

PENNSTATE



Milton S. Hershey Medical Center  
College of Medicine

# **Architectural Design & Construction Standards For New Construction & Renovation Work**

## **HMC-COM Building Project Number HMC-1216**

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1. [PSU Access Enhancements](#)
2. [Green Guide For Healthcare](#)
3. [BSCN](#)

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.

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

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.

**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.

SECTION 04200 - UNIT MASONRY

A. PROJECT INCLUDES

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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at:

[http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

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.
  - 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.
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.

SECTION 04230 - REINFORCED UNIT MASONRY

A. PROJECT INCLUDES

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. PROJECT INCLUDES

- 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.



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 STONEWORK

##### A. PROJECT INCLUDES

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. PROJECT INCLUDES**

- 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. PROJECT INCLUDES

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.

- 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. PROJECT INCLUDES

- 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. PROJECT INCLUDES

###### 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. PROJECT INCLUDES**

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.
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. PROJECT INCLUDES

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.

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- 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. PROJECT INCLUDES

- 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.
  - 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. PROJECT INCLUDES

- 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.
  - b. Welding Electrodes and Filler Metal: AWS specifications.
  - c. Fasteners, Anchors, and Inserts: Noncorrosive.

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- 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. PROJECT INCLUDES

- 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.
  - g. Finish: Fluoropolymer, Kynar 500.
- 2. Steel and Iron:
  - h. Steel Tubing: ASTM A-500 or A-501.

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- 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. PROJECT INCLUDES**

- 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.
- 2. Wood Components:
  - a. Type: Hardwood bonded to subrail.
  - b. Finish: Transparent.
- 3. Auxiliary Materials:
  - a. Nonshrink Nonmetallic Grout: CE CRD-C621.

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- 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 Prier: FS TT-P-645.

**SECTION 05810 - EXPANSION JOINT COVER ASSEMBLIES**

**A. PROJECT INCLUDES**

- 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:
  - 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:

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- 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. PROJECT INCLUDES:

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. PROJECT INCLUDES

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. PROJECT INCLUDES

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:
  - 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.

SECTION 07110 - SHEET MEMBRANE WATERPROOFING

A. PROJECT INCLUDES

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. PROJECT INCLUDES

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.

SECTION 07160 - BITUMINOUS DAMPPROOFING

A. PROJECT INCLUDES

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. PROJECT INCLUDES

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.

SECTION 07210 - BUILDING INSULATION

A. PROJECT INCLUDES

- 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.
- 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. PROJECT INCLUDES

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

#### SECTION 07250 - FIREPROOFING

##### A. PROJECT INCLUDES

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.

- c. Sealer for Mineral-Fiber Fireproofing: Clear-drying protective coating for nondusting applications.
- 2. Exposed Sprayed-On Fireproofing:
  - d. Type: High density cementitious fireproofing, cement-aggregate or mineral-fiber formulation.
  - e. Auxiliary Materials: Primers, adhesive, lath, and reinforcing fabric.
  - f. 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. PROJECT INCLUDES

- 1. Cold applied built-up asphalt roofing system and roof insulation.
- 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.
  - a. Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

##### 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.
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.

SECTION 07530 - SINGLE PLY MEMBRANE ROOFING

A. PROJECT INCLUDES

1. No single ply membrane roofing is permitted.

SECTION 07600 - FLASHING AND SHEET METAL

A. PROJECT INCLUDES

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.
  - 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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

## 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.

**SECTION 07700 - ROOF SPECIALTIES AND ACCESSORIES**

**A. PROJECT INCLUDES**

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. PROJECT INCLUDES**

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.
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. PROJECT INCLUDES

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. PROJECT INCLUDES

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.
- 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.

SECTION 08111 - STEEL DOORS AND FRAMES

A. PROJECT INCLUDES

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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

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.

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. PROJECT INCLUDES

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.

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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 physicist.

**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. PROJECT INCLUDES**

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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

**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 application.)
  - 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.
- d. Fixed side panels.

SECTION 08305 - ACCESS DOORS

A. PROJECT INCLUDES

- 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. PROJECT INCLUDES

- 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.

- 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

PART 1 - GENERAL

1.1 SECTION INCLUDES:

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

1.2 DEFINITION / METHOD OF OPERATION:

- A. ICU door system shall provide room access without a floor track.
  - 1. Under normal operating conditions, hospital personnel shall have access by way of sliding door.
  - 2. 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.
  - 3. Doors and swing panels in full breakaway position shall double the normal entrance opening.

4. Reset procedures shall occur in reverse order.

### 1.3 QUALITY ASSURANCE:

- A. 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.

### 1.4 WARRANTY:

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

## PART 2 - PRODUCTS

### 2.1 PRODUCT / MANUFACTURER:

- A. As manufactured by Horton.
- B. Components:
  1. Aluminum doors, swing panels, frame assembly.
  2. No floor track.
  3. Support rollers and guide piston.
  4. 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. PROJECT INCLUDES

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.

**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. PROJECT INCLUDES**

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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at:

[http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm))

**B. PRODUCTS**

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. PROJECT INCLUDES**

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.
  - e. Glass Color: Transparent.
  - f. Door Fittings: Aluminum, ASTM B-221, alloy 6063 T5.
  - 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. PROJECT INCLUDES

- 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. PROJECT INCLUDES**

- 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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at [http://www.opp.psu.edu/std/std.htm#design\\_standards](http://www.opp.psu.edu/std/std.htm#design_standards) )

**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:
- a. Ventilator opening limit device.
  - b. Operating hardware.
  - c. Insect screening.
  - d. Nonglazed vent bar.

#### SECTION 08710 - DOOR HARDWARE

##### A. PROJECT INCLUDES

- 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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm))

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

#### SECTION 08800 - GLASS AND GLAZING

##### A. PROJECT INCLUDES

- 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.

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##### 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:
  - 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: 1/4-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.
- 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. PROJECT INCLUDES

- 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.
  - 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. PROJECT INCLUDES**

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 -

All interior finishes shall be comprised of Class A fire rated material. Material submittals shall clearly illustrate compliance with this requirement. In no case will a lower fire class rating be approved by the professional or the owner.

**DIVISION 9 – ROOM FINISHES**

**A. OUTLINE ROOM FINISH SCHEDULE – all finishes are subject to approval of HMC facilities and user groups.**

**1. Exam Rooms:**

- a. Partitions: Paint with accent wall
- b. Floor: VCT, vinyl or linoleum sheet goods
- c. Floor Base: Rubber/vinyl
- d. Ceiling: ACT & Grid
- e. Window Sills: Solid surface material. Color to be approved by HMC.

**2. Waiting Rooms:**

- a. Partitions: Vinyl wall covering
- b. Floor: Carpet
- c. Floor Base: Rubber/vinyl
- d. Ceiling: Gypsum Board Bulkheads & ACT/Grid
- e. Window Sills: Solid surface material. Color to be approved by HMC.

**3. Offices:**

- a. Partitions: Paint with accent wall
- b. Floor: Carpet
- c. Floor Base: Rubber/vinyl
- d. Ceiling: ACT & Grid
- e. Window Sills: Solid surface material. Color to be approved by HMC.

**4. Public Corridors:**

- a. Partitions: Paint
- b. Floor: VCT, vinyl or linoleum sheet goods
- c. Floor Base: Rubber/vinyl

- d. Ceiling: Gypsum board bulkheads at crossing doors & corridors & ACT/Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
  - f. Ramping floors to use a slip resistant hard surface tile product.
5. Staff Corridors:
- a. Partitions: Paint
  - b. Floor: VCT, vinyl or linoleum sheet goods
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: ACT & Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
  - f. Ramping floors to use a slip resistant hard surface tile product.
6. Primary Public Lobbies/Entrances:
- a. Partitions: Vinyl Wall Cover & Paint
  - b. Floor: Stone Tile/Porcelain
  - c. Floor Base: Stone/Porcelain
  - d. Ceiling: Gypsum Board Bulkheads & ACT/Grid
  - e. Window Sills: Stone or Wood. Coordinate with room material selections.
7. Secondary Public Lobbies:
- a. Partitions: Vinyl Wall Cover & Paint
  - b. Floor: Stone Tile/Porcelain
  - c. Floor Base: Stone/Porcelain
  - d. Ceiling: Gypsum Board Bulkheads & ACT/Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
8. Operating Rooms & Procedure Rooms:

- a. Partitions: Epoxy Paint & Vinyl Wall Covering
  - b. Floor: Sheet vinyl
  - c. Floor Base: Integral
  - d. Ceiling: Gypsum Board Bulkheads & ACT/Grid (Scrubbable)
9. Procedure Support Areas:
- a. Partitions: Paint
  - b. Floor: Sheet vinyl/Linoleum
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: ACT & Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
10. MEP Support Spaces:
- a. Partitions: Epoxy Paint
  - b. Floor: Elastomeric – Return over all mechanical curbs
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: No Ceilings
11. Conference Rooms:
- a. Partitions: Vinyl wall cover or paint
  - b. Floor: Carpet
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: Gypsum Board Bulkheads & ACT/Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
12. Toilet Rooms:
- a. Partitions: Epoxy paint & ceramic tile
  - b. Floor: Ceramic tile
  - c. Floor Base: Cove

- d. Ceiling: Gypsum board
13. Staff Lounge:
- a. Partitions: Paint & vinyl wall cover
  - b. Floor: Carpet & vct
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: ACT & Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
14. Education & Training Areas:
- a. Partitions: Paint & vinyl wall cover
  - b. Floor: Carpet
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: ACT & Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
15. Therapy Spaces:
- a. Partitions: Paint
  - b. Floor: Sheet vinyl/Linoleum
  - c. Floor Base: Rubber/vinyl
  - d. Ceiling: ACT & Grid
  - e. Window Sills: Solid surface material. Color to be approved by HMC.
16. Inpatient Rooms:
- a. Partitions: Duron Paints – General paint (Aria Ivory #8680), Trim (Stucco Greige 8693M), Accent (Autumn Evening #8474M), Accent (Bayou Waters #8593M), Accent (Cupola Yello #7743M), Accent (Desert Edge #7824M), Accent (Dewy Twig #7681W).

- b. Floor: Armstrong “Timberline” with heat welded seams. Color #33004 Medium Oak.
- c. Floor Base: Johnsonite 4-inch Tightlock base. Color #31 Zephyr.
- f. Window Sills: Solid surface material. Corian Color “Midnight”.
- g. Wall Protection: Acrovyn 0.040 Thickness pebble texture. Color Oyster Gray.

17. Patient Room Bathrooms:

- a. Walls: Ceramic tile on cement backer board
- b. Floor: Ceramic tile with cove base
- c. Shower: Terrazzo shower base with solid surface wall panels or ceramic tile. Finish materials to be installed on cement backer board.
- d. Ceiling: Epoxy paint gypsum board.

18. Laboratory Spaces:

- a. Partitions: Epoxy Paint
- b. Floor: Sheet vinyl – Meditech product with welded seams.
- c. Floor Base: 4-inch welded integral base.
- d. Ceiling: ACT& Grid.

**B. PROGRAM REQUIREMENTS:**

The preceding space 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 2001 Edition of the AIA Guidelines for Design and Construction of Hospital and 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.

Handicap accessibility standards should comply with International Building Code, Americans with Disabilities Standards, and the PSU Access Enhancements (See Attachment)

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. (See Attachment)

SECTION 09250 - GYPSUM WALLBOARD

A. PROJECT INCLUDES

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 at service corridors and receiving area.
  - 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.
2. Gypsum Wallboard Attachment:
  - a. Gypsum board screw-attached to steel framing and furring.
  - b. Gypsum board nail-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.
3. Except where a requirement in this specification is more stringent, all gypsum board assemblies are to comply with the Pennsylvania State University OPP minimum standards for Division 9 Finishes.



Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

**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: 1/2-inch DensArmor as manufactured by Georgia Pacific or approved equal.
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. 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. PROJECT INCLUDES

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:
  - c. Steel Framing: ASTM C-645.
  - d. Gypsum Shaftwall Board: ASTM C-442, Type X.
  - e. Gypsum Wallboard: ASTM C-36, Type X.
  - f. Water-Resistant Gypsum Backing Board: ASTM C-630, Type X.
  - g. Gypsum Wallboard Joint Treatment Materials: ASTM C-475 and ASTM C-840.
3. Auxiliary Materials:
  - h. Cornerbeads, edge trim, and control joints.
  - i. Laminating adhesive
  - j. Gypsum board screws, ASTM C-1002.
  - k. Concealed acoustical sealant.
  - l. Mineral fiber sound attenuation blankets.

**SECTION 09300 - TILE**

**A. PROJECT INCLUDES**

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.
2. Except where a requirement in this specification is more stringent, all tile installations are to comply with the Pennsylvania State University OPP minimum standards for Division 9 Finishes.

Pennsylvania State University's Office of Physical Plant Standards

(Available at [http://www.opp.psu.edu/stnd/stnd.htm#design\\_standards](http://www.opp.psu.edu/stnd/stnd.htm#design_standards) )

**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 cove base of 2 x 2 tiles.
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 cove base of 2 x 2 tiles.
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.

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.
  
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
  - 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 pregouted 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. PROJECT INCLUDES

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

##### 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 by 24.
- 2. Tegular Lay-in acoustic ceiling:
  - a. Armstrong natural fissure panel type #507A
  - b. 15/16-inch PRELUDE XL by Armstrong.
  - c. Edge Detail: recessed edge.
  - c. Size: 24 by 24.

SECTION 09521 - ACOUSTICAL WALL PANELS

A. PROJECT INCLUDES

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

SECTION 09650 - RESILIENT FLOORING

A. PROJECT INCLUDES

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 2mm sheet or 24-inch 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.
  - b. Linoleum with Jute Backing: FS LLL-F-1238A, (0.80) (1/10) (1/8) inch thick.
  - c. Wood look sheet vinyl flooring: TIMBERLINE by Armstrong Industries.
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) (0.80) inch thick.
- b. Resilient Stair Treads, Risers and Skirtings: Rubber accessories.
- c. Metal and rubber Edge strips and terminations.

#### SECTION 09680 - CARPET

##### A. PROJECT INCLUDES

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, Entropy or equal with 4-inch rubber base. C&A is also an acceptable manufacturer.
  - b. Provide attic stock in the amount of 3% of the total installed square footage.
  - c. No carpet in clinical areas or public/staff corridors.
  - d. Broadloom product may be used in offices only.
2. Auxiliary Materials:
  - a. Edge guards.
  - b. Adhesives, cements and fasteners.
3. Carpet Installation Method: Direct glue down installation.

#### SECTION 09830 - ELASTOMERIC COATINGS

##### A. PROJECT INCLUDES

1. Elastomeric coatings and surface preparation for all mechanical room spaces.

##### B. QUALITY ASSURANCE

1. Regulations: Compliance with VOC and environmental regulations.

C. PRODUCTS

1. As manufactured by Dex-O-Tex.

D. ELASTOMERIC COATING SCHEDULE

1. Concrete: 1 coat primer, 2 coats acrylic elastomeric coating; total dry film thickness not less than 20 mils.

SECTION 09900 - PAINTING

A. PROJECT INCLUDES

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 at 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.
6. Except where a requirement in this specification is more stringent, all Paint installations are to comply with the Pennsylvania State University OPP minimum standards for Division 9 Finishes.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

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.

D. INTERIOR PAINT SCHEDULE

1. Concrete and Masonry (Except Concrete Masonry Units) to Receive Semigloss Enamel Finish: 1 coat latex-based interior flat paint, 1 coat

- interior enamel undercoat, 1 coat interior semigloss odorless alkyd enamel.
2. Concrete Masonry Units to Receive Semigloss Alkyd Enamel Finish: 1 coat high-performance latex block filler, 1 coat interior enamel undercoat, 1 coat interior semigloss odorless alkyd enamel.
  3. Mineral-Fiber-Reinforced Cement Panels to Receive Lusterless Emulsion Finish: 2 coats latex-based interior flat paint.
  4. Gypsum Drywall to Receive Lusterless Emulsion Finish (Ceilings): 1 coat latex-based interior primer, 1 coat latex-based interior flat paint.
  5. Gypsum Drywall to Receive Semigloss Alkyd Enamel Finish (Toilet Room and Service area Walls): 1 coat interior latex-based primer, 2 coats interior semigloss odorless alkyd enamel.
  6. Gypsum Drywall to Receive Primer Only (At Areas to Receive Wallcovering): 1 coat interior latex-based primer.
  7. Gypsum Drywall to Receive eggshell Alkyd Enamel Finish (general wall finish): 1 coat interior latex-based primer, 2 coats interior eggshell odorless alkyd enamel.
  8. Woodwork and Hardboard to Receive Semigloss Enamel Finish: 1 coat interior enamel undercoat, 2 coats interior semigloss odorless alkyd enamel.
  9. Ferrous Metal to Receive Semigloss Enamel Finish: 1 coat synthetic rust-inhibiting primer, 1 coat interior enamel undercoat, 1 coat interior semigloss odorless alkyd enamel.
  10. Zinc Coated Metal to Receive Semigloss Finish: 1 coat galvanized metal primer, 1 coat interior enamel undercoat, 1 coat interior semigloss odorless alkyd enamel.
  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 and above.

#### SECTION 09950 - WALL COVERINGS

##### A. PROJECT INCLUDES

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.

SECTION 10100 - VISUAL DISPLAY BOARDS

A. PROJECT INCLUDES

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. PROJECT INCLUDES

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.

SECTION 10265 – IMPACT-RESISTANT WALL PROTECTION

A. PROJECT INCLUDES

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. PROJECT INCLUDES

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.

- 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 10416 - DIRECTORIES

##### A. PROJECT INCLUDES

- 1. Directories: Provided by HMC

##### B. PRODUCTS

- 1. Directories
  - a. Type: Non-illuminated.
  - b. Frame: Reveal-type frame and cover design.
  - c. Glazing: Clear glass.
  - d. Message Strips: Silkscreened message strips.

#### SECTION 10425 - SIGNS

##### A. PROJECT INCLUDES

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

**SECTION 10436 - EXTERIOR POST AND PANEL SIGNS**

**A. PROJECT INCLUDES**

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 - METAL LOCKERS

##### A. PROJECT INCLUDES

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

##### 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. PROJECT INCLUDES

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.
  - 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. PROJECT INCLUDES**

- 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.

END OF SECTION

SECTION 10750 - TELEPHONE SPECIALTIES

A. PROJECT INCLUDES

- 1. Telephone specialties.

B. PRODUCTS

- 1. Telephone Enclosures:
  - a. Interior Type: Wall-mounted, panel-style telephone enclosures.
  - b. Telephones: Panel-type, coin operated.
- 2. Materials:
  - a. Stainless Steel: ASTM A-167, AISI Type 302 or 304.
- 3. Finishes:
  - a. Stainless Steel: No. 4 directional polish.

SECTION 10800 - TOILET AND BATH ACCESSORIES

A. PROJECT INCLUDES

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.

SECTION 11132 - PROJECTION SCREENS

- A. PROJECT INCLUDES
  - 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. PROJECT INCLUDES
  - 1. All residential type appliances to be supplied by HMC. Coordinate all utility and casework requirements to support HMC supplied equipment.
- B. PRODUCTS
  - 1. Kitchen Appliances:
    - a. Refrigerator/freezers.
    - b. Freezers.
    - c. Microwave ovens.

SECTION 12500 - WINDOW TREATMENT

A. PROJECT INCLUDES

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 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. PROJECT INCLUDES

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.

SECTION 13091 - X-RAY AND RADIATION PROTECTION

A. PROJECT INCLUDES

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 manufactures 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.

SECTION 14210 - TRACTION ELEVATORS

A. PROJECT INCLUDES

1. Pre-engineered geared electric traction elevators:
  - a. Hospital elevators.
  - b. Freight elevators.
  - c. Floor to be slip resistant welded sheet vinyl. Polysafe "Vogue" color to be Woodland Grey #4770
  - 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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

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.)

**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. Polysafe "Vogue" color to be Woodland Grey #4770
  - 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.

Pennsylvania State University's Office of Physical Plant Standards

(Available at: [http://www.opp.psu.edu/construction/standards/design\\_standards.cfm](http://www.opp.psu.edu/construction/standards/design_standards.cfm) )

- 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.
  
- 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.
    - k. Power Supply: 480 volt, 3 phase, 60 Hz.
    - l. Cab Interiors: Textured Stainless Steel. (Plastic Laminate not permitted.)
    - m. Protection pads are to be provided for all new elevators.

PENNSSTATE



# **PSU Access Enhancements**

**for the Design and Construction Manual  
Americans with Disabilities Act (ADA) related**

**Compiled by the Office of Physical Plant  
ADA Steering Committee (OPPADASC)**

**January 2003**

**DRAFT**

January 10 2003

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## **FORWARD**

The Pennsylvania State University (PSU) is dedicated to ensuring accessibility to programs, services and activities in accordance with the Americans with Disabilities Act, Title II. The Americans with Disabilities Act Associated Guidelines (ADAAG) and the PSU Access Enhancements manual are followed to provide access to programs, services and activities.

The PSU Access Enhancements were developed to meet the needs of disabled students, faculty and staff and comply with ADAAG. The PSU Access Enhancements are a compilation of experiences by challenged students, community groups and legal advice to the University Access Committee (UAC). For this reason, the PSU Access Enhancements set a standard beyond the minimum requirements of the ADAAG.

This manual is periodically updated to reflect the University's community needs. Check the web site <http://www.opp.psu.edu/construction/standards/index.cfm> "design standards" or contact the PSU project manager.

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# GENERAL

## **Curb Cuts or Curb Ramps mean the same**

- Offset the curb cuts from the major pedestrian flow. This curb placement allows the sight impaired to detect a curb drop off with a cane or Seeing Eye dog, so people will not wander into intersections.
- All curb ramp surfaces shall have a tactile warning system consisting of truncated domes, the full width and length of the curb ramp surface, which shall contrast visually with adjoining surfaces.
- Maintain curb ramp slope of 1:12 (8.33%) slope; curb wings slope of 1:10 (10%). If there is not enough room at the top of the curb ramp for a wheelchair to make a turn (48 inches min.) then the side flares shall have a slope of 1:12 (8.33%).

## **Parking lots (New Construction)**

- ADA parking spaces shall have an accessible pathway exiting the front of the lay down space, so as not to discharge people into vehicular traffic.
- Illustration of typical ADA parking sign (60" to top of sign on an approved metal pole). See PSU Signage manual.

## **Interior Signage**

- Permanent interior signage to be installed with top edge of sign at 61" above finished floor (A.F.F.) and 3" from the door trim on the latch side. See PSU Signage Manual.

## **Restrooms (building common areas)**

- Double roll toilet tissue dispenser in the accessible stall shall be installed with bottom edge 12" above grab bar.
- Install automatic flush controls on the water closet and urinals.
- Install self-closing valves on accessible rest room sinks.
- Accessible stalls shall have self-closing doors and a door latch that is ADA approved.
- Install shelf in accessible stall where possible. Shelf installation at maximum 48" A.F.F. if applicable (in stall arrangement).
- Mounting heights of all accessible controls and operating mechanisms shall be a maximum 48" A.F.F. with sufficient clear floor space.
- Install power assist door openers where there is no minimum 18" side clearance at restroom door.

## **Counters**

- All counters where goods, services or information is distributed shall have a section with a maximum counter height of 28-34" A.F.F., minimum 36" width and minimum 24" depth, with a vertical clearance of 27" for knee space.

## **Automatic Door Openers (ADO)**

- The accessible main entrance on each grade level shall have automatic door openers. Install the push button door opener 32" on center A.F.F. These push buttons should be installed in line with the door being opened.
- A standard sign available at the University Park Campus OPP sign shop shall identify automatic doors. Standard adhesive backed sign shall be installed on the power assist door surface at 53" on



center A.F.F., 5” from door hinge side. (Note: this sticker placement might be door specific and should be verified by OPP)

### **ADO Push Button Heights/Proximity Card Readers and Bollard Locations**

- Push buttons for automatic doors should be 5’-0” from the door frame to allow sufficient clear floor space to open the door. The push button operator shall be 32” O.C. A.F.F. If a proximity card reader is needed, it shall be 27” O.C. A.F.F. If the site has a bollard with both a push button and a proximity card reader, the height is 34” O.C. for push buttons instead of the standard 32” O.C.

### **Clearance at Latched Doors**

- Clearance on the pull side of an interior door with a latch only, shall be 12” minimum. The clear approach space in front of the interior door shall be 48” x 48” minimum.

### **Traffic Pole Push Buttons**

- Pedestrian signal buttons shall have a 2” diameter and be mounted 32” O.C. above the finished surface. There shall be a 60” diameter, firm, stable, clear surface next to the pedestrian button location.

### **Vending & Dispenser Operable parts**

- When new vending and dispenser equipment is installed the highest operable part, shall be 48” maximum and 15” minimum above the finished surface, either for a front or side approach.

### **Emergency Shower & Eye Wash Stations**

- Where eye wash stations are located, an accessible station is needed. If only one station is provided, it shall be accessible along an accessible route and located in close proximity to the other eye wash stations.

### **Emergency Phone Stations (Code Blue)**

- Where emergency phone stations are provided, they shall be approachable and usable by physically challenged people.

The following Appendix illustrates the above-developed guidelines. These are general guidelines and site conditions may vary. Contact the PSU project manager with design layout questions. For your convenience the PSU Access Enhancements are on the web at

<http://www.opp.psu.edu/construction/standards/index.cfm> “design standards”.

## **APPENDIX**

Zip file of all drawings – PDF

<http://www.opp.psu.edu/construction/standards/ADA/PDF-access-manual.zip>

# Construction

**Y** - (yes) you are moderately confident that you can attain the credit.  
**?** - (maybe) it will be challenging for this project and you are uncertain of your ability to attain it but you will try.  
**N** - (no) while technically possible, you currently don't expect to try to achieve this credit in this project due to cost or other tradeoffs with project goals.  
**NA** - (not applicable) it is inherently physically unattainable for this particular project regardless of effort due to physical conditions or project scope.

Note: an Excel spreadsheet of this checklist is available for download at [www.gghc.org](http://www.gghc.org)

## Integrated Design

Y	Prereq 1	Integrated Design Process	Required
Y	Prereq 2	Environmental Health Mission Statement & Program	Required

## Sustainable Sites

**18 Points**

Y	Prereq 1	Erosion & Sedimentation Control	Required
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Y	?	N	NA	Credit 1	1
Y	?	N	NA	Credit 2	1
Y	?	N	NA	Credit 3.1	1
Y	?	N	NA	Credit 3.2	1
Y	?	N	NA	Credit 4.1	1
Y	?	N	NA	Credit 4.2	1
Y	?	N	NA	Credit 4.3	1
Y	?	N	NA	Credit 4.4	1
Y	?	N	NA	Credit 5.1	1
Y	?	N	NA	Credit 5.2	1
Y	?	N	NA	Credit 6.1	1
Y	?	N	NA	Credit 6.2	1
Y	?	N	NA	Credit 7.1	1
Y	?	N	NA	Credit 7.2	1
Y	?	N	NA	Credit 8	1
Y	?	N	NA	Credit 9	1
Y	?	N	NA	Credit 10.1	1
Y	?	N	NA	Credit 10.2	1

## Water Efficiency

**7 Points**

Y	Prereq 1	Potable Water Use for Equipment Cooling	Required
---	----------	---	----------

Y	?	N	NA	Credit 1.1	1
Y	?	N	NA	Credit 1.2	1
Y	?	N	NA	Credit 2	1
Y	?	N	NA	Credit 3.1	1
Y	?	N	NA	Credit 3.2	1
Y	?	N	NA	Credit 4.1	1
Y	?	N	NA	Credit 4.2	1

## Energy &amp; Atmosphere

19 Points

Y	Prereq 1	Fundamental Building Systems Commissioning	Required
Y	Prereq 2	Minimum Energy Performance	Required
Y	Prereq 3	CFC Reduction in HVAC&R Equipment	Required

Y	?	N	NA	Credit 1.1	Optimize Energy Performance: 5%	1
Y	?	N	NA	Credit 1.2	Optimize Energy Performance: 10%	1
Y	?	N	NA	Credit 1.3	Optimize Energy Performance: 15%	1
Y	?	N	NA	Credit 1.4	Optimize Energy Performance: 20%	1
Y	?	N	NA	Credit 1.5	Optimize Energy Performance: 25%	1
Y	?	N	NA	Credit 1.6	Optimize Energy Performance: 30%	1
Y	?	N	NA	Credit 1.7	Optimize Energy Performance: 35%	1
Y	?	N	NA	Credit 1.8	Optimize Energy Performance: 40%	1
Y	?	N	NA	Credit 2.1	Renewable Energy: 1%	1
Y	?	N	NA	Credit 2.2	Renewable Energy: 2%	1
Y	?	N	NA	Credit 2.3	Renewable Energy: 5%	1
Y	?	N	NA	Credit 3	Additional Commissioning	1
Y	?	N	NA	Credit 4	Refrigerant Selection	1
Y	?	N	NA	Credit 5	Measurement & Verification	1
Y	?	N	NA	Credit 6.1	Energy Supply Efficiency: 10%	1
Y	?	N	NA	Credit 6.2	Energy Supply Efficiency: 15%	1
Y	?	N	NA	Credit 6.3	Energy Supply Efficiency: 17%	1
Y	?	N	NA	Credit 6.4	Energy Supply Efficiency: 18%	1
Y	?	N	NA	Credit 7	Medical Equipment Efficiency	1

## Materials &amp; Resources

24 Points

Y	Prereq 1	Storage & Collection of Recyclables	Required
Y	Prereq 2	Mercury Elimination	Required

Y	?	N	NA	Credit 1.1	Building Reuse: Maintain 40% of Existing Walls, Floors & Roof	1
Y	?	N	NA	Credit 1.2	Building Reuse: Maintain 80% of Existing Walls, Floors & Roof	1
Y	?	N	NA	Credit 1.3	Building Reuse: Maintain 50% of Interior Non-Structural Elements	1
Y	?	N	NA	Credit 2.1	Construction Waste Management: Divert 50% from Landfill & Incineration	1
Y	?	N	NA	Credit 2.2	Construction Waste Management: Divert 75% from Landfill & Incineration	1
Y	?	N	NA	Credit 2.3	Construction Practices: Site & Materials Management	1
Y	?	N	NA	Credit 2.4	Construction Practices: Utility & Emissions Control	1
Y	?	N	NA	Credit 3.1	Resource Reuse 5%	1
Y	?	N	NA	Credit 3.2	Resource Reuse 10%	1
Y	?	N	NA	Credit 4.1	Recycled Content: 10%	1
Y	?	N	NA	Credit 4.2	Recycled Content: 20%	1
Y	?	N	NA	Credit 5.1	Regional Materials: 10%	1
Y	?	N	NA	Credit 5.2	Regional Materials: 20%	1
Y	?	N	NA	Credit 6	Rapidly Renewable Materials: 5%	1
Y	?	N	NA	Credit 7	Certified Wood	1
Y	?	N	NA	Credit 8.1	PBT Elimination: Dioxins	1
Y	?	N	NA	Credit 8.2	PBT Elimination: Mercury Use in Equipment	1
Y	?	N	NA	Credit 8.3	PBT Elimination: Lead & Cadmium	1

**Materials & Resources continued**

Y	?	N	NA	Credit 9.1 Furniture & Medical Furnishings: Resource Reuse	1
Y	?	N	NA	Credit 9.2 Furniture & Medical Furnishings: Materials	1
Y	?	N	NA	Credit 9.3 Furniture & Medical Furnishings: Manufacturing, Transportation & Recycling	1
Y	?	N	NA	Credit 10 Copper Reduction	1
Y	?	N	NA	Credit 11.1 Resource Use: Design for Flexibility	1
Y	?	N	NA	Credit 11.2 Resource Use: Minimize Materials	1

**Environmental Quality**

**24 Points**

Y		Prereq 1	Minimum IAQ Performance	Required
Y		Prereq 2	Asbestos Removal or Encapsulation	Required

Y	?	N	NA	Credit 1 Air Quality Monitoring	1
Y	?	N	NA	Credit 2 Increase Ventilation Effectiveness	1
Y	?	N	NA	Credit 3.1 Construction IAQ Management Plan: During Construction	1
Y	?	N	NA	Credit 3.2 Construction IAQ Management Plan: Before Occupancy	1
Y	?	N	NA	Credit 4.1 Low-Emitting Materials: Interior Adhesives & Sealants	1
Y	?	N	NA	Credit 4.2 Low-Emitting Materials: Wall & Ceiling Finishes	1
Y	?	N	NA	Credit 4.3 Low-Emitting Materials: Flooring Systems	1
Y	?	N	NA	Credit 4.4 Low-Emitting Materials: Composite Wood & Insulation	1
Y	?	N	NA	Credit 4.5 Low-Emitting Materials: Furniture & Medical Furnishings	1
Y	?	N	NA	Credit 4.6 Low-Emitting Materials: Exterior Applied Products	1
Y	?	N	NA	Credit 5.1 Chemical & Pollutant Source Control: Outdoor	1
Y	?	N	NA	Credit 5.2 Chemical & Pollutant Source Control: Indoor	1
Y	?	N	NA	Credit 6.1 Controllability of Systems: Lighting	1
Y	?	N	NA	Credit 6.2 Controllability of Systems: Thermal & Ventilation	1
Y	?	N	NA	Credit 7 Continuous Comfort Monitoring System	1
Y	?	N	NA	Credit 8.1a Daylight & Views: Daylight for Occupied Spaces: 34-48% flr w/in 15'	1
Y	?	N	NA	Credit 8.1b Daylight & Views: Daylight for Occupied Spaces: 38-56% flr w/in 15'	1
Y	?	N	NA	Credit 8.1c Daylight & Views: Daylight for Occupied Spaces: 42-64% flr w/in 15'	1
Y	?	N	NA	Credit 8.1d Daylight & Views: Daylight for Occupied Spaces: 90% access to daylight	1
Y	?	N	NA	Credit 8.1e Daylight & Views: Daylight for Occupied Spaces: 2% DF for 75% of staff	1
Y	?	N	NA	Credit 8.2 Daylight & Views: Building Orientation	1
Y	?	N	NA	Credit 8.3 Daylight & Views: Views for Occupied Spaces	1
Y	?	N	NA	Credit 8.4 Daylight & Views: Lighting & Circadian Rhythm	1
Y	?	N	NA	Credit 9 Acoustic Environment	1

**Innovation in Design**

**4 Points**

Y	?	N	Credit 1.1 Innovation in Design:	1
Y	?	N	Credit 1.2 Innovation in Design	1
Y	?	N	Credit 1.3 Innovation in Design	1
Y	?	N	Credit 1.4 Innovation in Design	1

**Construction Project Total**

**96 Points**

# Operations

## Integrated Operations 5 Points

Y	Prereq 1	Integrated Operations & Maintenance Process	Required
Y	Prereq 2	Recertification Process	Required
Y	Prereq 3	Environmental Tobacco Smoke Control	Required
Y	Prereq 4	Outside Air Introduction & Exhaust Systems	Required

Y	?	N	NA	Credit 1.1	Building Operations & Maintenance: Staff Education	1
Y	?	N	NA	Credit 1.2	Building Operations & Maintenance: Building Systems Maintenance	1
Y	?	N	NA	Credit 1.3	Building Operations & Maintenance: Building Systems Monitoring	1
Y	?	N	NA	Credit 2.1	IAQ Management: Maintaining Indoor Air Quality	1
Y	?	N	NA	Credit 2.2	IAQ Management: Reduce Particulates in Air Distribution	1

## Transportation Operations 3 Points

Y	?	N	NA	Credit 1.1	Alternative Transportation: Public Transit Access	1
Y	?	N	NA	Credit 1.2	Alternative Transportation: Low Emitting & Fuel Efficient Vehicles	1
Y	?	N	NA	Credit 1.3	Alternative Transportation: Car Pool Programs	1

## Energy Efficiency 18 Points

Y	Prereq 1	Existing Building Commissioning	Required
Y	Prereq 2	Minimum Energy Performance	Required
Y	Prereq 3	Ozone Protection	Required

Y	?	N	NA	Credit 1.1	Optimize Energy Performance: Energy Star score of 63	1
Y	?	N	NA	Credit 1.2	Optimize Energy Performance: Energy Star score of 67	1
Y	?	N	NA	Credit 1.3	Optimize Energy Performance: Energy Star score of 71	1
Y	?	N	NA	Credit 1.4	Optimize Energy Performance: Energy Star score of 75	1
Y	?	N	NA	Credit 1.5	Optimize Energy Performance: Energy Star score of 79	1
Y	?	N	NA	Credit 1.6	Optimize Energy Performance: Energy Star score of 83	1
Y	?	N	NA	Credit 1.7	Optimize Energy Performance: Energy Star score of 87	1
Y	?	N	NA	Credit 1.8	Optimize Energy Performance: Energy Star score of 91	1
Y	?	N	NA	Credit 1.9	Optimize Energy Performance: Energy Star score of 95	1
Y	?	N	NA	Credit 1.10	Optimize Energy Performance: Energy Star score of 99	1
Y	?	N	NA	Credit 2.1	On-Site & Off-Site Renewable Energy: 1% on or 5% off	1
Y	?	N	NA	Credit 2.2	On-Site & Off-Site Renewable Energy: 2% on or 10% off	1
Y	?	N	NA	Credit 2.3	On-Site & Off-Site Renewable Energy: 5% on or 25% off	1
Y	?	N	NA	Credit 2.4	On-Site & Off-Site Renewable Energy: 10% on or 50% off	1
Y	?	N	NA	Credit 3	Energy Efficient Equipment	1
Y	?	N	NA	Credit 4	Refrigerant Selection	1
Y	?	N	NA	Credit 5.1	Performance Measurement: Enhanced Metering	1
Y	?	N	NA	Credit 5.2	Performance Measurement: Emission Reduction Reporting	1

## Water Conservation

8 Points

				Prereq 1	Minimum Water Efficiency	Required
Y						
Y	?	N	NA	Credit 1.1	Water Efficient Landscaping: Reduce potable water use by 50%	1
Y	?	N	NA	Credit 1.2	Water Efficient Landscaping: Eliminate potable water use	1
Y	?	N	NA	Credit 2.1	Building Water Use Reduction: Reduce fixture use by 10%	1
Y	?	N	NA	Credit 2.2	Building Water Use Reduction: Reduce fixture use by 20%	1
Y	?	N	NA	Credit 3.1	Process Water Efficiency : Reduce 20%	1
Y	?	N	NA	Credit 3.2	Process Water Efficiency : Reduce 30%	1
Y	?	N	NA	Credit 3.3	Process Water Efficiency : Reduce 40%	1
Y	?	N	NA	Credit 4	Enhanced Metering	1

## Chemical Management

5 Points

				Prereq 1	Polychlorinated Biphenyl (PCB) Removal	Required
Y						
Y	?	N	NA	Credit 1.1	Community Contaminant Prevention: Airborne Releases	1
Y	?	N	NA	Credit 1.2	Community Contaminant Prevention: Leaks & Spills	1
Y	?	N	NA	Credit 2	Indoor Pollutant Source Control: High Hazard Chemicals	1
Y	?	N	NA	Credit 3.1	Chemical Discharge: Chemical Waste Minimization Plan	1
Y	?	N	NA	Credit 3.2	Chemical Discharge: Pharmaceutical Waste Discharge	1

## Waste Management

6 Points

				Prereq 1	Waste Stream Audit	Required
Y						
Y	?	N	NA	Credit 1.1	Total Waste Reduction: 30%	1
Y	?	N	NA	Credit 1.2	Total Waste Reduction: 40%	1
Y	?	N	NA	Credit 1.3	Total Waste Reduction: 50%	1
Y	?	N	NA	Credit 2.1	Regulated Medical Waste Reduction: <10%	1
Y	?	N	NA	Credit 2.2	Regulated Medical Waste Reduction: Minimize incineration	1
Y	?	N	NA	Credit 3	Food Waste Reduction	1

## Environmental Services

9 Points

Y	?	N	NA	Credit 1.1	Outdoor Grounds & Building Exterior Management : 4 items	1
Y	?	N	NA	Credit 1.2	Outdoor Grounds & Building Exterior Management : 4 more	1
Y	?	N	NA	Credit 2	Indoor Integrated Pest Management	2
Y	?	N	NA	Credit 3	Environmentally Preferable Cleaning Policy	1
Y	?	N	NA	Credit 4.1	Sustainable Cleaning Products & Materials: 30% of annual purchases	1
Y	?	N	NA	Credit 4.2	Sustainable Cleaning Products & Materials: 60% of annual purchases	1
Y	?	N	NA	Credit 4.3	Sustainable Cleaning Products & Materials: 90% of annual purchases	1
Y	?	N	NA	Credit 5	Environmentally Preferable Janitorial Equipment	1

## Environmentally Preferable Purchasing

11 Points

Y	?	N	NA	Credit 1.1	Food: Organic or Sustainable	1
Y	?	N	NA	Credit 1.2	Food: Antibiotics	1
Y	?	N	NA	Credit 1.3	Food: Local Production / Food Security	1
Y	?	N	NA	Credit 2	Janitorial Paper & Other Disposable Products	1
Y	?	N	NA	Credit 3	Electronics Purchasing & Take Back	1
Y	?	N	NA	Credit 4.1	Toxic Reduction: Mercury	1
Y	?	N	NA	Credit 4.2	Toxic Reduction: DEHP	1
Y	?	N	NA	Credit 4.3	Toxic Reduction: Natural Rubber Latex	1
Y	?	N	NA	Credit 5	Furniture & Medical Furnishings	1
Y	?	N	NA	Credit 6.1	IAQ Compliant Products: 45% of annual purchases	1
Y	?	N	NA	Credit 6.2	IAQ Compliant Products: 90% of annual purchases	1

## Innovation in Operation

7 Points

Y	?	N		Credit 1.1	Innovation in Operation	1
Y	?	N		Credit 1.2	Innovation in Operation	1
Y	?	N		Credit 1.3	Innovation in Operation	1
Y	?	N		Credit 1.4	Innovation in Operation	1
Y	?	N		Credit 2	Documenting Sustainable Operations Business Case Impacts	1
Y	?	N		Credit 3.1	Documenting Productivity Impacts: Absenteeism & Healthcare Costs	1
Y	?	N		Credit 3.2	Documenting Productivity Impacts: Other Productivity Impacts	1

## Operations Project Total

72 Points

**Key**

**Y** - (yes) you are moderately confident that you can attain the credit.

**?** - (maybe) it will be challenging for this project and you are uncertain of your ability to attain it but you will try.

**N** - (no) while technically possible, you currently don't expect to try to achieve this credit in this project due to cost or other tradeoffs with project goals.

**NA** - (not applicable) it is inherently physically unattainable for this particular project regardless of effort due to physical conditions or project scope.

Examples would include: Credits SS 3.1 & 3.2 (Brownfield redevelopment) for a project not on a brownfield site, MR Credits 1.1 - 1.3 (Building reuse) if no portions of an existing building are part of the project, EQ Credit 8.1, 4th 7 5th points (Daylight & Views: inpatient ) if there are no facilities for inpatients, and SS Credit 7.1 & 2 (Heat island effect) if the scope of the project is only interior renovation





# Green Guide for Health Care (GGHC)

**A metric tool for evaluating health and sustainability  
of building design, construction, maintenance and operations  
for the healthcare industry**

Convened by the Center for Maximum Potential Building Systems  
Sponsored by Hospitals for a Healthy Environment (H2E)  
the New York State Research & Development Administration (NYSERDA)  
and the Merck Family Fund

**Healing environment – Indoor air quality – Daylighting  
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- Provides the healthcare sector with a tool to guide and measure progress towards enhanced environmental and health performance in facility planning, design, construction and operation
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- Built upon the Green Healthcare Construction Guidance Statement developed by the American Society of Healthcare Engineering (ASHE)
- Addresses the particular structural, usage, and regulatory challenges of healthcare buildings and emphasizes environmental and public health issues
- Focuses on institutional occupancies such as acute care hospitals and applies to new freestanding facilities, additions to existing facilities coupled with renovation, and extensive rehabilitation/ adaptive reuse projects

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