PART 0 DESIGN STANDARDS

0.01 GENERAL DESIGN GUIDELINES

A. Inspections by others do not relieve the A/E of contract requirements.

B. In the absence of other information, the methods and recommendations of the National Concrete Masonry Association (NCMA), Brick Institute of America (BIA), and Rocky Mountain Masonry Institute (RMMI) shall be followed.

C. Avoid grouted masonry where exterior face brick forms one or more sides of the grouted surface. Moisture from grouting tends to initiate efflorescence.

D. Half stess design of unit masonry is not allowed.

E. Parapet walls: Increase reinforcing by at least 50% over wall design.

F. Coordinate unit masonry veneer and substrate construction requirements.

1. Coordinate design, spacing, and dimensions of horizontal reinforcing and ties with other composite wall components including board insulation.

G. Design and detail control and expansion joints to meet, at least, the minimum guidelines of the BIA and NCMA.

H. Bullnose units

1. If unit masonry is used on the interior of the building, all outside corners shall be bullnosed.

2. Avoid bullnoses at door jambs where resilient base is to be applied. (return to jamb is too small to maintain base adhesion). Frames or other trim should extend 1/2” beyond face of masonry so base can abut.

I. All masonry exposed on the interior of the building shall have a dense, smooth surface which is easily cleanable and is resistant to marring.

1. Wire cut, ribbed, or otherwise heavily textured or uneven brick or concrete masonry shall not be used in interior applications.

2. Interior concrete masonry units exposed and unpainted in the finished construction shall be dense, smooth, ground face units or other acceptable block approved by the DPS Project Manager..

J. Water repellents are not allowed on masonry surfaces.

K. Refer to Section 09900 for anti-graffiti coatings.

L. Structural glazed tile masonry units may be used under special circumstances and in limited applications with the approval of the DPS Project Manager.

M. Glass unit masonry, thin brick veneer, and surface bonded masonry are prohibited.

0.02 BRICK

A. Brick is the preferred material for exterior walls. Other exterior cladding materials may be used only with approval of the DPS Project Manager.

B. “Modular” size (7-5/8” x 3-5/8” x 2-1/4”) brick is required by DPS in most cases. Other sizes may be used only with approval of the DPS Project Manager.

C. Matching of existing brick, delivery time, and future availability often determine brick specification criteria.

D. Exposed brick is strongly discouraged for exterior horizontal applications with upward exposure such as copings, caps, rowlocks, sills, and reveals.

0.03 CONCRETE UNIT MASONRY

A. Concrete unit masonry shall not be used on the building exterior.

0.04 COLD AND HOT WEATHER REQUIREMENTS

A. Specify cold and hot weather requirements.

PART 1 GENERAL No standards

PART 2 PRODUCTS

2.01 BRICK MATERIALS

A. Face brick
   1. Grade SW, type FBS (ASTM C-216-87)
   2. Specify minimum of two brick manufacturers.

B. Concrete masonry units
   1. Hollow load-bearing concrete block, Grade N
   2. Specify minimum of two concrete masonry unit manufacturers.
   3. Ends: Concave; bullnose at interior exposed corners
   4. Special shapes
      a) Provide special manufactured shapes of concrete masonry units including solid units, lintel blocks, bond beams, facing units, etc.
      b) Sound absorbing acoustic units: NRC 65 minimum rating

C. Ties
   1. Two-piece slotted or clip-and-loop only
   2. Single-piece flat stock, corrugated, wire ties, and ferrous materials prohibited

D. Horizontal joint reinforcement: Truss type

E. Accessories
   1. Embedded flashings
   2. Control joint materials
   3. Expansion joint materials
   4. Other masonry accessories per standard Section 04110

PART 3 EXECUTION

3.01 INSTALLATION

A. Mortar joints
   1. Lay units with full mortar beds on bed faces and minimum 85% coverage on head joints.
   2. For units requiring grouting, apply mortar to webs also.
   3. Exposed-to-view mortar joints shall be rodded to a smooth, concave finish.
   4. Mortar joints not exposed to view in the finished construction shall be cut flush with masonry.
   5. Strike joints flush at surfaces scheduled to receive plaster.

B. Rake back top of wall at end of workday. Toothing of subsequent masonry is not acceptable.

C. Protect top of masonry walls and veneers to prevent water infiltration, wicking, and efflorescence.

D. Cavities and spaces to contain reinforcement and grout
   1. Aligned, continuous and unobstructed; no more than 10% mortar obstruction
   2. 2” minimum clear in any dimension

3.02 REINFORCEMENT

A. Horizontal masonry joint reinforcement shall be placed so that longitudinal wires are located over face-shell mortar beds, and are fully embedded in mortar.

1. Minimum mortar coverage: 5/8" to exterior face of wall; 1/2" all other locations.
2. Lap reinforcement 6" minimum.
3. Use factory-fabricated corner and intersection sections.
4. Unless otherwise indicated, install horizontal reinforcement at 16" O.C. beginning with first course (8" above base of masonry).

B. Continuity of horizontal reinforcing is required below fenestration (windows and other wall openings and penetrations).

3.03 GROUTING

A. Spaces around openings, frames and other built-in items shall be filled solid as each course is laid.

B. Grout all cells which occur at corners, door and window jambs, changes in parapet or foundation elevations (both sides of step), and control joints (both sides of joints).

C. Slush fill hollow metal frames with grout at masonry and concrete walls.

3.04 CLEANING

A. Clean new masonry per RMMI recommendations, 1 week minimum, 2 weeks maximum, after placement.

B. Cleaning solutions shall be water-based and approved by the masonry manufacturer.

C. Muriatic acid solutions are prohibited.

3.05 TOLERANCES

A. Specify tolerances.

3.06 FIELD QUALITY CONTROL

A. Contractor shall work with the Owner to schedule Owner's masonry inspections and testing.

B. Refer to DPS Standard 04110 for other masonry testing.

C. Owner will provide masonry prism testing and inspection for Owner's information at Owner's expense.

1. A/E shall specify locations and frequency of prism testing.

D. Contractor will be provided with Owner's testing information and may use test information as a part of Contractor's qualtiy control. However, Owner does not represent that the frequency or type of testing is adequate to assure compliance with contract requirements. Contractor shall provide additional testing needed to assure contract compliance, at Contractor's expense.

E. Additional tests or re-tests required for quality control shall be at Contractor's expense.

END OF SECTION 04200