH DOOR TO HAVE:

4	HINGES	BB81
1	PASSAGE SET	XSE320MC7010
1	OVERHEAD STOP	4420 SERIES

HEADING #26

ALL HARDWARE BY DOOR MANUFACTURER

HEADING #27

EACH PAIR TO HAVE:

8	HINGES	BB81
1	SET FLUSHBOLTS	590
1	DEADLOCK	MS560
1	CYLINDER	
2	SETS PULLS	ROCKY MOUNTAIN TBD BTB
2	CLOSERS	2010-H
2	KICKPLATE	KP X B4E
2	OVERHEAD STOPS	4420 SERIES
1	THRESHOLD	413
1	SET DOOR SEALS	5075
2	AUTO DOOR BOTTOMS	4448S
1	ASTRAGAL SEAL	143P

HEADING #28

EACH PAIR TO HAVE:

8	HINGES	BB21 X NRP
1	SET FLUSHBOLTS	BY DOOR MANUFACTURER
1	LOCKSET	BY DOOR MANUFACTURER
1	CYLINDER	
2	CLOSERS	2010
2	OVERHEAD STOPS	N9020 SERIES
2	KICKPLATES	KP X B4E
1	THRESHOLD	425E
1	SET DOOR SEALS	134N
2	DOOR BOTTOM SEALS	200N
1	ASTRAGAL SEAL	143P

NOTE: DOOR TO MEET FBC ASSEMBLY

END OF SECTION 087100

SECTION 122413 – EXTERIOR ROLLER SCREENS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Motor-operated, single-roller screens.

B. Related Requirements:

1. Section 061000 "Rough Carpentry" for wood blocking and grounds for mounting roller shades and accessories.
2. Section 079200 "Joint Sealants" for sealing the perimeters of installation accessories for light-blocking shades with a sealant.
3. Division 26000 – for operating control system.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller screens.

2. Florida Product approval Number.

B. Shop Drawings: Show fabrication and project specific installation details for roller shades, including screen materials, their orientation to rollers, and their seam and batten locations.
1. Show locations of any joints in screen material in the form of an exterior elevation of the building. If no joints required, so state.

2. Motor-Operated Screens: Include details of installation and diagrams for power, signal, and control wiring. Coordinate with Division 26000 requirements.

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

D. , 10 inches (250 mm) long.

E. Samples for Initial Selection: For each type and color of screen material.

1. Include Samples of accessories involving color selection.

F. Samples for Verification: For each type of roller shade.

1. Screen Material: Not less than **10 inches (250 mm)** square. Mark interior face of material if applicable.

2. Roller screen: Full-size operating unit, not less than 16 inches (400 mm) wide by 36 inches (900 mm) long for each type of screen indicated.
3. Installation Accessories: Full-size unit, not less than 10 inches (250 mm) long.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of screen material.

C. Product Test Reports: For each type of screen material, for tests performed by **a qualified testing agency**.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roller screens to include in maintenance manuals. Include wiring diagrams, control operation instructions.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Acceptance of mockups does not constitute acceptance of deviations from the Contract Documents contained in mockups unless Architect specifically accepts such deviations in writing.
2. Subject to compliance with requirements, mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

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

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller screens until construction and finish work in spaces, including painting, is complete and dry.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware o through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain roller shades from single source from single manufacturer.

2.2 MOTOR-OPERATED, SINGLE-ROLLER SCREENS

A. Manufacturer's include:
1. Phantom Screens – Sheer Weave 2360
a. Openness Approximately 10%
b. Yarn Diameter .011 Warp, .011 Fill
c. Sun UV Protection up to 90% blockage.
d. Roll width: 98".
e. Color : Charcoal.
f. Construction: PVC (Vinyl coated (65%), Fiberglass Mesh (35%)

B. Motorized Operating System: Provide factory-assembled, shade-operator system of size and capacity and with features, characteristics, and accessories suitable for conditions indicated, complete with electric motor and factory-prewired motor controls, power disconnect switch, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

1. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Electric Motor: **Manufacturer's standard** tubular, enclosed in roller.

a. Electrical Characteristics: Coordinate with Division 26000 requirements.
b. Maximum Total Shade Width: **As required to operate roller shades indicated**.
c. Maximum Shade Drop: **As required to operate roller shades indicated**.
d. Maximum Weight Capacity: **As required to operate roller shades indicated**.

e. Group Control Station: Coordinate with Division 26000 requirements.
f. Color: **As selected by Architect from manufacturer's full range**.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Refer to drawing details.
2. Direction of Screen Roll: Refer to the drawing details.
3. Screen-to-Roller Attachment: **Manufacturer's standard method**.

D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Screens:
1. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
a. Color and Finish: **As selected by Architect from manufacturer's full range**.

F. Installation Accessories:

2.3 ROLLER SCREEN FABRICATION

A. Product Safety Standard: Fabricate roller screens to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill openings as follows, measured at 74 deg F (23 deg C):

1. Refer to drawing details. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch (6 mm) per side or 1/2-inch (13-mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

C. Screen Fabrication: Fabricate screens without battens or seams to extent possibl
1. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, **locations of connections to building electrical system,** and other conditions affecting performance of the Work.

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

3.2 ROLLER SCREEN INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

B. Electrical Connections: Connect motor-operated roller shades to building electrical system.

C. Roller Shade Locations: **As indicated on Drawings**.

3.3 ADJUSTING

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

3.4 CLEANING AND PROTECTION

A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

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

END OF SECTION 122413