



**PennState Health**  
Milton S. Hershey Medical Center



**PennState**  
College of Medicine

# **Architectural Design & Construction Standards**

## **For New Construction & Renovation Work**

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*The HMC “Design and Construction Standards” are to be considered guidelines. This is a “living” document that will be continuously updated as best practices evolve, manufacturers develop new products, and building codes change. This document is not intended to stifle innovation. Deviations from these guidelines are acceptable if concurrence is obtained from the Owner.*

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SECTION 02761– PAVEMENT LINE PAINTING/GRAPHICS

- A. Paint shall be SealMaster Fast Dry SMT-244 Traffic Paint– 100% acrylic water based formula. Color shall be determined by the owner. Any alternates suggested must be reviewed and approved by the Grounds Manager prior to awarding.
- B. Crosswalk/stop bar glass reflective beads will be Type I: Appearance: Colorless and transparent ball, no visible bubbles and impurity. Spherical beads:  $\geq 80\%$ (600 < Sieve size < 850um, spherical beads  $\geq 75\%$ )Density: 2.4-2.6g/cm<sup>3</sup>Refractive index:  $N_d \geq 1.50$ Glass bead composition: The glass bead is made of sodium and calcium.  $SiO_2 > 68\%$
- C. Crosswalk Slip resistant materials – An application of H&C Sharkgrip slip resistant additive product shall be applied (broadcast) on each application of the two (2) coats required.
- D. Sweep and clean surface to eliminate oils, loose material and dust/dirt.
- E. Paint shall be applied via mechanical equipment to produce clean, uniform and straight edges. Apply at manufacturer’s recommended rate to provide a minimum wet film thickness of 15 mils.
- F. Two (2) coat application is required for all pavement markings.
- G. For all crosswalks - apply by broadcast reflective media glass beads immediately as marking paint is applied to allow for proper adhesion. Follow manufacturer’s recommendations.
- H. For all crosswalks - apply by broadcast – H&C Sharkgrip anti-skid material immediately as marking paint is applied to allow for proper adhesion.
- I. Pavement symbols – please refer to PENNDOT specifications, Publication 111 Traffic Control Pavement Marking standards – TC-8600 and TC-8700. Unless instructed to do otherwise by owner, match existing graphics.
- J. Keep traffic off of the newly painted areas for the time recommended by the manufacturer.

SECTION 02787 – ASPHALT SEALCOATING

- A. Sealcoating product shall be Sealmaster Masterseal Ultra Blend Pavement Sealer for all areas where odor is not a concern to building intakes. The alternate to be used in areas near buildings and air intakes is Sealmaster Polymer-Modified

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Masterseal (PMM) Ultra Blend Pavement Sealer. Consult grounds manager if in question of which product to use.

- B. Installation shall only be completed by a certified applicator.
- C. Properly prepare surface areas - sweep and clean surface to remove/eliminate oils, loose material and dust/dirt.
- D. Cracks should be filled prior to sealcoating applications. See Asphalt Crack Sealing standard.
- E. Apply two (2) coats to all areas, allowing proper drying time in between coats.
- F. Verify weather conditions are within manufacturers recommendations.
- G. Provide proper road/lot closure and traffic control as required.
- H. Keep traffic off of the newly applied areas for the time recommended by the manufacturer.

**SECTION 02980 – IMPRINTED CROSSWALKS**

- A. Imprinted crosswalks are to be installed at high volume pedestrian crossing areas. Locations considered should be reviewed and approved by the grounds manager.
- B. Materials used shall be TrafficPatternsXD manufactured by Ennis-Flint. Pattern and colors shall match existing on campus.
- C. Installation shall only be completed by a certified applicator.
- D. Properly prepare surface areas - sweep and clean surface to eliminate oils, loose material and dust/dirt.
- E. Provide proper road closure and traffic control as required.
- F. Keep traffic off of the newly applied areas for the time recommended by the manufacturer.

**SECTION 02983 – ASPHALT CRACK/JOINT FILLING**

- A. Crack filling and joint filling product shall be Sealmaster Crackmaster Supreme DF. Product is a hot applied rubberized crack and joint material.
- B. Installation shall only be completed by a certified applicator.

- C. Properly prepare surface areas - sweep and clean surface to remove/eliminate oils, loose material and dust/dirt.
- D. Verify weather conditions are within manufacturers recommendations.
- E. Provide proper road/lot closure and traffic control as required.
- F. Keep traffic off of the newly applied areas for the time recommended by the manufacturer.



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SECTION 03300 - CAST-IN-PLACE CONCRETE

A. PROJECT INCLUDES

1. Cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

- Footings.
- Foundation walls.
- Slabs-on-grade.
- Suspended slabs.
- Concrete toppings.
- Building walls.
- Structural slabs.

- B. Except where a requirement in this specification is more stringent, all Cast-in-place concrete is to comply with the Pennsylvania State University OPP minimum standards for Division 3 Concrete work.

C. QUALITY ASSURANCE

1. Quality Standard: ACI 301.
2. Mockups to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.

D. MATERIALS

1. Form-facing materials.
2. Steel Reinforcement:
  - a. Reinforcing Bars: Deformed & Epoxy coated.
  - b. Welded Wire Reinforcement: Plain & Deformed.
3. Concrete Materials:
  - a. Portland Cement: ASTM C 150, Type I, gray.
  - b. Silica fume.
  - c. Aggregate: Normal weight & lightweight (all elevated slabs).

- d. Water to be potable and complying with ASTM C 94.
- e. Admixtures: Air entraining, Water reducing, High range, water reducing, plasticizing, Non-set accelerating, corrosion inhibiting. No calcium chlorides will be accepted.
- 4. Waterstops: Flexible rubber & Self-expanding butyl strip.
- 5. Vapor Retarders: Cass C Polyethylene, 10-mil reinforced sheet.
  - a. Granular Course over Vapor Retarder:
- 6. Curing Materials: Potable water, Clear, waterborne, membrane-forming curing, dissipating compound.
- 7. Related Materials: Expansion- and isolation-joint-filler strips.

#### E. CONCRETE MIXTURES

- 1. Compressive Strength (28 Days):
  - a. Footings: As required by soil conditions.
  - b. Foundation Walls: 3000 psi (20.7 MPa).
  - c. Slabs-on-Grade: 4000 psi (27.6 MPa).
  - d. Suspended Slabs: Lightweight concrete: 4000 psi (27.6 MPa).
  - e. Building Walls & Structural Slabs: 4500 psi (31 MPa)
- 2. Mixing: Project site.

#### F. INSTALLATION

- 1. Formed-Surface Finish: Rubbed.
- 2. Floor and Slab Finishes:
  - a. Float: Surfaces to receive trowel finish, and surfaces to be covered with built-up or membrane roofing.
  - b. Trowel: Surfaces exposed to view, and surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, thin film-finish coating system.

- c. Trowel and Fine Broom: Surfaces to be covered with ceramic or quarry tile installed by either thickset or thin-set method.
- d. Broom: Exterior steps, ramps.
- e. Slip-Resistive Aggregate: Concrete stair treads, platforms, and ramps.

G. FIELD QUALITY CONTROL

- 1. Testing: By Contractor-engaged agency.
- 2. Inspections: By Owner-engaged special inspector.
- 3. All contractor testing is to comply with the Pennsylvania State University OPP minimum standards for Division 3 Concrete work.

SECTION 03450 - ARCHITECTURAL PRECAST CONCRETE

A. PROJECT INCLUDES

- 1. Architectural precast concrete cladding units.

B. PERFORMANCE REQUIREMENTS

- 1. Structural Performance: Fabricator to design architectural precast concrete units to meet the requirements of the application.

C. QUALITY ASSURANCE

- 1. Installer: PCI-certified erector.
- 2. Fabricator: PCI-certified plant.
- 3. Design Standards: ACI 318 and PCI MNL 120.
- 4. Quality-Control Standard: PCI MNL 117.
- 5. Sample panels for each finish, color, and texture variation.
- 6. Mockups.
- 7. Preconstruction testing mockup.

D. MATERIALS

- 1. Reinforcing Materials:

- a. Reinforcing Bars: Steel.
  - b. Steel Bar Mats: Steel.
  - c. Welded Wire Reinforcement: Plain steel & Deformed steel.
2. Concrete Materials:
- a. Portland Cement: ASTM C 150, Type I or Type III.
  - b. Supplementary Cementitious Materials: Fly ash & Silica fume.
  - c. Aggregates: Normal & Lightweight.
    - i. Face-Mixture Coarse Aggregates: Uniformly graded.
  - d. Coloring admixture.
  - e. Admixtures: Air entraining & Water reducing.
3. Steel Connections: TBD by design professional
- a. Finish: Painted.
4. Stainless-Steel Connections: Stainless-steel plate, bolts and headed studs.
5. Bearing Pads: High-density plastic.
6. Grout: Nonmetallic, nonshrink.
7. Stone facing specified in Division 4 with stainless-steel anchors.
- E. CONCRETE MIXTURES
1. Compressive Strength (28 Days):
    - a. Normal-Weight Concrete Face and Backup Mixtures: 4000 psi
      - i. Lightweight Concrete Backup Mixtures: 4000 psi
- F. FABRICATION
1. Finishes: Match adjacent or neighboring material finish. Final selection to be approved by HMC.

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G. SOURCE QUALITY CONTROL

1. Testing Agency: Owner engaged to evaluate fabricator's quality-control and testing methods.

H. FIELD QUALITY CONTROL

1. Special Inspections: By Contractor-engaged agency.
2. Testing and Inspections: By Contractor-engaged agency.

SECTION 03930 - CONCRETE REHABILITATION

A. PROJECT INCLUDES

1. Removal of deteriorated concrete and reinforcement and subsequent replacement and patching.
2. Floor joint repair.
3. Epoxy crack injection.
4. Corrosion-inhibiting treatments.
5. Polymer sealers.
6. Steel structural reinforcement.

B. QUALITY ASSURANCE

1. Mockups for concrete removal and patching, floor joint repair.

C. MATERIALS

1. Bonding Agents: Epoxy-modified, cementitious bonding and anticorrosion agent.
2. Patching Mortar: packaged, polymer modified, cementitious.
3. Miscellaneous Materials:
  - a. Epoxy joint filler.
  - b. Polyurea joint filler.
  - c. Epoxy crack injection adhesive.

- d. Corrosion-inhibiting treatment materials.
- e. Polymer Overlay: Epoxy and aggregate.
- f. Polymer Sealer: Epoxy.
- g. Methylmethacrylate sealer/brighteners.
- h. Steel plates, shapes, and bars with modified-alkyd primer and alkyd-gloss enamel.
- i. Postinstalled Anchors: Expansion.

D. EXECUTION

- 1. Preparation:
  - a. Reinforcing Bars: wire brushing.
  - b. Surfaces for Corrosion-Inhibiting Treatment: Low-pressure water cleaning.
  - c. Surfaces for Sealers: low-pressure water cleaning.

E. FIELD QUALITY CONTROL

- 1. Testing Agency: Contractor engaged to sample materials and perform tests.
- 2. Tests:
  - a. Compressive strength of patching mortar.
  - b. Concrete.
  - c. Compressive strength of grouted preplaced aggregate.
  - d. Core-drilled samples of joint filler.
  - e. Core-drilled samples of epoxy crack injection.

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SECTION 04200 - UNIT MASONRY

A. APPLICATION

1. Unit Masonry Construction:
  - a. Brick veneer cavity wall on metal studs. (18-inches above grade and higher only) Use limited to matching of existing adjacent material.
  - b. Brick/Stone Clad and concrete block composite walls. (Site walls)
  - c. Brick and concrete block cavity walls. (18-inches above grade and below) Use limited to matching of existing adjacent material.
  - d. Concrete block bearing walls and non-bearing partitions.
  - e. Freestanding site masonry walls.
  - f. Repair and remodeling of existing construction.
  - g. Colored mortar: Color to be approved by HMC

Except where a requirement in this specification is more stringent, all unit masonry is to comply with the Pennsylvania State University OPP minimum standards for Division 4 Masonry.

B. QUALITY ASSURANCE

1. Standards: ACI-530.1, Specification for Masonry Structures.
2. Fire Performance: ASTM E-119.
3. Testing: Independent testing laboratory.
4. Field-Constructed Mock-up: Typical exterior masonry construction.

C. PRODUCTS

1. Face Brick:
  - a. Size: Standard modular, 3-5/8 inches thick by 2-1/4 inches high by 7-5/8 inches long. Match existing brick.
  - b. Grade: ASTM C-216, Grade: SW, severe weathering type areas subject to freeze-thaw.

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- c. Type: ASTM C-216, Type FBX, for general use in exposed masonry requiring minimum variations in size and color ranges.
  - d. Special Shapes: As required by building configuration.
  - e. Bond Pattern: Running bond.
2. Concrete Masonry Units:
- a. Hollow Load-Bearing Concrete Masonry Units: ASTM C-90, 1900 psi compressive strength, normal weight.
  - b. Solid Load-Bearing Concrete Masonry Units: ASTM C-90, 1900 psi compressive strength, normal weight.
  - c. Size: Face dimension of 7-5/8 inches high by 15-5/8 inches long by width required for application.
  - d. Bond Pattern: Running Bond.
3. Limestone Trim Units:
- a. Grade and Color: Select, buff.
  - b. Finish: Smooth.
4. Mortar and Grout:
- a. Mortar Mix: ASTM C-270, Type S, for reinforced masonry, masonry below grade and masonry in contact with earth and ASTM C-270, Type N, for above-grade loadbearing and nonloadbearing walls and parapet walls and for interior loadbearing and nonloadbearing partitions.
  - b. Mortar Materials:
    - i. Brick: Portland cement, ASTM C-150, Type I or II.
    - ii. Concrete Masonry: ASTM C-270, Type N.
    - iii. Mortar Aggregate: Special color, ASTM C-144.
    - iv. Grout Aggregate: ASTM C-404.
    - v. Hydrated Lime: ASTM C-207, Type S.
    - vi. Color: Colored pigmented mortar.



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5. Reinforcing Steel:
    - a. Reinforcing Bars: ASTM A-615, Grade 60.
    - b. Deformed Reinforcing Wire: ASTM A-496.
    - c. Plain Welded Wire Fabric: ASTM A-185.
  6. Joint Reinforcing: Welded wire with deformed side rods.
    - a. Steel Wire: 9 gage stainless steel.
    - b. Type: Ladder or truss type.
  7. Ties and Anchors:
    - a. Bent Wire Ties: Galvanized steel.
    - b. Rigid Anchors: Galvanized steel straps.
    - c. Masonry to Concrete Frame: Two-piece galvanized steel anchor.
    - d. Masonry to Steel Frame: Anchor with crimped wire anchor section for welding to steel.
    - e. Adjustable Masonry Veneer Anchors: Screw-attached two-piece galvanized triangular or rectangular wire tie and metal anchor.
    - f. Screws for Steel Studs: ASTM C-954 stainless steel.
    - g. Unit Type Masonry Inserts in Concrete: Malleable iron.
    - h. Dovetail Slots: Galvanized sheet metal.
    - i. Anchor Bolts: ASTM A-307, Grade A, galvanized.
    - j. Postinstalled Anchors: Chemical or expansion anchors.
  8. Masonry Accessories:
    - a. Nonmetallic expansion joint strips.
    - b. Preformed control joint gaskets.
    - c. Bond breaker strips.
    - d. Plastic weep hole vent. UV resistant polypropylene copolymer designed to fill the head joint completely.

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SECTION 04230 - REINFORCED UNIT MASONRY

A. APPLICATION

1. Reinforced Concrete Masonry Unit Foundation Walls.
2. Refer to Section "Unit Masonry" for masonry materials, accessories, installation requirements not included in this section.

B. QUALITY ASSURANCE

1. Design Engineering: Registered engineer.
2. In addition, all masonry is to comply with the Pennsylvania State University OPP minimum standards for Division 4 Masonry.

C. PRODUCTS

1. Reinforcement Bars: ASTM A-615, deformed, Grade 60.
2. Grouting:
  - a. Use "fine Grout", ASTM C-476 for filling spaces less than 4" in one or both horizontal directions.
  - b. Use "Coarse Grout", ASTM C-476 for filling 4" spaces or larger in both horizontal directions.

D. EXECUTION

1. Grouting Technique: At the Contractor's option, use either low-lift or high-lift grouting techniques subject to requirements which follow.
  - a. Low-Lift Grouting:
    - i. Provide minimum clear dimension of 2" and clear area of 8 sq.in. in vertical cores to be grouted.
    - ii. Lay CMU to maximum pour height. Do not exceed 5' height, or if bond beam occurs below 5' height stop pour at course below bond beam.
  - b. High-Lift Grouting:
    - i. Do not use high-lift grouting techniques for grouting of CMU unless minimum cavity dimension and area is 3" and 10 sq.in., respectively.

- ii. Construct masonry to full height of maximum grout pour specified, prior to placing grout.
  - (a.) Limit grout lifts to a maximum height of 5' and grout pour to a maximum height of 24', for single wythe hollow concrete masonry walls, unless otherwise indicated.
- iii. Limit grout pours to sections which can be completed in one working day with not more than one hour interruption of pouring operation.

#### SECTION 04270 - GLASS UNIT MASONRY

##### A. APPLICATION

- 1. Glass unit masonry for interior applications.
- 2. Glass unit masonry for exterior applications.

##### B. QUALITY ASSURANCE

- 1. Fire Performance: ASTM E-163.
- 2. Field-Constructed Mock-Up: Typical panel.

##### C. PRODUCTS

- 1. Hollow Glass Block: Non-loadbearing glass block with partial vacuum interior.
  - a. Pattern: Transparent.
  - b. Pattern: Translucent, light-diffusing wavy design.
  - c. Pattern: Translucent, light-diffusing fluted design.
  - d. Pattern: Translucent, decorative.
  - e. Pattern: Match existing.
  - f. Edge Coating Color: White.
  - g. Shape: Square, nominal 6 inches square.
  - h. Shape: Square, nominal 8 inches square.
  - i. Shape: Square, nominal 12 inches square.
  - j. Shape: Rectangular, nominal 4 inches by 8 inches.
  - k. Shape: Rectangular, nominal 6 inches by 8 inches.
  - l. Corner Unit: Preformed.
  - m. Joint Width: 3/8 inch.
- 2. Solid Glass Block: Semi-transparent solid glass, factory-applied edge coating, 3 inches thick by 7-5/8 inches square actual size.

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3. Mortar Materials:
    - a. Portland Cement, Gray: ASTM C-150, Type I.
    - b. Hydrated Lime: ASTM C-207, Type S.
    - c. Aggregate for Mortar: ASTM C-144.
    - d. Water Repellent Admixture: Stearic water-repellent compound.
  4. Glass Unit Masonry Accessories:
    - a. Panel (Joint) Reinforcement: Stainless steel ladder-type welded wire units, ASTM A-580, AISI Type 304.
    - b. Panel Anchors: Perforated steel strips, hot-dip galvanized.
    - c. Asphalt Emulsion: Water-based.
    - d. Glass Fiber Expansion Strips: 4 pound density.
    - e. Dovetail Slots: Galvanized steel.
    - f. Steel Column Anchors: Trapezoidal ties, zinc-coated.

## SECTION 04405 - EXTERIOR STONEMWORK

### A. APPLICATION

1. Exterior Cut Stonework:
  - a. Cladding panels.
  - b. Copings and sills.
  - c. Trim and molded units.

### B. QUALITY ASSURANCE

1. Testing: Independent testing laboratory.
2. Field-Constructed Mock-Up: Typical exterior panels.

### C. PRODUCTS

1. Granite:

- 
- a. Building Stone Standard: ASTM C-615.
  - b. Finish: Polished.
  - c. Finish of Paving, Steps, and Risers: Thermal.
  - d. Type: Selection to be determined.
  - e. Joints: Sealant.
  - f. Cladding Thickness: 1-1/4 inches plus or minus 1/8 inch.
2. Limestone:
    - a. Building Stone Standard: ASTM C-568.
    - b. Finish: Smooth, machine finish.
    - c. Type: Indiana oolitic limestone.
    - d. Joints: Sealant.
    - e. Cladding Thickness: 3 inches plus or minus 1/8 inch.
3. Mortar and Grout:
    - a. Portland Cement: ASTM C-150, Type I or II.
    - b. Hydrated Lime: ASTM C-207, Type S.
    - c. Aggregate: ASTM C-144.
    - d. Colored Mortar Pigments: Iron oxides and chromium oxides.
    - e. Latex Additive: Water emulsion type.
4. Anchors and Attachments: Stainless steel, ASTM A-666, Type 304.
  5. Framing Support System: Preengineered panelized galvanized steel metal grid and stainless steel stone anchors.

## SECTION 04500 - MASONRY RESTORATION AND CLEANING

### A. APPLICATION

1. Masonry Restoration:
  - a. Repointing mortar joints.
  - b. Repair of damaged masonry.

2. Masonry Cleaning:
  - a. Washing and cleaning exposed masonry surfaces.
- B. Quality Assurance
  1. Materials: Cleaning materials acceptable to environmental agencies and authorities having jurisdiction.
  2. Field-Constructed Mock-Up: Each type of cleaning, repointing, and repair.
- C. Products
  1. Repointing Mortar: Match existing with strength suitable for project conditions.
    - a. Portland Cement: ASTM C-150, Type I.
    - b. Hydrated Lime: ASTM C-207, Type S.
    - c. Aggregate for Mortar: ASTM C-144.
    - d. Colored Mortar Aggregate: Colored sand.
    - e. Colored Mortar Pigment: Iron oxides and chromium oxides.
    - f. Aggregate for Grout: ASTM C-404.
  2. Patching Materials: Compatible with existing materials; visual matching.
  3. Cleaning Materials:
    - a. Water and steam.
    - b. Alkaline prewash cleaner.
    - c. Proprietary Acidic Cleaner.

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SECTION 05120 - STRUCTURAL STEEL

A. APPLICATION

1. Structural steel for building construction and related anchors, fasteners, and connectors.
2. Architecturally exposed structural steel.

B. QUALITY ASSURANCE

1. Standards: AISC, Code of Standard Practice for Steel Buildings and Bridges, and applicable regulations.
2. Testing: Independent testing laboratory.
3. Erection Tolerances: AISC standards.

C. PRODUCTS

1. Steel Materials:
  - a. Structural Steel Shapes, Plates, and Bars: ASTM A-36.
  - b. Cold-Formed Steel Tubing: ASTM A-500, Grade B.
  - c. Hot-Formed Steel Tubing: ASTM A-501.
  - d. Steel Pipe: ASTM A-53, Type E or S, Grade B; or ASTM A-501.
  - e. Headed Stud-Type Shear Connectors: ASTM A-108, Grade 1015 or 1020.
  - f. Anchor Bolts: ASTM A-307, nonheaded type.
  - g. Unfinished Threaded Fasteners: ASTM A-307, Grade A.
  - h. High-Strength Threaded Fasteners: ASTM A-325 or ASTM A-490, as applicable.
2. Auxiliary Materials:
  - a. Direct Tension Indicators: ASTM A-959.
  - b. Electrodes for Welding: AWS Code.
  - c. Structural Steel Primer Paint: SSPC - Paint 13.

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- d. Cement Grout: Portland cement, sand.
  - e. Metallic Shrinkage-Resistant Grout: Premixed ferrous aggregate grouting compound.
  - f. Nonmetallic Shrinkage-Resistant Grout: Premixed nonmetallic grouting compound, CE CRD-C621.

#### SECTION 05220 - STEEL JOISTS AND JOIST GIRDERS

##### A. APPLICATION

- 1. Steel joists and joist girders for floor and roof framing.

##### B. QUALITY ASSURANCE

- 1. Standards: Steel Joist Institute Standard Specifications.

##### C. PRODUCTS

- 1. Steel Materials:
  - a. Type: LH-series Longspan steel joists.
  - b. Steel: SJI specifications for chord and web sections.
  - c. Steel Bearing Plates: ASTM A-36.
- 2. Auxiliary Materials:
  - a. Unfinished Threaded Fasteners: ASTM A-307, Grade A.
  - b. Steel Prime Paint: SJI specifications.

#### SECTION 05310 - STEEL DECK

##### A. APPLICATION

- 1. Steel Floor and Roof Deck Units:
  - a. Roof deck
  - b. Composite steel deck.

##### B. QUALITY ASSURANCE

- 1. Standards: AISI, Specification for the Design of Cold-Formed Steel Structural Members; and SDI Design Manual for Composite Decks, Form Decks, and Roof Decks.



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2. Approvals: UL label and FM listing.

C. PRODUCTS

1. Steel Materials and Finish:
  - a. Type: Steel for galvanized metal deck, ASTM A-446.
  - b. Steel Shapes: ASTM A-36.
  - c. Shear Connectors: Headed stud type, ASTM A-108.
  - d. Sheet Metal Accessories: ASTM A-526, commercial quality, galvanized.
  - e. Galvanizing: ASTM A-525, G60.
  - f. Galvanizing Repair: ASTM A-780.
2. Auxiliary Materials:
  - a. Metal cover plates.
  - b. Metal closure strips.

SECTION 05400 - COLD-FORMED METAL FRAMING

A. APPLICATION

1. Cold-Formed Metal Framing Units:
  - a. Bracing of exterior masonry veneer.
  - b. Bracing of exterior cladding.
  - c. Support of roof structures.
  - d. Support of structures.

B. QUALITY ASSURANCE

1. Standards: AISI, Specification for the Design of Cold-Formed Steel Structural Members.
2. Deflection Criteria: L/600 for exterior brick veneer, maximum 3/10 inch under full live and dead loads.
3. Fabrication Tolerances: 1/8 inch in 10 feet.

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4. Erection Tolerances: 1/16 inch.
  5. Cold-Formed Metal Framing Materials:
    - a. Stud Type: C-shaped load-bearing steel studs.
    - b. Joist Type: C-shaped steel joists.
    - c. Units 16 gage and heavier: ASTM A-446, A-570, or A-611, yield point 40,000 psi. Structural metal stud systems area to be engineered manufacturer for specific back-up application.
    - d. Units 18 gage and lighter: ASTM A-446, A-570, or A-611, yield point 33,000 psi.
    - e. Finish: Galvanized, ASTM A-525, G60.
  6. Auxiliary Materials:
    - a. Fasteners
    - b. Electrodes for welding.
    - c. Galvanizing repair, ASTM A-780.

#### SECTION 05500 - METAL FABRICATIONS

##### A. APPLICATION

1. Metal Fabrications:
  - a. Metal stairs.
  - b. Steel pipe railings.
  - c. Ladders for elevator pit.
  - d. Nosings.
  - e. Cast treads and thresholds.
  - f. Loose bearing and leveling plates.
  - g. Loose steel lintels. All exposed lintels to be galvanized and painted.
  - h. Framing and supports for overhead doors.
  - i. Framing and supports for suspended toilet partitions.

2. Miscellaneous steel trim.
3. Shelf and relieving angles.
4. Structural steel door frames for overhead doors.
5. Metal bar gratings.
6. Pipe bollards.
7. Elevator entrance sill angles.

**B. QUALITY ASSURANCE**

1. Design Engineering: Registered engineer.
2. Handrail and Railing Structural Performance: ASTM E-985.

**C. PRODUCTS**

1. Ferrous Materials:
  - a. Steel Plates, Shapes and Bars: ASTM A-36.
  - b. Rolled Steel Floor Plates: ASTM A-786.
  - c. Steel Bars for Gratings: ASTM A-569 or A-36.
  - d. Wire Rod for Grating Cross Bars: ASTM A-510.
  - e. Steel Tubing: ASTM A-500 or A-501.
  - f. Uncoated Structural Steel Sheet: ASTM A-611 or A-570.
  - g. Uncoated Steel Sheet: ASTM A-366 or A-569.
  - h. Galvanized Steel Sheet, Structural Quality: ASTM A-446, Grade A, G90.
  - i. Galvanized Steel Sheet, Commercial Quality: ASTM A-526, G90.
  - j. Reinforcing Bars: ASTM A-615, Grade 60.
  - k. Brackets, Flanges, and Anchors: Cast or formed metal.
  - l. Concrete Inserts: Threaded or wedge type.
  - m. Welding Rods and Bare Electrodes: ASW specifications.

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- n. Zinc-Coating: Hot-dip galvanized coating for materials in exterior assemblies or exterior walls.
- 2. Aluminum Materials:
    - a. Extruded Bars and Shapes: ASTM B-221 aluminum alloy.
    - b. Rolled Tread Plate: ASTM B-632 aluminum alloy.
    - c. Rivets: ASTM B-316, aluminum alloy.
    - d. Sheet for Expanded Aluminum Grating: ASTM B-209.
    - e. Fasteners: ASTM A-153.
    - f. Finish: Clear anodized.
  - 3. Fasteners:
    - a. Bolts and Nuts: Hexagon head type, ASTM A-307, Grade A.
    - b. Lag Bolts: Square head, FS FF-B-561.
    - c. Machine Screws: Cadmium plated steel, FS FF-S-92.
    - d. Wood Screws: Flat head carbon steel, FS FF-S-111.
    - e. Plain Washers: Round carbon steel, FS FF-W-92.
    - f. Drilled-In Expansion Anchors: FS FF-S-325.
    - g. Toggle Bolts: Tumble-wing type, FS FF-B-588.
    - h. Lock Washers: Spring type carbon steel, FS FF-W-84.
    - i. Zinc-Coating: Fasteners in exterior assemblies or exterior walls.
  - 4. Auxiliary Materials:
    - a. Nonshrink Metallic Grout: CE CRD-C621.
    - b. Nonshrink Nonmetallic Grout: CE CRD-C621.
    - c. Interior Anchoring Cement: Hydraulic expansion cement.
    - d. Exterior/Interior Anchoring Cement: Erosion-resistant hydraulic expansion cement.
    - e. Shop Primer: Alkyd primer, FS TT-P-645.

- f. Galvanizing Repair Paint: SSPC - Paint 20.
- g. Bituminous Paint: Asphalt mastic, SSPC - Paint 12.
- h. Zinc Chromate Primer: FS TT-P-645.

SECTION 05521 - PIPE AND TUBE RAILINGS

A. APPLICATION

- 1. Pipe and tube handrails and railing systems.

B. QUALITY ASSURANCE

- 1. Design Engineering: Registered engineer.
- 2. Handrail and Railing Structural Performance: ASTM E-985.

C. PRODUCTS

- 1. Aluminum Pipe and Tube Railing Systems:
  - a. Extruded Bar and Tube: ASTM B-221, alloy 6063 T5/T52.
  - b. Extruded Structural Pipe and Tube: ASTM B-429, alloy 6063 T5/T52.
  - c. Drawn Seamless Tube: ASTM B-210, alloy 6063 T832.
  - d. Plate and Sheet: ASTM B-209, alloy 6061 T6.
  - e. Die and Hand Forgings: ASTM B-247, alloy 6061 T6.
  - f. Castings: ASTM B-26, alloy A356 T6.
  - g. Finish: Fluoropolymer, Kynar 500.
- 2. Steel Pipe and Tube Railing Systems:
  - a. Steel Pipe, Black Finish: ASTM A-53.
  - b. Steel Pipe, Galvanized Finish: ASTM A-53.
  - c. Steel Tubing: ASTM A-500 or A-501.
  - d. Steel Plates, Shapes and Bars: ASTM A-36.
  - e. Gray Iron Castings: ASTM A-48, Class 30.

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- f. Malleable Iron Castings: ASTM A-47, Grade 32510.
  - g. Finish: Galvanized and shop primed.
3. Auxiliary Materials:
- a. Nonshrink Nonmetallic Grout: CE CRD-C621.
  - b. Interior Anchoring Cement: Hydraulic expansion cement.
  - c. Exterior/Interior Anchoring Cement: Erosion-resistant hydraulic expansion cement.
  - d. Shop Primer: Alkyd primer, FS TT-P-645.
  - e. Galvanizing Repair Paint: SSPC - Paint 20.
  - f. Bituminous Paint: Asphalt mastic, SSPC - Paint 12.
  - g. Zinc Chromate Primer: FS TT-P-645.

#### SECTION 05580 - SHEET METAL FABRICATIONS

##### A. APPLICATION

- 1. Sheet Metal Fabrications:
  - a. Closures and trim.
  - b. Filler panels.
  - c. Lighting troughs.
  - d. Heating-cooling unit enclosures.

##### B. PRODUCTS

- 1. Sheet Metals:
  - a. Steel Sheet, Galvanized: ASTM A-526 or A-527, G90.
  - b. Stainless Steel Sheet: ASTM A-167, Type 302 or 304.
  - c. Aluminum Sheet: ASTM B-209, alloy 5005 H15.
- 2. Auxiliary Materials:
  - a. Sound Deadening Insulation: Unfaced mineral fiber batt.

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- b. Welding Electrodes and Filler Metal: AWS specifications.
  - c. Fasteners, Anchors, and Inserts: Noncorrosive.
  - d. Gaskets: Flexible cellular neoprene, ASTM D-1056.
  - e. Bituminous Paint: Asphalt mastic, SSPC - Paint 12.
3. Finishes:
- a. Aluminum: Fluoropolymer, Kynar 500.
  - b. Stainless Steel: AISI No. 4, bright directional polish.
  - c. Steel: Galvanized and shop primed.

#### SECTION 05700 - ORNAMENTAL METALWORK

##### A. APPLICATION

- 1. Ornamental Metalwork:
  - a. Display cases fabricated from custom shapes.
  - b. Directory frames fabricated from custom shapes.
  - c. Combination elevator push-button stations.
  - d. Clad hollow metal doors and frames.
  - e. Ornamental rails and shapes.

##### B. PRODUCTS

- 1. Aluminum:
  - a. Extruded Bar and Tube: ASTM B-221, alloy 6063 T5/T52.
  - b. Extruded Structural Pipe and Tube: ASTM B-429, alloy 6063 T5/T52.
  - c. Drawn Seamless Tube: ASTM B-483, alloy 6063 T832.
  - d. Plate and Sheet: ASTM B-209, alloy 6061 T6.
  - e. Die and Hand Forgings: ASTM B-247, alloy 6061 T6.
  - f. Castings: ASTM B-26, alloy A356 T6.

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- g. Finish: Fluoropolymer, Kynar 500.
  - 2. Steel and Iron:
    - h. Steel Tubing: ASTM A-500 or A-501.
    - i. Steel Plates, Shapes and Bars: ASTM A-36.
    - j. Gray Iron Castings: ASTM A-48, Class 30.
    - k. Malleable Iron Castings: ASTM A-47.
    - l. Finish: Galvanized and shop primed.

#### SECTION 05720 - ORNAMENTAL HANDRAILS AND RAILINGS

##### A. APPLICATION

- 1. Ornamental metal handrail and railing systems.

##### B. QUALITY ASSURANCE

- 1. Design Engineering: Registered engineer.
- 2. Handrail and Railing Structural Performance: ASTM E-985.
- 3. Safety Glazing Standard: ANSI Z97.1.

##### C. PRODUCTS

- 1. Aluminum:
  - a. Extruded Bar and Tube: ASTM B-221, alloy 6063 T5/T52.
  - b. Extruded Structural Pipe and Tube: ASTM B-429, alloy 6063 T5/T52.
  - c. Drawn Seamless Tube: ASTM B-483, alloy 6063 T832.
  - d. Plate and Sheet: ASTM B-209, alloy 6061 T6.
  - e. Die and Hand Forgings: ASTM B-247, alloy 6061 T6.
  - f. Castings: ASTM B-26, alloy A356 T6.
  - g. Finish: Fluoropolymer, Kynar 500.



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2. Wood Components:
    - a. Type: Hardwood bonded to subrail.
    - b. Finish: Transparent.
  3. Auxiliary Materials:
    - a. Nonshrink Nonmetallic Grout: CE CRD-C621.
    - b. Welding Electrodes and Filler Metal: AWS specifications.
    - c. Fasteners, Anchors, and Inserts: Non-corrosive.
    - d. Exterior/Interior Anchoring Cement: Erosion-resistant hydraulic expansion cement.
    - e. Shop Primer: Alkyd primer, FS TT-P-645.
    - f. Galvanizing Repair Paint: SSPC - Paint 20.
    - g. Bituminous Paint: Asphalt mastic, SSPC - Paint 12.
    - h. Zinc Chromate Primer: FS TT-P-645.

#### SECTION 05810 - EXPANSION JOINT COVER ASSEMBLIES

##### A. APPLICATION

1. Expansion Joint Cover Assemblies:
  - a. Floor expansion joint cover assemblies.
  - b. Wall expansion joint cover assemblies.
  - c. Ceiling expansion joint cover assemblies.
  - d. Fire-rated expansion joint cover assemblies.
  - e. Seismic expansion joint assemblies.

##### B. QUALITY ASSURANCE

1. Fire Performance: ANSI/UL 263, NFPA 251, UBC 43-1, ASTM E-119, and ASTM E-814 as applicable.

##### C. PRODUCTS

1. Assemblies:

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- a. Type: Metal assembly with wearing surface cover plate.
  - b. Performance: Based on building use. Final selection of expansion joint is contingent on the review and acceptance of the system by HMC.
2. Expansion Joint Cover Materials:
    - a. Aluminum: ASTM B-221, alloy 6063 T5 for extrusions; ASTM B-209, alloy 6061 T6 for sheet and plate.
    - b. Preformed Seals: ASTM D-2000 rubber extrusions.
    - c. Seismic Seals: ASTM D-2000 rubber extrusions.
    - d. Fire Barriers: Based on fire performance standards.
  3. Finishes:
    - a. Aluminum Finish: Clear anodized.
  4. Installation:
    - a. Set extrusion in epoxy grout when setting joint frame into structural slab.
    - b. Infill slab and set frame with 4000-lb grout.

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SECTION 06100 - ROUGH CARPENTRY

A. APPLICATION

1. Rough Carpentry:
  - a. Wood furring, grounds, nailers, cleets, and blocking.
  - b. Underlayment.

B. PRODUCTS

1. All wood substrate, blocking, and misc. support both concealed and visible is to be fire treated. Identifying marks are to be accessible for visual inspection prior to be concealed in construction.

SECTION 06200 - FINISH CARPENTRY

A. APPLICATION

1. Finish Carpentry:
2. Standing and running trim and rails.
3. Interior paneling on fire retardant flakeboard core.

B. PRODUCTS

1. Interior Standing and Running Trim and Rails:
  - a. Species: Quarter sawn White Oak or match existing.
  - b. Grade: AWI Premium.
  - c. Fasteners: Concealed and countersunk fasteners.
  - d. Finish: Clear.
  - e. Trim profiles are to be designed to eliminate all flat surfaces that could collect dust.
2. Paneling:
  - a. Species: Quarter sawn White Oak or match existing.
  - b. Grade: AWI Premium.
  - c. Finish: Clear.

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SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

A. APPLICATION

1. Interior Architectural Woodwork:
2. Plastic laminate countertops. (Dry Locations)
3. Base, wall, and tall cabinets.
4. Solid surface countertops. (Wet Locations – counters with sinks)

B. QUALITY ASSURANCE

1. Standards: Architectural Woodwork Institute (AWI) "Architectural Woodwork Quality Standards."
2. Casework is to be designed to avoid ledges, gaps, and areas that will catch dust and dirt or be difficult to clean.
3. Use of solid wood for substrates is required in wet locations.
4. Use of wood veneer for finish surfaces is prohibited in clinical areas.

C. PRODUCTS

1. Interior Wood Casework:
  - a. Drawer bodies to be solid wood construction.
  - b. Drawers and doors to be overlay construction.
  - c. Cabinet exteriors to be clad in high pressure plastic laminate. Interiors to be melamine.
2. Casework Hardware and Auxiliary Materials:
  - a. Cabinet hinges: No concealed hinges will be accepted.
  - b. Drawer glides: 100-lb. Capacity with full extension features
  - c. Wire pulls
  - d. Silencers
3. Interior Laminate-Clad Countertops:

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- a. Countertops to have high pressure laminate surfaces with post formed backsplashes and nosing trim. (No wood trim) Provide chemical resistant laminate countertops where appropriate for the program application.
4. Solid Surface Countertops:
- a. Countertops to have ½-inch solid surface with post formed backsplashes and nosing. Provide all necessary subsurface blocking/backing as needed to support material.
5. Auxiliary Materials:
- a. Screws: FS FF-S-111.
  - b. Nails: FS FF-N-105.
  - c. Anchors: Type required for secure anchorage.

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SECTION 07110 - SHEET MEMBRANE WATERPROOFING

A. APPLICATION

1. Sheet Membrane Waterproofing Systems:
  - a. Exterior Decks.
  - b. Concrete slabs on grade.
  - c. Foundation walls and footings.

B. QUALITY ASSURANCE

1. Testing: Flood testing of horizontal applications.

C. PRODUCTS

1. Butyl Sheet Waterproofing: Synthetic butyl rubber sheets, 60 mils thick, tensile strength 1200 psi, ASTM D-412.
2. Flashing Materials and Protection Board: Compatible with membrane waterproofing and providing a drainage channel feature that diverts ground water toward the perimeter drainage system.

SECTION 07130 - BENTONITE WATERPROOFING

A. APPLICATION

1. Bentonite Waterproofing Systems:
  - a. Exterior decks.
  - b. Foundation walls and footings.

B. PRODUCTS

1. Bentonite Panels, Polyethylene-Backed Type: 1.0 pound per square foot of bentonite adhered to high-density polyethylene sheet backing.
2. Granular Bentonite: Dust-free bentonite granules, packaged in moisture proof bags.
3. Plastic Bentonite: Hydrated bentonite gel, minimum 3/16 inch thick at surfaces and 3/8 inch thick at construction joints.
4. Protection Board: Compatible with bentonite waterproofing.

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SECTION 07160 - BITUMINOUS DAMPPROOFING

A. APPLICATION

1. Bituminous Dampproofing:
  - a. Exterior site walls retaining earth higher than the adjacent walking surface.
  - b. Exterior of interior wythe at cavity walls.
  - c. Interior masonry surfaces at wet locations.

B. PRODUCTS

1. Cold Applied Asphalt Emulsion Dampproofing:
  - a. Materials and Application: Heavy fibrated mastic type, ASTM D-1227, Type IV, 60 mils.
  - b. Materials and Application: Semifibrated mastic type, ASTM D-1227, Type II, 30 mils.
  - c. Materials and Application: Nonfibrated liquid type, ASTM D-1227, Type III, 15 mils.
  - d. Protection Course: Compatible with dampproofing.

SECTION 07175 - WATER REPELLENTS

A. APPLICATION

1. Water Repellents for Vertical Surfaces:
  - a. Concrete surfaces.
  - b. Unit masonry surfaces.
  - c. Stonework surfaces.

B. PRODUCTS

1. Water Repellents:
  - a. Appearance: Clear, non-gloss, non-yellowing.
  - b. Vapor Transmission: Breathing type, non vapor barrier.
  - c. Film Forming Sealers: Water-based acrylic.

- d. Penetrating Sealers (Not Visible): Water-based silane.
- e. Application Rate: Suitable for substrate and project conditions.

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SECTION 07210 - BUILDING INSULATION

A. APPLICATION

- 1. Building Insulation and Vapor Retarders:
  - a. Under slabs-on-grade, board type.
  - b. Foundation walls, board type.
  - c. Thermal insulation in exterior cavity walls, board type.
  - d. Thermal insulation in exterior walls, blanket type.
  - e. Thermal insulation at underside of roofs, over heated spaces and over soffits, blanket type.
  - f. Thermal insulation over unheated areas, blanket type.
  - g. Acoustic insulation at interior partitions, blanket type.
  - h. Firesafing insulation, board or blanket type.
  - i. Sheet vapor retarders.

B. PRODUCTS

- 1. Board Insulation:
  - a. Type: Extruded polystyrene, rigid, ASTM C-578.
  - b. Type: Polyisocyanurate board, rigid, FS HH-I-1972/1, Class 2.
  - c. Type: Cellular glass, rigid, ASTM C-552, Type I.
  - d. Type: Glass fiber board, foil-faced, semi-rigid or rigid, ASTM C-553.
  - e. Type: Firesafing semi-refractory fiber board, semi-rigid, ASTM C-612, Class 1 and 2.
  - f. Vapor Retarder: Integral vapor retarder as required for application.



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2. Blanket/Batt Insulation:
    - a. Type: Glass fiber or mineral slag fiber, ASTM C-665, Type I (unfaced).
    - b. Type: Glass fiber or mineral slag fiber, ASTM C-665, Type III kraft vapor-retarder membrane.
  3. Vapor Retarder (Not Integral With Insulation):
    - a. Interior Type: Reinforced 2-ply polyethylene, 6 to 8 mils.
    - b. Under slab Type: Reinforced 3-ply polyethylene, 10 to 12 mils.
  4. Accessories:
    - a. Adhesives and mechanical anchors.
    - b. Protection board.
    - c. Crack sealers and tapes.

#### SECTION 07240 - EXTERIOR INSULATION AND FINISH SYSTEMS

##### A. APPLICATION

1. Exterior Insulation and Finish Systems
  - a. No EIFS is permitted except at exterior soffits and mechanical penthouse enclosures.

#### SECTION 07250 - FIREPROOFING

##### A. APPLICATION

1. Fireproofing for building structure.

##### B. QUALITY ASSURANCE

1. Fire Performance: ASTM E-119, and local regulations.

##### C. PRODUCTS

1. Concealed Sprayed-On Fireproofing:
  - a. Type: Mineral fiber, 13 pounds per cubic foot dry density, ASTM E-605.
  - b. Auxiliary Materials: Primers, adhesive, lath, and reinforcing fabric.

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- c. Sealer for Mineral-Fiber Fireproofing: Clear-drying protective coating for nondusting applications.
  2. Exposed Sprayed-On Fireproofing:
    - a. Type: High density cementitious fireproofing, cement-aggregate or mineral-fiber formulation.
    - b. Auxiliary Materials: Primers, adhesive, lath, and reinforcing fabric.
    - c. Sealer for Mineral-Fiber Fireproofing: Clear-drying protective coating for nondusting applications.
  2. Mineral Fiber Board Fireproofing:
    - a. Type: Semi-refractory fiber board, unfaced.
    - b. Auxiliary Materials: Anchorage assemblies required for fire rating and attachment.

#### SECTION 07511 - BUILT-UP ASPHALT ROOFING

##### A. APPLICATION

1. Cold applied built-up asphalt roofing system and roof insulation. **All roofing systems shall be designed and installed by a TREMCO authorized contractor**
2. Removal of existing roofing, insulation, and flashing.
3. Modifications to existing roofing for new construction.
4. Except where a requirement in this specification is more stringent, all unit masonry is to comply with the Pennsylvania State University OPP minimum standards for Division 7 Thermal & Moisture Protection.

##### B. QUALITY ASSURANCE

1. Listing: UL Class A external fire exposure, and Class 90 wind uplift.
2. Listing: FM Class I construction.
3. Comply with all NRCA (National Roofing Contractor Association) Standards.

##### C. WARRANTY

1. Roofing Warranty: Manufacturer's 15 year warranty.

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2. Cold Applied Asphalt Roofing:
    - a. Type: Aggregate surfaced, 3 ply.
    - b. Felt: Asphalt/glass-fiber felts.
    - c. Deck Type: Insulated deck.
  3. Auxiliary Materials
    - a. Vapor Retarder: Bituminous vapor retarder.
    - b. Insulation: Polyisocyanurate foam board.
    - c. Surfacing Aggregate: Clean water-worn gravel.
    - d. Walkway Protection Boards: Compatible with system.
    - e. Roofing & Sheet Metal Accessories: SMACNA and NRCA recommendations.
    - f. **Pest Management: Tim-Bor Professional by Nisus Corporation shall be applied during all roofing installations.**

#### SECTION 07530 - SINGLE PLY MEMBRANE ROOFING

##### A. APPLICATION

1. No single ply membrane roofing shall be permitted.

#### SECTION 07600 - FLASHING AND SHEET METAL

##### A. APPLICATION

1. Flashing and Sheet Metal:
  - a. Metal counterflashing and base flashing.
  - b. Exterior wall flashing and expansion joints.
  - c. Built-in metal valleys, gutters, and scuppers.
  - d. Exposed metal trim and fascia units.
  - e. Elastic flashing.
  - f. Elastic roof and wall expansion joint systems.

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- g. Laminated composition flashing.
  - h. Sheet metal accessories.
2. Except where a requirement in this specification is more stringent, all unit masonry is to comply with the Pennsylvania State University OPP minimum standards for Division 7 Thermal & Moisture Protection.

**B. PRODUCTS**

1. Sheet Metal Flashing and Trim:
- a. Stainless Steel: AISI Type 302/304, ASTM A-167, 2D annealed finish, 28 gage.
  - b. Copper: ASTM B-370, 16 ounces per square foot.
2. Flexible Sheet Membrane Flashing: Nonreinforced flexible black elastic sheet, 50 to 65 mils thick, butyl synthetic rubber sheet.
3. Laminated Composition Sheet Flashing: 5 ounce copper sheet laminated between 2 layers of bituminous impregnated Kraft paper or saturated fabric.
4. Fabricated Units: Compliance with SMACNA Architectural Sheet Metal Manual.
5. Elastic Expansion Joints: Factory-fabricated metal-flanged edges to fit curbs and curb substrate.
6. Auxiliary Materials:
- a. Solder compatible with metal.
  - b. Bituminous isolation coating.
  - c. Mastic and elastomeric sealants.
  - d. Epoxy seam sealer.
  - e. Rosin-sized building paper slip sheet.
  - f. Polyethylene underlayment.
  - g. Reglets and metal accessories.
  - h. Gutters and conductor head guards.
  - i. Asphaltic roofing cement.

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SECTION 07700 - ROOF SPECIALTIES AND ACCESSORIES

A. APPLICATION

1. Roof Specialties and Accessories:
  - a. Curb and equipment support units. Curbs are to match footprint of mechanical equipment and be flashed into roof on all sides.
  - b. Curb-cut roof expansion joints.

B. PRODUCTS

1. Curb and Equipment Support Units:
  - a. Type: Designed for roof type and equipment.
  - b. Materials: Steel, 14 gage, hot dip galvanized.
2. Curb-Set Roof Expansion Joints:
  - a. Type: Prefabricated expansion joints for installation on raised curbs.
  - b. Materials: Extruded aluminum with waterproof bellows.

SECTION 07710 - MANUFACTURED ROOF SPECIALTIES

A. APPLICATION

1. Prefabricated Roof Specialties:
  - a. Fascia system for built-up roofing.
  - b. Aluminum copings.
  - c. Elastic roof expansion joint covers.

B. QUALITY ASSURANCE

1. Insurance Requirements: FM approval and acceptance letter.

C. PRODUCTS

1. Fascia for Built-up Roofing: Extruded aluminum fascia, compression clamp, and 26 gage zinc-coated steel water dam/hold-down clip.
2. Aluminum Copings: Interlocking multi-part, coping system, 0.063 inch thick aluminum sheet, 24 gage zinc-coated steel anchor plate, and formed aluminum gutter. Standing seam closure required on all coping joints.

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3. Elastic Roof Expansion Joint Covers: Metal flanged elastic-sheet bellows-type joint system, membrane, and metal flanges compatible with substrate.
  4. Finishes:
    - a. Aluminum Finish: Fluoropolymer, Kynar 500, 2 coat.

#### SECTION 07820 - METAL-FRAMED SKYLIGHTS

##### A. APPLICATION

1. Metal framed skylight system.

##### B. QUALITY ASSURANCE

1. Glazing Strengths: AAMA Glass Design for Sloped Glazing.
2. Structural Performance: Registered engineer.

##### C. WARRANTY

1. Metal Framed Skylight Glazing and System Warranty: Manufacturer's 5 year warranty.

##### D. PRODUCTS

1. Metal Framed Skylights:
  - a. Type: Standard cap system, self-supporting.
  - b. Framing: Extruded aluminum.
  - c. Finish: Fluoropolymer, Kynar 500, 2 coat.
2. Sloped Glazing.
  - a. Type: Glass, double glazed, laminated inner lite, heat-strengthened exterior lite.
  - b. Sealants: Silicone.
3. Auxiliary Materials:
  - a. Vertical glazing with skylight system.
  - b. Sun shading film

#### SECTION 07900 - JOINT SEALERS

A. APPLICATION

1. Joint sealers at interior and exterior vertical and horizontal joints.

B. QUALITY ASSURANCE

1. Field-Constructed Mock-Ups: Each joint type.

C. PRODUCTS

1. Urethane Elastomeric Joint Sealants:

- a. Type and Application: Multi-part nonsag urethane sealant, ASTM C-920, for vertical and horizontal joints, exterior use.
- b. Type and Application: Multi-part pourable urethane sealant, ASTM C-920, for horizontal joints, exterior and interior use.

2. Silicone Elastomeric Joint Sealants:

- a. Type and Application: One-part nonacid-curing silicone sealant, ASTM C-920, for vertical [and horizontal] joints, modulus as required for application, exterior and interior use.
- b. Type and Application: One-part acid-curing silicone sealant, ASTM C-920, for vertical joints, exterior and interior use
- c. Type and Application: One-part mildew-resistant silicone sealant, ASTM C-920, for sanitary applications, interior use.

3. Polysulfide Elastomeric Joint Sealants:

- a. Type and Application: Two-part nonsag polysulfide sealant, ASTM C-920, for vertical joints, exterior [and interior] use.
- b. Type and Application: Two-part polysulfide sealant, ASTM C-920, for horizontal joints, exterior and interior use.
- c. Type and Application: Two-part polysulfide sealant, ASTM C-920, for water immersion.

4. Latex Joint Sealants:

- a. Type: Acrylic-emulsion, ASTM C-834.
- b. Type: Silicone emulsion, ASTM C-834, and ASTM C-920.
- c. Application: Interior joints in vertical and overhead surfaces with limited movement.

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5. Solvent-Release-Curing Joint Sealants:
    - a. Type: Acrylic-emulsion, ASTM C-920.
    - b. Type: Butyl, FS TT-S-001657.
    - c. Application: Exterior vertical surfaces with limited movement.
  6. Compression Seals:
    - a. Type: Preformed foam sealant.
    - b. Type: Preformed hollow neoprene gasket, ASTM D-2628.
    - c. Application: Wide exterior joints in vertical surfaces.
  7. Fire-Sensitive Joint Sealers:
    - a. Type: Foamed-in-place fire-stopping sealants.
    - b. Type: One part fire-stopping sealant.
    - c. Application: Penetrations in fire-rated floor and wall assemblies. Only use products manufactured by 3M Company for all joint and penetration systems.
  8. Specialty Sealants:
    - a. Type and Application: Synthetic rubber for acoustical sealant for concealed joints.
    - b. Type and Application: Butyl-polyisobutylene sealant and tape sealant for concealed joints.
  9. Paving Joint Fillers:
    - a. Type: Bituminous fiber.
    - b. Application: Filler for exterior paving joints.
  10. Auxiliary Materials:
    - a. Plastic foam joint fillers.
    - b. Elastomeric tubing backer rods.
    - c. Bond breaker tape.



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SECTION 08111 - STEEL DOORS AND FRAMES

A. APPLICATION

1. Steel Doors:
  - a. Interior steel doors and frames.
  - b. Exterior steel doors and frames.
2. Except where a requirement in this specification is more stringent, all steel doors are to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

B. QUALITY ASSURANCE

1. Standards: ANSI/SDI-100, Recommended Specifications for Standard Steel Doors and Frames.
2. Performance Standards:
  - a. Fire-Rated Assemblies: NFPA 80, and acceptable testing agency listing.
  - b. Thermal-Rated Assemblies at Exterior: ASTM C-236 or ASTM C-976.
  - c. Sound-Rated Assemblies at Mechanical Rooms: ASTM E-90, and ASTM E-413.

C. PRODUCTS

1. Steel Doors:
  - a. Door Type: Flush steel doors with hollow or composite construction.
  - b. Interior Doors: ANSI/SDI-100, Grade II, heavy-duty, minimum 16 gage cold-rolled steel, 1-3/4 inches thick.
  - c. Exterior Doors: ANSI/SDI-100, Grade III, extra-heavy-duty, minimum 16 gage galvanized sheet steel, 1-3/4 inches thick.
  - d. Accessories: Sightproof stationary louvers and glazing stops.
  - e. Finish: Factory primed and field painted.

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2. Steel Frames:
    - a. Interior Frames: Welded type, 16 gage sheet steel, mitered corners.
    - b. Exterior Frames: Welded type, 16 gage galvanized sheet steel, mitered or coped corners.
    - c. Accessories: Door silencers and plaster guards.
    - d. Finish: Factory primed and field painted.

#### SECTION 08114 - CUSTOM STEEL DOORS AND FRAMES

##### A. APPLICATION

1. Custom Steel Doors and Frames:
  - a. Interior custom steel doors and frames.
  - b. Exterior custom steel doors and frames.
  - c. Stainless steel door frames for high traffic, high infection control, limited staff access areas. Areas would include, but not be limited to Operating Rooms and support spaces in operating suites, Cath. Labs, and other high value clinical spaces. All locations to be approved by HMC.
2. Except where a requirement in this specification is more stringent, all custom steel doors are to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

##### B. QUALITY ASSURANCE

1. Performance Standards:
  - a. Fire-Rated Assemblies: NFPA 80, and acceptable testing agency listing.
  - b. Thermal-Rated Assemblies at Exterior: ASTM C-236 or ASTM C-976.
  - c. Sound-Rated Assemblies: ASTM E-90, and ASTM E-413.
  - d. Radiation shielding as required for application. All shielding analysis to be provided by the contractor and reviewed by HMC's Department of Health Physics.

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C. PRODUCTS

1. Steel Doors:
  - a. Door Type: Seamless hollow construction, 1-3/4 inches thick, minimum 16 gage at interior, 16 gage at exterior.
  - b. Interior Construction: Steel sheet, ASTM A-366 or ASTM A-569.
  - c. Exterior Construction: Galvanized steel sheet, ASTM A-526, and ASTM A-525, with A60 or G60 coating.
  - d. Accessories: Sightproof stationary louvers and glazing stops.
  - e. Finish: Factory primed and field painted.
  - f. Minimum width for inactive leaf is 24-inches.
2. Steel Frames:
  - a. Frame Construction: Mitered fully-welded construction, minimum 16 gage at interior, 16 gage at exterior.
  - b. Accessories: Door silencers and plaster guards.
  - c. Finish: Factory primed and field painted.
  - d. Stainless Steel frames: Minimum 16 gage, mitered fully welded construction, #304 Stainless with brushed finish.

SECTION 08211 - FLUSH WOOD DOORS

A. APPLICATION

1. Flush Wood Doors:
  - a. Interior solid core flush doors.
  - b. Interior solid core flush doors with high pressure laminate faces.
2. Except where a requirement in this specification is more stringent, all wood doors are to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

B. QUALITY ASSURANCE

1. Quality Standards: NWWDA I.S.1 and AWI Architectural Quality Standards.

2. Quality Standards: AWWDA I.S.1 and WIC Manual of Millwork.
3. Fire Rated Wood Doors: Meeting ASTM E-152 requirements.

C. PRODUCTS

1. Interior Solid Core Doors:
  - a. Grade: Premium grade.
  - b. Construction: 7-ply construction with particleboard or glued-block core.
  - c. Finish: Transparent finish on slip-matched plain-sliced White Oak faces.
  - d. Minimum width for inactive leaf is 24-inches.
  - e. Provide stainless steel armor protection on hinge and latch sides of door.
2. Interior Solid Core Doors for Plastic Laminate Finish: (Preferred Standard for interior applicaton.)
  - a. Grade: Premium grade.
  - b. Construction: Particleboard or glued-block core.
  - c. Faces: GP-125, 0.125 inch thick plastic laminate.
  - d. Minimum width for inactive leaf is 24-inches.
  - e. Provide stainless steel armor protection on hinge and latch sides of door.
3. Fitting and Finish:
  - a. Fitting: Factory-prefit and premachine doors.
  - b. Factory Finish: Transparent factory finish, AWI Finish System No. 2, catalyzed lacquer.
4. Auxiliary Materials:
  - a. Metal louvers.
  - b. Glazing frames.
  - c. Transoms.

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- d. Fixed side panels.

#### SECTION 08305 - ACCESS DOORS

##### A. APPLICATION

- 1. Access doors for walls and ceilings.

##### B. PRODUCTS

- 1. Access Doors:
  - a. Frames: 16 gage sheet steel with flange suitable for adjacent material.
  - b. Doors: 14 gage sheet steel.
  - c. Door Type: Flush panel.
  - d. Locking Devices: Machine screw.
  - e. Fire rated door & frame systems for use in rated assemblies.

#### SECTION 08330 - OVERHEAD COILING DOORS

##### A. APPLICATION

- 1. Overhead Coiling Doors:
  - a. Exterior units.

##### B. QUALITY ASSURANCE

- 1. Fire-Rated Assemblies: NFPA 80, and acceptable testing agency listing.

##### C. PRODUCTS

- 1. Overhead Coiling Doors:
  - a. Type: Insulated standard service door.
  - b. Door Curtain: Galvanized steel sheet, ASTM A-446, with ASTM A-525, G90 coating.
  - c. Slat Profile: Flat-face slats.
  - d. Operation: Electric door operator.
  - e. Steel Finish: Galvanized finish only.

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- f. Steel Finish: Power coated factory finish.
2. Auxiliary Materials:
- a. Helical torsion spring counterbalance.
  - b. Hood for curtain and operating mechanism.
  - c. Windlocks, end locks, jamb guides, and weatherstripping.
  - d. Automatic reversing control for bottom bar for electric door operator.
  - e. Vision panels.

#### SECTION 08344 – ICU SLIDING ENTRANCE DOOR

##### A. APPLICATION

- 1. Providing manual sliding doors.
  - a. 2-panel units, right hand.
  - b. One panel within each unit to be swing-out.
  - c. Provide complete assemblies including combination swing/slide active leafs, header/support housing, and door carriers.
  - d. Units for spaces indicated as Isolation Rooms shall have gasketing for containment.
- 2. Related Sections:
  - a. Section 08800 - Glass and Glazing.

##### B. DEFINITION / METHOD OF OPERATION:

- 1. ICU door system shall provide room access without a floor track.
  - a. Under normal operating conditions, hospital personnel shall have access by way of sliding door.
  - b. When patient and/or medical equipment access is required, swing panels shall swing out and allow for sliding doors to break away to full-open position.
  - c. Doors and swing panels in full breakaway position shall double the normal entrance opening.

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- d. Reset procedures shall occur in reverse order.

C. QUALITY ASSURANCE:

- 1. Product shall be represented and installed by a factory authorized and trained distributor. Distributor shall maintain a parts inventory and trained personnel capable of providing service.

D. WARRANTY:

- 1. Units shall be warranted against defects in material and workmanship for a period of one year from the date of Substantial Completion.

E. PRODUCT / MANUFACTURER:

- 1. As manufactured by Horton.
- 2. Components:
  - a. Aluminum doors, swing panels, frame assembly.
  - b. No floor track.
  - c. Support rollers and guide piston.
  - d. Door carrier hanger assembly, swing panel pivots, breakaway latches, limiting arms, pull handles, static arrester, and weathering seal.

SECTION 08410 - ALUMINUM ENTRANCES AND STOREFRONTS

A. APPLICATION

- 1. Aluminum Entrances and Storefront:
  - a. Exterior entrance doors.
  - b. Vestibule doors matching entrance doors.
  - c. Interior doors.
  - d. Frames for entrances.
  - e. Storefront-type framing system.
  - f. Transoms.
  - g. Sidelights.

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B. PRODUCTS

1. Aluminum Entrances and Storefront:
  - a. Doors Style Medium stile and rail doors.
  - b. Aluminum Members: ASTM B-221, B-209 and B-211.
  - c. Steel Reinforcement: ASTM A-36, ASTM A-611, and ASTM A-570.
  - d. Glass and Glazing: Insulating glazing.
  - e. Glazing Color: Tinted glass. Match existing bronze tint.
  - f. Door Hanging Devices: Ball-bearing butts.
  - g. Closers: Concealed mounted.
  - h. Closer Operation: Single acting closers.
  - i. Aluminum Finish: Fluoropolymer, Kynar 500, 2-coat system.
2. Auxiliary Materials:
  - a. Aluminum infill panels.
  - b. Push/pulls, door stops, overhead holders, and deadlocks.
  - c. Weatherstripping and thresholds.
  - d. Exit devices.
  - e. Electric-strike release.

SECTION 08460 - AUTOMATIC ENTRANCE DOORS

A. APPLICATION

1. Automatic Entrance Doors:
  - a. Exterior units.
2. Except where a requirement in this specification is more stringent, all automatic entrance doors are to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

B. PRODUCTS



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1. Automatic Entrance Doors:
    - a. Door Operation: One-way swing doors.
    - b. Door Style: Medium stile and rail doors.
    - c. Door Control: Photocell automatic controls.
    - d. Operator: Electromechanical operator.
    - e. Aluminum Members: ASTM B-221, B-209 and B-211.
    - f. Steel Reinforcement: ASTM A-36, ASTM A-611 and ASTM A-570.
    - g. Glass and Glazing: Insulating glazing.
    - h. Glazing Color: Clear glass.
    - i. Closers: Concealed mounting.
    - j. Aluminum Finish: Fluoropolymer, Kynar 500.
  2. Auxiliary Materials:
    - a. Guide rails.
    - b. Push/pulls, door stops, and deadlocks.
    - c. Weatherstripping and thresholds.

#### SECTION 08470 - REVOLVING ENTRANCE DOORS

##### A. APPLICATION

1. Revolving Doors:
  - a. Type: 2-wing revolving doors.
  - b. Operation: Power-assisted.
  - c. Glass for Wings: Tempered safety glass, ASTM C-1048, Kind FT.
  - d. Glass for Enclosure: Laminated glass, ASTM C-1036.
  - d. Glass Color: Transparent.
  - f. Door Fittings: Aluminum, ASTM B-221, alloy 6063 T5.

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- g. Aluminum Finish: Clear anodized.
  - 2. Auxiliary Materials:
    - a. Accessory fittings for transoms and sidelight fittings.
    - b. Panic collapsing devices.
  - 3. Suggested Door Manufacturers include Besam and Boon Edam:

#### SECTION 08510 - STEEL WINDOWS

##### A. APPLICATION

- 1. Steel Windows:
  - a. Individual units set in wall construction.
  - b. Continuous horizontal strip windows.

##### B. QUALITY ASSURANCE

- 1. Testing: Window performance.

##### C. PRODUCTS

- 1. Steel Windows:
  - a. Fixed Window Type: Heavy Custom type, Steel Window Institute.
  - b. Glazing: Single pane glass. Wire glass where fire rating is required.
  - c. Glazing Color: Clear glass.
  - d. Steel Window Members: Hot-rolled new billet steel.
  - e. Trim Members: Extruded aluminum, formed sheet aluminum or stainless steel.
  - f. Anchors, Clips, and Window Accessories: Stainless steel, galvanized steel or bronze.
  - g. Finish: Shop prime for site finish.

#### SECTION 08525 - ALUMINUM ARCHITECTURAL WINDOWS

##### A. APPLICATION

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1. Aluminum Architectural Windows:
    - a. Individual units set in wall construction.
    - b. Individual units set in curtain wall construction.
    - c. Continuous horizontal strip windows with mullions.
    - d. Continuous vertical strip windows with spandrels.
    - e. Thermally broke units with internal weep system to discharge water from window system.
  2. Except where a requirement in this specification is more stringent, all Aluminum Windows are to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

B. QUALITY ASSURANCE

1. Testing: Window performance.

C. PRODUCTS

1. Aluminum Architectural Windows:
  - a. Window Operation: Projected & Fixed windows.
  - b. Window Grade: Architectural grade, AAMA 101, and AAMA GS-001.
  - c. Glazing: Insulating glass.
  - d. Glazing Color: Tinted glass. Match existing bronze.
  - e. Construction: Thermal-break type.
  - f. Aluminum Window Members: Aluminum extrusions.
  - g. Anchors, Clips, and Window Accessories: Aluminum, nonmagnetic stainless steel, or galvanized steel.
  - h. Aluminum Finish: Fluoropolymer, Kynar 500, 2-coat.
2. Auxiliary Materials: HMC-4181 Lights and Shades in H4216
  - a. Ventilator opening limit device.
  - b. Operating hardware.

- c. Insect screening.
- d. Nonglazed vent bar.

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SECTION 08710 - DOOR HARDWARE

A. APPLICATION

- 1. Hardware for swinging doors.
- 2. Remodeling existing hardware.
- 3. Except where a requirement in this specification is more stringent, all door hardware is to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.
- 4. Closers shall be specified only when required by building codes or program necessity.

B. QUALITY ASSURANCE

- 1. Hardware for Fire-Rated Openings: NFPA-80, and local requirements.
- 2. Handicapped Accessibility: ANSI A117.1, and local requirements.
- 3. Materials and Application: ANSI A156 series standards.

C. PRODUCTS

- 1. Door Hardware:
  - a. Quality Level: Heavy duty commercial type.
  - b. Locksets and Latchsets (Lever Handles): Model 8200 with LNJ trim, by Sargent Manufacturing Company. No Substitutes.
    - i. Lock Cylinders: Cylinder to accept Best Manufacturing Company interchangeable 7 pin core. No Substitutes. Provide construction cores. Turn over final cores to owner for keying and installation.
    - ii. Hinges and Butts: Model BB#1279 by McKinney Co. (Ball Bearing). Continuous hinges at all doors with automatic operators. Hinges by McKinney Co. – Satin finish.
    - iii. Flush Bolts: Model #256, #257, or #258 by H.B. Ives, A Harrow Company.

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- iv. Dust-proof Strikes: Model #489 by H.B. Ives, A Harrow Company.
  - v. Exit/panic Devices: Monarch 18 Series by Von Duprin Division of Ingersoll-Rand.
  - c. Closers: Model #4040 or #4041 DEL by LCN Division of Ingersoll-Rand.
    - i. Kick Plates: Model 8 x 2 LDDW .050 B3E by Rockwood.
    - ii. Stretcher Plates: Model 48 x 2 LDW .050 B3E by Rockwood.
    - iii. Wall Stops: Model #406 by Rockwood Industries.
    - iv. Floor Stops: Model by Rockwood.
    - v. Overhead Stops: Model #GJ360 by Glynn-Johnson.
    - vi. Silencers: Model #GJ64 by Glynn-Johnson.
    - vii. Magnetic Hold Open Devices: Model # 7850 by LCN Division of Ingersoll-Rand.
    - viii. Exterior Automatic Door Operator: Surface type application as manufactured by Door-O-Matic Company.
    - ix. Interior Automatic Door Operator: Senior-Swing as manufactured by Door-O-Matic Company.
    - x. Astragals: Model #357 UL Label by Pemko or approved equal.
    - xi. Keying: Coordinate keying with owner requirements. Best Manufacturing Company 7-pin cores.
  - d. Push/Pull Units: Push Plates: 70 x 4 x 16 .050 by Rockwood. Pull w/ Plate: 108 x 70 x 16 TB by Rockwood.
    - i. Hardware Finishes: Satin stainless finish on exposed surfaces.
    - ii. Electromagnetic Locks, shear locks, and keyswitches: as manufactured by Locknetics.

2. Auxiliary Materials

- a. Soundstripping.

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- b. Weatherstripping and thresholds.
  - c. Card-operated opening devices.

## SECTION 08800 - GLASS AND GLAZING

### A. APPLICATION

- 1. Glass and Glazing:
  - a. Exterior windows.
  - b. Exterior curtain wall.
  - c. Exterior spandrel panels.
  - d. Exterior entrances and storefront.
  - e. Skylights.
  - f. Interior windows and glazed openings.
  - g. Doors.
  - h. Mirrors.
- 2. Except where a requirement in this specification is more stringent, all glass and glazing is to comply with the Pennsylvania State University OPP minimum standards for Division 8 Doors, Windows, Glass & Hardware.

### B. QUALITY ASSURANCE

- 1. Field-Constructed Mock-Up: Each type of glazing.
- 2. Testing: Glazing performance.

### C. WARRANTY

- 1. Glass Warranties:
  - a. Laminated Glass: Manufacturers 4 year warranty.
  - b. Coated Glass: Manufacturers 5 year warranty.
  - c. Insulating Glass: Manufacturers 10 year warranty.

### D. PRODUCTS

- 1. Glass:

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- a. Primary Glass Products: Clear float, tinted float, and wire glass, ASTM C-1036. Match existing tint of glass.
  - b. Heat-Treated Glass Products: Heat-strengthened, tempered, coated, and spandrel glass, ASTM C-1048.
  - c. Laminated Glass Units: Polyvinyl butyral interlayer.
  - d. Sealed Insulating Glass Units: ASTM E-774, Class A.
  - e. Mirrors: Silvering and protective coatings.
  - f. High-Performance Coatings: Low e (low emissivity) type.
  - g. Fritted Coatings: Custom patterns.
2. Plastic:
    - a. Acrylic Plastic Glazing: Monolithic acrylic sheet with ultraviolet absorber, ASTM D-4802, Type UVA.
    - b. Polycarbonate Glazing: Extruded monolithic polycarbonate sheets.
3. Glazing:
    - a. Elastomeric glazing sealants.
    - b. Preformed glazing tapes.
    - c. Glazing gaskets.
    - d. Setting blocks, spacers, and compressible filler rods.

## E. SCHEDULE

1. Glazing Schedule:
  - a. Metal Windows: ¼-inch thick unit, clear tempered glass, wire when applicable.
  - c. Storefront: 1 inch thick insulating unit, tinted glass, match existing bronze.
  - d. Entrances: 1 inch thick insulating unit, clear glass.
  - e. Skylights: 1-1/16 inch insulating unit, tinted annealed exterior lite and clear laminated interior lite.

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- f. Curtain Wall: 1 inch thick insulating unit, tinted glass with reflective coating on second surface. Match existing tint.
  - h. Mirrors: 1/4 inch plate glass.
  - i. Doors: Tempered or wire glass.  
  
Unit Sizes:  
  
door into lab from corridor 6 W x 30 H  
door into tissue culture room 22 W x 28 H  
office next to lab 22 W x 28 H  
door into classroom 6 W x 39 H  
door in corridor 6 W x 39 H
  - j. Security Glazing: Laminated glass.
  - k. Decorative Glazing: 3/8-inch Cast glass

#### SECTION 08920 - GLAZED ALUMINUM CURTAIN WALLS

##### A. APPLICATION

- 1. Aluminum stick-type glazed aluminum curtain wall with interior and exterior exposed metal framing.

##### B. QUALITY ASSURANCE

- 1. Testing: Pre-construction laboratory mock-up testing and performance testing.
- 2. Field-Constructed Mock-Ups: Typical bay.

##### C. WARRANTY

- 1. Glazing and Curtain Wall System Warranty: Manufacturer's 5 year warranty.

##### D. PRODUCTS

- 1. Glazed Aluminum Curtain Walls:
  - a. Primary Components: Extruded aluminum framing, internal reinforcements, insulated spandrel panels, trim, and filler units, sealants, and gaskets.
  - b. Glazing: Insulating glass.
  - c. Glazing Color: Tinted glass, match existing bronze.



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- d. Construction: Thermal-break type.
  - e. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or galvanized steel.
  - f. Aluminum Finish: Fluoropolymer, Kynar 500, 2-coat.
2. Auxiliary Materials:
- a. Window cleaners bolts.
  - b. Window washing rail.

#### SECTION 08960 - SLOPED GLAZING SYSTEMS

##### A. APPLICATION

- 1. Site-assembled, self-supporting aluminum-framed sloped glazing system with exterior metal cap retainers over main and cross-rafter, ridges, and hips.

##### B. QUALITY ASSURANCE

- 1. Testing: Pre-construction laboratory mock-up testing and performance testing.
- 2. Field-Constructed Mock-Ups: Typical bay.

##### C. WARRANTY

- 1. Sloped Glazing Warranty: Manufacturer's 5 year warranty.

##### D. PRODUCTS

- 1. Sloped Glazing Systems:
  - a. Primary Components: Extruded aluminum framing, internal reinforcement, trim, and filler units, sealants, and gaskets.
  - b. Glazing: Insulating glass.
  - c. Glazing Color: Tinted glass.
  - d. Construction: Thermal-break type.
  - e. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or galvanized steel.
  - f. Aluminum Finish: Fluoropolymer, Kynar 500, 2-coat.

- g. Glare reducing film.
- 2. Auxiliary Materials:
  - a. Window cleaners bolts.
  - b. Window washing rail.

DIVISION 9 – ROOM FINISHES

SECTION 09000 - OUTLINE ROOM FINISH SCHEDULE

- A. All interior finishes shall be comprised of Class A Fire Rated Material. Materials submittals shall clearly illustrate compliance with this requirement. In no case shall a lower fire class rating be approved.
- B. PROGRAM REQUIREMENTS:
1. This program is diagrammatic only and is intended to identify a level of finish anticipated in similar spaces. Final room program spaces must meet all program requirements identified in the most current edition of the Facility Guidelines Institute for Design and Construction of Health Care Facilities. All final finishes are to comply with the standards established in the AIA Guidelines and the performance requirements identified by the HMC Staff.
  2. Handicap accessibility standards should comply with International Building Code, Americans with Disabilities Act Standards, and the PSU Access Enhancements.
  3. Consideration must be given to the safety and program needs of Bariatric patients in the design of clinical and support spaces. Please refer to the American College of Surgeons Bariatric Surgery Center Network for additional information.
- C. All finishes are subject to approval of HMC facilities and user groups.
1. Exam Rooms:
    - a. Partitions: Paint with accent wall color.
    - b. Floor: VCT, vinyl or linoleum (no “green product” wood backing). Heat welded seams only. No chemical welded seams.
    - c. Floor Base: Rubber/vinyl.
    - d. Ceiling: ACT & Grid.
    - e. Window Sills: Moisture resistant material. No plastic laminate.
    - f. Wall protection: Chair rail, see Division 10. Wall protection under rail as needed.
  2. Waiting Rooms:
    - a. Partitions: Vinyl wall covering and or paint.

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- b. Floor: Carpet, VCT, vinyl, or rubber. Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Rubber/vinyl.
  - d. Ceiling: Gypsum Board Bulkheads & ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate
  - f. Wall Protection: Chair rail-See Division 10. Install corner guards as needed.
3. Offices:
- a. Partitions: Paint with accent wall.
  - b. Floor: Carpet or VCT.
  - c. Floor Base: Rubber/vinyl.
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate
4. Public Corridors:
- a. Partitions: Paint and vinyl wall covering.
  - b. Floor: VCT, vinyl, rubber, luxury vinyl tile, linoleum sheet goods (no “green product” wood backing), ceramic tile, terrazzo. Ramping floors to use slip resistant hard surface tile product. Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Rubber/vinyl, ceramic.
  - d. Ceiling: Gypsum board bulkheads at crossing doors & corridors and ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate. Ramping floors to use a slip resistant hard surface tile product.
  - f. Wall Protection: See Division 10
    - i. Hand rail at 36” (Acrovyn HRB-4CN or equal). Crash rail above cove base.
    - ii. Wall protection between top and bottom crash rail
    - iii. Corner guards where appropriate.

5. Service Corridors:
  - a. Partitions: CMU or abuse resistant drywall. Epoxy paint.
  - b. Flooring: Sealed concrete, VCT, or elastomeric coating.
  - c. Ceiling: ACT & Grid or no ceiling.
  - d. Wall Protection: Crash rail, hand rail, sheet protection as appropriate with corner guards.
  
6. Staff Corridors/ Office Corridor:
  - a. Partitions: Paint.
  - b. Floor: VCT, vinyl, rubber or linoleum (no “green product” wood backing). Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Rubber/vinyl.
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
  - f. Ramping floors to use a slip resistant hard surface tile product.
  - g. Wall Protection: See Division 10
    - iv. Crash rail- bottom rail above cove base and upper rail at 38” or higher to top of rail based on height of carts and equipment in the area. Rail should project out from the wall to provide better wall protection.
    - v. Wall protection between top and bottom crash rail
    - vi. Hand rail where appropriate
    - vii. Corner guards as needed.
  
7. Public Lobbies/Entrances:
  - a. Partitions: Vinyl Wall Covering & Paint and feature wall material (wood, metal, ceramic, stone) .
  - b. Floor: Stone Tile/Porcelain or Terrazzo.
  - c. Floor Base: Stone/Porcelain or Terrazzo with corner protection.
  - d. Ceiling: Gypsum Board & ACT/Grid.

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- e. Window Sills: Moisture resistant materials. No plastic laminate. Coordinate with room material selections.
8. Operating Rooms:
- a. Partitions: Epoxy Paint.
  - b. Floor: Terrazzo.
  - c. Floor Base: Terrazzo with stainless steel corner protection.
  - d. Ceiling: Gypsum Board.
  - e. Wall Protection: solid surface and stainless steel. See Division 10.
9. Procedure Rooms:
- a. Partitions: Epoxy Paint.
  - b. Floor: Vinyl sheet material or rubber. Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Integral.
  - d. Ceiling: Gypsum Board or scrubbable ACT with manufacturer applied gasket on grid as required.
  - e. Window Sills: Solid surface material. No plastic laminate.
10. Procedure Support Areas:
- a. Partitions: Paint.
  - b. Floor: Sheet vinyl/Linoleum, rubber or VCT. Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Rubber/vinyl.
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
11. MEP Support Spaces:
- a. Partitions: Epoxy Paint.
  - b. Floor: Elastomeric – Return over all mechanical curbs.
  - c. Floor Base: Rubber/vinyl.

- d. Ceiling: No Ceilings.
12. Conference Rooms:
- a. Partitions: Vinyl wall covering and or paint.
  - b. Floor: Carpet, vinyl (Heat welded seams only. No chemical welded seams.), VCT, linoleum (no ‘green product’ wood backing).
  - c. Floor Base: Rubber/vinyl.
  - d. Ceiling: Gypsum Board Bulkheads & ACT/Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
13. Toilet Rooms
- a. Partitions: Epoxy paint & ceramic tile or solid surface material to 60” above finished floor.
  - b. Floor: Ceramic tile with appropriate waterproof membrane under the tile floor.
  - c. Floor Base: Ceramic Cove to match floor tile.
  - d. Ceiling: Gypsum board.
14. Staff Lounge:
- a. Partitions: Paint.
  - b. Floor: VCT.
  - c. Floor Base: Rubber/vinyl. Heat welded seams only. No chemical welded seams.
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
  - f. Wall protection as needed. Solid surface wall protection material in high traffic/ high abuse areas.
15. Education & Training Areas:
- a. Partitions: Paint with accent wall.
  - b. Floor: Carpet or VCT

- c. Floor Base: Rubber/vinyl. Heat welded seams only. No chemical welded seams.
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
16. Therapy Spaces:
- a. Partitions: Paint.
  - b. Floor: Sheet vinyl, Linoleum (no “green product” wood backing), Rubber, or VCT Heat welded seams only. No chemical welded seams.
  - c. Floor Base: Rubber/ vinyl
  - d. Ceiling: ACT & Grid.
  - e. Window Sills: Moisture resistant material. No plastic laminate.
  - f. Wall Protection: See Division 10
    - i. Hand rail (Acrovyn HRB-4CN or equal) at 36” to top of rail. Bottom crash rail above cove base.
    - ii. Wall protection between top and bottom crash rail.
    - iii. Corner guards as specified by HMC.
17. Inpatient Rooms:
- a. Partitions: Paint.
  - b. Floor: Sheet vinyl, rubber, heat welded seams only, no chemical welded seams.
  - c. Floor Base: Rubber or vinyl.
  - d. Window Sills: Solid surface material. Moisture resistant. No plastic laminate.
  - e. Wall Protection: Acrylic sheet (0.040 inches). Chair/hand rail or crash rail as required. Install solid surface bed stop/ locator.
18. Patient Bathrooms
- a. Walls: Ceramic tile over appropriate waterproof substrate system.



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- b. Floor: Ceramic tile with ceramic cove base over appropriate waterproof membrane.
  - c. Shower: Terrazzo shower base with solid surface wall panels or ceramic tile. Finish materials to be installed on appropriate waterproof substrate system.
  - d. Ceiling: Epoxy paint gypsum board.
19. Laboratory Spaces:
- b. Partitions: Epoxy Paint.
  - c. Floor: VCT.
  - d. Floor Base: 4-inch vinyl.
  - e. Ceiling: ACT& Grid.

#### SECTION 09250 - GYPSUM WALLBOARD

##### A. APPLICATION

1. Gypsum Wallboard Systems:
- a. Interior walls, partitions, and ceilings for tape and joint compound finish.
  - b. Exterior walls and soffits.
  - c. Steel framing systems to receive gypsum board.
  - d. Insulation and vapor barrier systems in gypsum drywall systems.
  - e. Cementitious backer units for application of tile.
  - f. Lead lined gypsum wallboard systems for radiation shielding.
  - g. Impact resistant gypsum wallboard systems in all corridors and receiving areas.
  - h. Mold/Moisture resistant gypsum wallboard system at all walls with sinks and/or toilets, and the following procedure areas: MRI, CT, CT/PET, & Linear Accelerator. MR board returns at all wet locations shall be a minimum of 4-feet. MR board is to be installed in all electrical & communication closet in new construction if the construction timeline requires the installation of permanent distribution panels prior to the building envelope being weather tight.

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2. Gypsum Wallboard Attachment:
    - a. Gypsum board screw-attached to steel framing and furring.
    - b. Gypsum board screw-attached to wood framing and furring.
    - c. Gypsum board bonded adhesively to interior concrete and masonry substrates.
    - d. Gypsum board bonded adhesively to wood framing and furring.

B. QUALITY ASSURANCE

1. Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities.
2. Field-Constructed Mock-up: Typical area.
3. No gypsum board product is to be used as blocking to support casework, door frames, or other finished or unfinished architectural woodwork.

C. PRODUCTS

1. Gypsum Board:
  - a. Gypsum Wallboard: ASTM C-36, regular, foil-backed, fire-rated, and lead lined types, 5/8 inch typical thickness.
  - b. Mold & Water-Resistant Gypsum Backing Board: ASTM C-630, regular and fire-rated types 5/8 inch typical thickness.
  - c. Exterior Gypsum Soffit Board: ASTM C-931, regular and fire-rated types, 5/8 inch typical thickness.
  - d. Exterior Gypsum Wall Board: 5/8-inch thick Densglass Gold – Exterior Guard as manufactured by Georgia Pacific or approved equal.
  - e. Joint Treatment: ASTM C-475 and ASTM C-840, 3-coat system.
  - f. Installation Standard: ASTM C-840.
  - g. Impact Resistant Gypsum Wallboard: Drywall panels shall meet or exceed ASTM C 1629 level 3 for surface abrasion and level 1 for impact resistance where specified.
2. Cementitious Backer Units:
  - a. Type: ANSI A-108.1, cement-coated portland cement panels.

- b. Thickness: 1/2 inch nominal.
- 3. Trim Accessories:
  - a. Material: Metal trim.
  - b. Types: Cornerbead, edge trim, and control joints. Recessed joints in gypsum board systems are to be limited to vertical applications wherever possible. The use of horizontal joints for aesthetic treatments in clinical or treatment areas is to be minimized for reduction of infection control risk.
- 4. Steel Framing for Walls and Partitions:
  - a. Steel Studs and Runners: ASTM C-645, 20 gage steel studs, 3-5/8 inch typical depth.
  - b. Furring Channels: ASTM C-645, 20 gage.
  - c. Auxiliary Framing Components: Furring brackets, resilient furring channels, Z-furring members, and non-corrosive fasteners.
  - d. Installation Standard: ASTM C-754.
- 5. Steel Framing for Suspended and Furred Ceilings:
  - a. Furring Channels: ASTM C-645, 20 gage standard channels.
  - b. Accessories: Hangers and inserts.
  - c. Installation Standard: ASTM C-754.
- 6. Auxiliary Materials:
  - a. Gypsum board screws, ASTM C-1002.
  - b. Gypsum board nails, ASTM C-514.
  - c. Fastening adhesive.
  - d. Concealed acoustical sealant.
  - e. Mineral fiber sound attenuation blankets.
  - f. Mineral fiber thermal insulation.
  - g. Polystyrene aggregated finish for ceilings.
  - h. Nonwoven polymeric sheet air infiltration barrier.

- i. Fasteners, Type S steel drill screws with corrosion-resistant finish.

SECTION 09270 - GYPSUM BOARD SHAFTWALL SYSTEMS

A. APPLICATION

1. Gypsum Board Shaftwall Systems:

- a. Elevator shaft enclosures.
- b. Stairwell shaft enclosures.
- c. Service shaft enclosures.

B. QUALITY ASSURANCE

1. Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities.

C. PRODUCTS

1. Cavity Shaft Wall Assemblies:

- a. Shaftwalls Board Thickness: Not less than 1 inch.
- b. Studs: I, C, H or double E studs, not less than 20 gage.

2. Gypsum Board Shaftwall Materials:

- a. Steel Framing: ASTM C-645.
- b. Gypsum Shaftwall Board: ASTM C-442, Type X.
- c. Gypsum Wallboard: ASTM C-36, Type X.
- d. Water-Resistant Gypsum Backing Board: ASTM C-630, Type X.
- e. Gypsum Wallboard Joint Treatment Materials: ASTM C-475 and ASTM C-840.

3. Auxiliary Materials:

- a. Cornerbeads, edge trim, and control joints.
- b. Laminating adhesive.
- c. Gypsum board screws, ASTM C-1002.
- d. Concealed acoustical sealant.

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- e. Mineral fiber sound attenuation blankets.

## SECTION 09300 - TILE

### A. APPLICATION

#### 1. Interior Tile:

- a. Wall tile over gypsum wallboard. Allow for a two-color pattern.
- b. Wall tile over tile backer board at wet areas. Allow for a two-color pattern.
- c. Slip Resistant Floor tile over concrete slab. Allow for a three-color pattern.

### B. QUALITY ASSURANCE.

- 1. Tile Materials: ANSI 118 series standard specifications.
- 2. Tile Installation: ANSI 108 series standard specifications and Tile Council of America, Handbook for Ceramic Tile Installation.

### C. PRODUCTS

#### 1. Unglazed Ceramic Mosaic Tile:

- a. Type: Porcelain factory-mounted flat tile.
- b. Size: 2 x 2 inches.
- c. Thickness: 1/4 inch nominal.
- d. Face: Plain face with cushion edges.
- e. 5-inch tile cove base.

#### 2. Glazed Ceramic Mosaic Tile:

- a. Type: Porcelain factory-mounted flat tile.
- b. Size: 2 x 2 inches.
- c. Thickness: 1/4 inch nominal.
- d. Face: Plain face with cushion edges.
- e. 5-inch tile cove base.

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3. Glazed Wall Tile:
    - a. Type: Interior type body, flat tile.
    - b. Size: 4-1/4 x 4-1/4 inches.
    - c. Thickness: 5/16 inch nominal thickness.
    - d. Face: Plain face with cushion edge.
  4. Unglazed Paver Tile:
    - a. Type: Porcelain flat tile.
    - b. Size: 12 x 12 inches.
    - c. Thickness: 3/8 inch nominal.
    - d. Face: Plain face with cushion edges.
    - e. Surface: Slip resistant.
  5. Glazed Paver Tile:
    - a. Type: Porcelain flat tile.
    - b. Size: 12 x 12 inches.
    - c. Thickness: 3/8 inch nominal.
    - d. Face: Plain face with cushion edges.
    - e. Surface: Slip resistant.
  6. Tile Accessories:
    - a. Matching trim units.
    - b. Marble thresholds in frames at tile locations.
    - c. Stone thresholds.
    - d. Ceramic toilet accessories.
  7. Setting Materials:
    - a. Portland cement mortar, ANSI A108.1.
    - b. Dry-set portland cement mortar, ANSI A118.1

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- c. Latex-portland cement mortar, ANSI A118.4.
  - d. Conductive dry-set mortar, ANSI A118.2.
  - e. Chemical-resistant epoxy adhesive, ANSI A118.3
  - f. Chemical-resistant furan mortar, ANSI A118.5.
  - g. Modified epoxy emulsion mortar, ANSI A118.8.
  - h. Organic adhesive, ANSI A136.1, Type 1.
8. Grout:
- a. Sand-portland cement grout, ANSI A108.10.
  - b. Commercial portland cement grout, ANSI A118.6
  - c. Dry-set grout, ANSI A118.6
  - d. Latex-portland cement grout, ANSI A118.6.
  - e. Chemical-resistant epoxy grout, ANSI A118.3.
  - f. Chemical-resistant furan resin grout, ANSI A118.5.
  - g. Elastomeric grout for pregrouted sheets: Silicone rubber.
  - h. Custom color as approved by HMC.
9. Setting Accessories:
- a. Membrane waterproofing under tile.
  - b. Cementitious tile backer board.
10. Elastomeric Sealants:
- a. One-part mildew-resistant silicone sealant for non-traffic areas.
  - b. Multi-part pourable urethane sealant for traffic areas.
  - c. Chemical-resistant sealant at chemical-resistant flooring.

## SECTION 09511 - ACOUSTICAL PANEL CEILINGS

### A. APPLICATION

- 1. Acoustical lay-in panel ceilings, trim, and exposed metal suspension system.

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B. QUALITY ASSURANCE

1. Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities.

C. PRODUCTS

1. Scrubbable Lay-in acoustic ceiling:
  - a. Armstrong: Fine Fissured Ceramaguard
  - b. 15/16-inch PRELUDE XL grid by Armstrong.
  - c. Edge Detail: Square edge.
  - d. Size: 24" x 24"

SECTION 09521 - ACOUSTICAL WALL PANELS

A. APPLICATION

1. Acoustical wall panels shall not be used without the approval of HMC Facilities and Infection Control Staff.

SECTION 09650 - RESILIENT FLOORING

A. APPLICATION

1. Resilient flooring and floor preparation.

B. QUALITY ASSURANCE

1. Performance: Fire performance meeting requirements of building code and local authorities.

C. PRODUCTS

1. Tile Flooring:
  - a. Rubber Flooring: Nora Mega 24-inch minimum tiles with Nora Sanitary Base.
  - b. Vinyl Composition Tile: Armstrong Stonetex or equal with 4-inch cove base.
2. Sheet Flooring:
  - a. Armstrong Medintech or Medinpoint heat welded with 6-inch integral cove base.



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- b. Linoleum with non-organic backing: FS LLL-F-1238A, (0.80) (1/10) (1/8) inch thick.
  - c. Wood look sheet vinyl flooring: TIMBERLINE by Armstrong Industries.
  - d. Rubber Flooring: Nora Mega 3mm rubber with Nora Sanitary Base.
3. Fluid-Applied Flooring:
- a. Type: Elastomeric surface applied waterproofing for flooring in Mechanical Rooms – Dex-O-Tex or approved equal.
  - b. Surface: Slip-resistant surface.
4. Auxiliary Materials:
- a. Wall Base: (Rubber) wall base (4) & (6) inch height, (1/8) inch thick Johnsonite cove base.
  - b. Resilient stair treads, risers and skirtings: Rubber.
  - c. Metal and rubber edge strips and terminations.

#### SECTION 09680 - CARPET

##### A. APPLICATION

- 1. Carpet and floor preparation.
- 2. Carpet tile and floor preparation.

##### B. QUALITY ASSURANCE

- 1. Performance: Fire performance meeting requirements of building code and local authorities.

##### C. PRODUCTS

- 1. Carpet Materials:
  - a. Carpet Material: Interface modular carpet tile, or equal with 4-inch rubber base. C&A (Collins & Aikman – now Tandus) is also an acceptable manufacturer.
  - b. Broadloom product may be used in office spaces only upon HMC approval.

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2. Auxiliary Materials:
    - a. Edge guards.
    - b. Adhesives, cements and fasteners.
  3. Carpet Installation Method: Direct glue down, RS adhesive, installation.

## SECTION 09900 - PAINTING

### A. APPLICATION

1. Painting and surface preparation for interior unfinished surfaces as scheduled.
2. Painting and surface preparation for exterior unfinished surfaces as scheduled.
3. Field-painting and surface preparation of exposed mechanical and electrical piping, conduit, ductwork and equipment.
4. Repainting and surface preparation in areas of remodeling.
5. The use of low odor paints is to be observed in all patient care areas that are fully or partially occupied during construction.

### B. QUALITY ASSURANCE

1. Regulations: Compliance with VOC and environmental regulations.

### C. PRODUCTS

1. First-line commercial-quality products for all coating systems as manufactured by Duron. All exceptions must have prior HMC approval.

### D. INTERIOR PAINT SCHEDULE

1. Concrete and masonry (except concrete masonry units) to receive semigloss enamel finish: 1 coat latex-based primer, one or more coats latex paint finish coats.
2. Concrete masonry units to receive semigloss latex finish: 1 coat high-performance latex block filler, 1 coat interior enamel undercoat, 1 or more coats interior low sheen latex enamel or one part acrylic enamel paint pre-catalyzed epoxy.
3. Mineral-fiber-reinforced cement panels to receive lusterless emulsion finish: 2 coats latex-based interior low sheen paint.

4. Gypsum drywall to receive lusterless emulsion finish (ceilings): 1 coat latex-based interior primer, 1 or more coat latex-based interior low sheen paint.
5. Gypsum drywall to receive low sheen latex finish (toilet room and service area walls): 1 coat interior latex-based primer, 1 or more coats interior low sheen odorless latex paint.
6. Gypsum drywall to receive primer only (at areas to receive wallcovering): 1 coat interior latex-based primer.
7. Gypsum drywall to receive eggshell latex finish (general wall finish): 1 coat interior latex-based primer, 1 or more coats interior eggshell odorless latex paint.
8. Woodwork and hardboard to receive semigloss enamel finish: 1 coat interior enamel undercoat, 2 coats interior semigloss latex paint.
9. Ferrous metal to receive semigloss enamel finish: 1 coat synthetic rust-inhibiting primer, 1 coat interior enamel undercoat, 1 coat interior semigloss direct to metal (DTM) coating.
10. Zinc coated metal to receive semigloss finish: 1 coat galvanized metal primer, 1 coat interior enamel undercoat, 1 coat interior semigloss direct to metal (DTM) coating..
11. Decorative wall coatings are to be limited to public areas not including public corridors. The application of decorative coatings shall be restricted to 36-inches above finish floor.

#### SECTION 09950 - WALL COVERINGS

##### A. APPLICATION

1. Wall coverings and surface preparation.

##### B. QUALITY ASSURANCE

1. Performance: Fire performance meeting requirements of building code and local authorities.

##### C. PRODUCTS

1. Vinyl Wall Covering:
  - a. Type: FS CCC-W-408A, Type II medium duty & Type III heavy duty wall covering.

- b. Stain Resistance: Factory applied polyvinyl fluoride or polymer coating.
- c. Weight: 15 oz. minimum.
- d. Adhesives: Use mildew proof product.
  - i. Roman Decorating Products: Ultra Plus Pro-988 Primer & Ultra Plus Pro-888 Clear Adhesive.
- e. No vinyl wall covering to be installed on the interior side of exterior walls.

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SECTION 10100 - VISUAL DISPLAY BOARDS

A. APPLICATION

1. Visual Display Boards:
  - a. Conference rooms.
  - b. Classrooms.

B. PRODUCTS

1. Markerboards:
  - a. Materials: Porcelain enamel face for liquid-type markers, core material, and backing.
  - b. Operation: Fixed.
  - c. Trim: Metal frame and tray, anodized finish.
3. Tackboards:
  - a. Material: Fabric Wrapped Natural cork.
  - b. Operation: Fixed.
  - c. Trim: Metal frame and tray, anodized finish.

SECTION 10155 - TOILET COMPARTMENTS

A. APPLICATION

1. Toilet compartments and screens.

B. PRODUCTS

1. Type and Mounting:
  - a. Compartments: Ceiling-hung.
  - b. Screens: Ceiling-hung.
  - c. Style: Standard privacy style.
2. Toilet Compartment Materials:
  - a. Phenolic Toilet Compartments with integral Finish. No metal partitions to be used.

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SECTION 10265 – IMPACT-RESISTANT WALL PROTECTION

A. APPLICATION

1. Vinyl wall protection.
2. Stainless steel wall protection

B. PRODUCTS

1. Vinyl: as manufactured by I.P.C. or approved equal
  - a. Corridor applications: 8-inch handrail mounted at 34-inches above finish floor and 8-inch crash rail mounted 4-inches above base.
  - b. Corner Guards: Full height surface mounted for all exposed corners in public and service corridors and spaces.
  - c. 4-foot Sheet wall protection for all service corridors. Use .060 thickness material.
2. Stainless Steel: #4 directional finish
  - a. Corner Guards – receiving areas and clinical procedure areas
  - b. Edge protection for doors - receiving areas and clinical procedure areas

SECTION 10270 - ACCESS FLOORING

A. APPLICATION

1. Raised Access Flooring:
  - a. Computer rooms.
  - b. Clean rooms.

B. QUALITY ASSURANCE

1. Performance: Ceiling and Interior Systems Construction Association, Recommended Test Procedures for Access Floors.

C. PRODUCTS

1. Access Flooring Assemblies and Materials:
  - a. Type: Gravity-held panels, understructure with bolted stringers.

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- b. Die-Cast Aluminum Panels: Corrosion resistant aluminum-alloy die cast panels.
  - c. Floor Panel Covering: Static conductive vinyl tile.
2. Accessories:
- a. Perforated panels.
  - b. Service outlets.
  - c. Floor grilles with dampers.
  - d. Ramps, stairs, and handrails.

## SECTION 10425 - SIGNS

### A. APPLICATION

- 1. Building Signage: Provide all directional & occupancy signage required for building occupancy permitting under PA Department of Health Life Safety and Department of Acute Care Review. Comply with HMC sign standards.
  - a. Panel signs.
  - b. Dimensional letters and numbers.
  - c. Cast plaques.

### B. PRODUCTS

- 1. Panel Signs:
  - a. Type: Framed.
  - b. Material: Aluminum.
  - c. Copy: Raised lettering.
- 2. Dimensional Letters and Numbers:
  - a. Type: Cast.
  - b. Material: Aluminum.
- 3. Metal Finishes:
  - a. Aluminum: Clear anodized.

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- b. Stainless Steel: Bright, directional polish.
  - c. Bronze: Natural satin finish.

## SECTION 10436 - EXTERIOR POST AND PANEL SIGNS

### A. APPLICATION

- 1. Internally illuminated post and panel exterior signs. Comply with HMC sign standards.

### B. PRODUCTS

- 1. Panels:
  - a. Type: Multiple message bar panels.
  - b. Copy: Subsurface.
  - c. Material: Fiberglass.
  - d. Frame: Extruded aluminum.
  - e. Construction: Multiple message bar panels, removable.
  - f. Illumination: Internal illumination.
- 2. Posts:
  - a. Material: Structural aluminum tubing, 6063-T5 alloy.
  - b. Mounting: Permanent direct-burial.
  - c. Shape: Semicircular.
- 3. Finishes:
  - a. Aluminum Finish: Baked enamel.
  - b. Galvanized Steel: Paint finish.
  - c. Fiberglass: Integral color.

## SECTION 10500 - LOCKERS

### A. APPLICATION

- 1. Metal lockers – Staff Locker Areas
- 2. Plastic Laminate Lockers – Patient Dressing Areas



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B. PRODUCTS

1. Lockers
  - a. Type: Wardrobe lockers, sheet steel, 24 gage back and sides, 16 gage top, bottom, and doors. By Vanguard or Penco Products.
  - b. Tier: Double-tier lockers.
  - c. Face: Solid with punched louvers.
  - d. Locking: Padlock type – Staff Area.
  - e. Locking: Keyed type – Patient Dressing Area.
  - e. Tops: Sloped – Staff Area.
  - f. Tops: Flat – Patient Dressing Area.
  - f. Mounting: Elevated base.
2. Accessories:
  - a. Number plates.
  - b. Locker room benches.
  - c. Filler strips.

SECTION 10522 - FIRE EXTINGUISHERS AND CABINETS

A. APPLICATION

1. Fire Extinguishers and Cabinets:
  - a. Portable fire extinguishers.
  - b. Fire extinguisher mounting brackets.
  - c. Fire extinguisher cabinets.

B. QUALITY ASSURANCE

1. Standards: UL and FM listed products.

C. PRODUCTS

1. Fire Extinguishers:
  - a. Type: Multipurpose dry chemical type.

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- b. Rating: minimum 10-lbs. capacity.
  - c. Public Area Mounting: Cabinet mounted.
  - d. Service Area Mounting: Metal brackets.
2. Cabinets:
- a. Mounting: Semi-recessed.
  - b. Trim: Exposed.
  - c. Doors: Aluminum, clear anodized finish.
  - d. Door Style: Acrylic bubble.

SECTION 10655 - ACCORDION FOLDING PARTITIONS

A. APPLICATION

- 1. Overhead track suspended accordion folding partitions with bellows sound seal foot.

B. QUALITY ASSURANCE

- 1. System Performance:
  - a. Sound Transmission Class: (44), ASTM E-413.
  - b. Noise Reduction Coefficient: (0.50), ASTM C-423.

C. PRODUCTS

- 1. Accordion Folding Partitions:
  - a. Type: Single or x-type accordion assembly.
  - b. Operation: Manual.
  - c. Track: Straight, heavy-duty aluminum or steel.
  - d. Finish: Vinyl, plastic laminate, or white board surface
- 2. Accessories:
  - a. Latches.

- b. Pendant pulls.
- c. Foot bolts.

SECTION 10800 - TOILET AND BATH ACCESSORIES

A. APPLICATION

- 1. Toilet accessories and metal framed mirrors.

B. PRODUCTS

- 1. Toilet Accessories as manufactured by Bobrick or equal.
  - a. Tri-fold Paper towel dispensers at every sink location. (Owner furnish Contractor installed)
  - b. Surface Mounted Toilet tissue dispensers, double roll. (Owner furnish Contractor installed)
  - c. Combination Tri-fold towel dispenser/semi-recessed waste receptacle units.
  - d. Stainless Steel Grab bars. (Meet loading standards for Bariatric patients)
  - e. Sanitary napkin vendors
  - f. Sanitary napkin disposal units.
  - g. Soap dispensers, wall mounted. (Owner furnish Contractor installed)
  - h. Mop and broom holders.
  - i. Robe hooks.
- 2. Mirrors and Frames:
  - a. Glazing: Mirror glass, 1/4 inch thick, ASTM C-1036.
  - b. Frames: Stainless steel.
  - c. Type: Standard wall unit.
- 3. Materials and Finishes:
  - a. Stainless Steel: AISI Type 302 or 304, No. 4 polished finish.

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SECTION 11132 - PROJECTION SCREENS

A. APPLICATION

1. Projection Screens.

B. PRODUCTS

1. Front Projection Screens:
  - a. Operation: Manual.
  - b. Mounting: Recessed mounting at ceiling.
  - c. Viewing Surface: Matte white surface.
  - d. Edge Treatment: Black masking borders.

SECTION 11452 - RESIDENTIAL APPLIANCES

A. APPLICATION

1. All residential type appliances to be supplied by HMC. Coordinate all utility and casework requirements to support HMC supplied equipment.

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SECTION 12500 - WINDOW TREATMENT

A. APPLICATION

1. Window treatment.
2. Privacy Curtains

B. PRODUCTS

1. Window Shades:
  - a. Type: Roll shades.
  - b. Shadecloth: Vinyl-coated cloth, translucent.
  - c. Accessories: Brackets and pulls.
2. Horizontal Blinds:
  - a. Horizontal blinds permitted in non-clinical spaces, public and staff spaces. Final approval by HMC.
  - b. Slats: Prefinished aluminum.
  - c. Slat Width: (1/2) inches.
  - d. Operations: Tilting and lifting mechanisms.
3. Vertical Blinds: No Vertical blinds shall be permitted
4. Drapery Tracks:
  - a. Track System: Dual-channel, ball-bearing carriers.
  - b. Material: Aluminum with anodized finish.
5. Drapery panels: Class A treated materials. Fabric to be approved HMC.
6. Blackout shades: for conference room with permanently mounted A/V equipment.

SECTION 12690 - FLOOR MATS AND FRAMES

A. APPLICATION

1. Floor mats and frames.

**B. PRODUCTS**

1. Floor Mats:
  - a. Type: Vinyl link-type mats.
  - b. Mounting: Recessed in metal frame.
2. Frame:
  - a. Material: Extruded aluminum, ASTM B-221, alloy 6063-T5.
  - b. Aluminum Finish: Clear anodized finish.

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SECTION 13091 - X-RAY AND RADIATION PROTECTION

A. APPLICATION

1. Radiation shielding for radiology and medical equipment.
2. Radiation shielding for linear accelerator.
3. EM shielding for MRI.
4. Shield design is the responsibility of the contractor, coordinate with the identified equipment vendors – submit design to HMC Physicist for review and approval.

B. QUALITY ASSURANCE

1. Hazard Report: Owner's health physicist shielding requirements for walls, ceilings, and floors.
2. Standards: National Council on Radiation Protection and Measurement, Report No. 49.

C. PRODUCTS

1. X-Ray Protection Materials:
  - a. Lead Sheet: Unpierced sheet lead, FF QQ-L-201, Grade C, thickness as required for hazard.
  - b. Lead Glass: 60 percent heavy metal oxide including 55 percent lead oxide.
  - c. Lead-Lined Gypsum Board: ASTM C-36, lead lined, 2 inch wide strips for lapping at joints.
  - d. Nails, Accessories, and Fasteners: Lead-headed.
2. MRI Protection Materials:
  - a. Steel Magnetic Shield – coordinate design with equipment manufacturer's requirements.
  - b. Copper Radio Frequency Shield - coordinate design with equipment manufacturer's requirements.
3. Linear Accelerator Protection Materials:
  - a. Maze or direct exposure design is acceptable.

- b. Mass based concrete mass shield or lead brick and concrete shield is acceptable.
4. CT Scanner, CT/PET Scanners:
- a. Lead Sheet: Unpierced sheet lead, FF QQ-L-201, Grade C, thickness as required for hazard.
  - b. Lead Glass: 60 percent heavy metal oxide including 55 percent lead oxide.
  - c. Lead-Lined Gypsum Board: ASTM C-36, lead lined, 2 inch wide strips for lapping at joints.
  - d. Nails, Accessories, and Fasteners: Lead-headed.
5. Manufactured Units:
- a. Lead-Lined Hollow Metal Doors: SDI-100, heavy duty, doors with un-pierced lead sheet lining, lockset shelf.
  - b. Lead-Lined Hollow Metal Door Frames: SDI-100, minimum 16 gage with un-pierced lead sheet lining.
  - c. Lead-Lined Wood Doors: Un-pierced lead sheet core, including locksets shield.
  - d. Control Windows: Lead glass and lead-lined steel or aluminum frame.
  - e. Lead Louvers: Lightproof lead louver with fixed maze-type blades, 30 percent free area for air circulation.
  - f. Film Transfer Cabinets: Two-compartment type, four-door film cassette transfer cabinets, lead-lined.
  - g. Designating Plaques: Plaques indicating hazard and level of protection.
  - h. Power operated shielded door rated for neutron or neutron and proton shielding.
  - i. RF/EM shielded door for MRI applications.



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SECTION 14210 - TRACTION ELEVATORS

A. APPLICATION

1. Pre-engineered geared electric traction elevators:
  - a. Hospital elevators.
  - b. Freight elevators.
  - c. Floor to be slip resistant welded sheet vinyl.
  - d. Wall treatments: Textured stainless steel.
  - e. Lighting to be low voltage down lights.
  - f. Cab handrails to be stainless steel.

B. QUALITY ASSURANCE

1. Safety Code: ASME/ANSI A17.1, local regulations and handicapped requirements.

C. PRODUCTS

1. Except where a requirement in this specification is more stringent, all elevators are to comply with the Pennsylvania State University OPP minimum standards for Division 14 Conveying Systems - Elevators.

A. The following criteria for installation of elevators on campus must be followed:

1. For all structures containing seven (7) or more floors, with a rise exceeding 60'0", use of a traction type elevator is preferred.

D. SCHEDULE

1. Hydraulic Elevator Schedule:
  - a. Capacity: 5000 pounds minimum.
  - b. Speed: (350) feet per minute.
  - c. Car Size: Refer to AIA Guidelines for Healthcare Facilities
  - d. Landings Served: (all floors.)
  - e. Travel Distance: TBD
  - f. Entrance Size: (5'-0" x 7'-0".)

- h. Entrance Door Operation: Side opening.
- i. Power Supply: 480 volt, 3 phase, 60 Hz.
- j. Cab Interiors: Textured Stainless Steel. (Plastic Laminate not permitted.)
- k. Protection pads are to be provided for all new elevators.

#### SECTION 14240 - HYDRAULIC ELEVATORS

##### A. PROJECT INCLUDES

- 1. Pre-engineered holeless hydraulic elevators:
  - a. Hospital elevators.
  - g. Freight elevators.
  - h. Floor to be slip resistant welded sheet vinyl.
  - i. Wall treatments: Textured stainless steel.
  - j. Lighting to be low voltage down lights.
  - k. Cab handrails to be stainless steel.

##### B. QUALITY ASSURANCE

- 1. Safety Code: ASME/ANSI A17.1, local regulations and handicapped requirements.

##### C. PRODUCTS

- 2. Except where a requirement in this specification is more stringent, all elevators are to comply with the Pennsylvania State University OPP minimum standards for Division 14 Conveying Systems - Elevators.

##### A. The following criteria for installation of elevators on campus must be followed:

- 1. For two (2) floor structures, with a maximum rise of 18'0", use of a holeless hydraulic is preferred. In cases where heavy use is anticipated, a traction elevator should be considered.
- 2. For three (3) to six (6) floor structures, with a maximum rise of 60'0", use of a roped hydraulic is preferred. In cases where heavy use is anticipated, a traction elevator should be considered.

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- B. In no case shall a conventional hydraulic elevator be installed. This means any installation that requires the use of in-ground oil-filled components is strictly prohibited.

D. SCHEDULE

1. Hydraulic Elevator Schedule:
- a. Capacity: 5000 pounds minimum.
  - b. Speed: (150) feet per minute.
  - c. Car Size: Refer to AIA Guidelines for Healthcare Facilities
  - d. Landings Served: (all floors.)
  - e. Travel Distance: TBD
  - f. Entrance Size: (5'-0" x 7'-0".)
  - h. Entrance Door Operation: Side opening.
  - l. Power Supply: 480 volt, 3 phase, 60 Hz.
  - m. Cab Interiors: Textured Stainless Steel. (Plastic Laminate shall not be permitted.)
  - n. Protection pads shall be provided for all new elevators.