DIVISION 4 – MASONRY

SECTION 04 2000 – UNIT MASONRY

1. General: This section outlines the general requirements for unit masonry.

2. Masonry Design Criteria:
   a. Deflection shall be limited to the lesser of l/600 or 0.3-inches for structures or components thereof, which support masonry.

3. Quality Assurance:
   a. Cold Weather Guidelines: Architect/Engineer shall require Contractor to submit cold-weather procedures before starting work and to keep a copy of guidelines on site.

4. Face Brick:
   a. Exterior face brick shall be Grade SW, Type FBX.
   b. Wherever brick is shown to "match existing," provide facing brick of color, texture, and size which duplicate the corresponding properties of existing masonry at the site. Samples shall be reviewed for approval by the Architect and NU Project Manager at the project site.

5. Ground Face Concrete Masonry Units: Provide in public areas. Ground surfaces filled with cementitious grout. Apply heat treated acrylic finish in compliance with ASTM C744 after polishing.
   a. Acceptable Manufacturers:
      i. Trendstone by Trenwyth Industries
      ii. Jandis & Sons, Inc.
      iii. Anchor Concrete Products, Inc.
      iv. RichStone by United Glazed Products
      v. Premier Line by Dillon & Co.

6. Mortar and Grout Materials: Portland cement Type I or Type II. Provide Portland cement of color required to produce approved mortar sample.
   a. Colored Mortar Aggregates (permitted only under special conditions): Ground stone, in colors required to match Architect's sample.


8. Joint Reinforcement and Anchorage Materials:
   
a. Use stainless steel.

b. The use of galvanized steel in lieu of stainless steel shall be reviewed with the NU Project Manager.

9. Cavity Wall Construction:
   
a. Horizontal Joint Reinforcement: Install continuously in bed joints at 16 inches on center vertically to bond wythes of cavity walls, lapping individual sections at least 6 inches. Use prefabricated L-shaped and T-shaped sections at corners and intersections. Do not span movement joints with reinforcement.
   
   i. Maximum CMU horizontal joint reinforcing spacing shall be 16” on center.

   ii. Minimum CMU vertical reinforcing shall be a #4 bar at 48” on center, in fully grouted cores.

b. Cavity Wall Insulation:
   
   i. Extruded polystyrene is preferred over polyisocyanurate.

   ii. The use of polyisocyanurate insulation in lieu of polystyrene shall be reviewed with the NU Project Manager.

   c. Provide a permanent weep system for masonry assemblies. Utilize a weep / air space protective product to prevent obstructions from mortar droppings, etc.

   i. Venting of Cavity Walls: Provide weatherproof method of venting at top and bottom of internal cavities.

   ii. Weeps: Provide permanent system of weeps that will remain free draining and will not be clogged by mortar.

   d. Architect is encouraged to utilize an air / vapor barrier (preferably a spray-applied product) on the exterior face of the back-up component in a masonry assembly.

END OF SECTION
DIVISION 4 – MASONRY

SECTION 04 4600 – LIMESTONE

1. General: This section outlines the general requirements for limestone masonry.

2. Design Considerations: To match existing stone bearing wall construction with modern cavity wall veneer stone technique, the following notes should be incorporated into the specifications:
   
a. Corner pieces shall be “L” shaped units with heights and lengths of pieces given based on the project specific requirements.

b. Arrange corners with larger stones at the bottom, decreasing in size higher up the building.

c. Edges of all units shall be hand chipped to remove shelves at mortar joints.

d. Vertical edges of the units shall be chipped or sawn to be vertical leaving a uniform mortar joint.

e. The horizontal mortar joints shall be emphasized, uniform in thickness, and be as long as practical.

f. Grey hued stone will buff over time. It is best to start a bit grey when trying to match existing older stone.

g. Most of the stone walls on the Evanston campus are a mixture of stone quarried from horizontal locations (tan in color) and vertical edge pieces (grey in color).

h. Where appropriate, specify an abrasive blast to match existing “weathered” stone finish.

i. Utilize tern-coated through wall flashings to avoid any shiny stainless steel edges.

j. Two 5-foot by 7-foot mock-up wall samples shall be made for mortar color, stone color, and to set the limit on stone unit “rectangleness”.

k. Once in place, the mock-up shall be made to confirm stone layout patterns and limits on mortar joint uniformity. Once approve, the mock-up can remain in place.

3. Quality Assurance: Single Source Responsibility: Design, fabrication, and installation shall be the responsibility of a single entity. Contractor shall require an engineer to perform structural design, determine the testing program, and evaluate the test results. The engineer shall be licensed in Illinois and have experience in engineering stonework that has resulted in successful installation of stonework similar to that required for this project.
a. Safety factors: Use safety factor of 8. Design with redundant load paths, so that failure of one element (fastener, anchor, etc.) does not result in failure of any other element.

b. Normal Thermal Movement: Movement resulting from an air temperature range of 120 degrees F, solar heat gain, and nighttime re-radiation.

c. Horizontal Building Movement: Allow for horizontal building movement from floor to floor (interstory drift) not more than the floor-to-floor height divided by 400.

d. Individual Fasteners and Attachments: Design to withstand the stresses produced by the following loads applied separately, applied through the center of gravity of the element supported, each added to the stresses produced by thermal movement: Vertical: 4 times the weight of the supported elements. Horizontal: 2 times the weight of the supported elements.

e. Stone Testing: Test each variety of stone to show compliance with physical characteristics specified. Test limestone in accordance with ASTM C 568. For stone veneer thinner than 2-1/4 inches, perform modulus of rupture tests on specimens of the smallest thickness and with the finish to be used on the project.

4. Stone pieces that are damaged during shipping, handling, etc. shall be reviewed by the Architect / Owner prior to installation. The Architect / Owner shall have the discretion to require that damaged pieces be repaired to their satisfaction prior to installation.

5. Submittals: Architect shall require the following minimum submittals:

f. Contractor shall provide fully-dimensioned shop drawings that include “closing” dimensions to the Architect’s dimensional reference (grid lines, face of foundation, etc.) and that dimension rough opening sizes for windows, etc. bounded by stone components.

g. Structural Design Data: Engineer's evaluation of test reports.

h. Testing program for full-scale mock-up testing.

i. Test reports for tests indicated.

6. Limestone:

j. Color: Buff.

k. Variety: Indiana Limestone.

l. ILI Grade: Select preferred, other grades may be used under special conditions.

m. Selection from three 12-inch by 12-inch samples.

n. Classification II, medium density.
o. Finishes: If shot sawn, also provide sandblasting at fabrication plant. Plucked finishes are not permitted.

7. Accessory Materials:

p. Stone Anchors in Direct Contact with Stone: Stainless steel, Type 304 or 316 unless specifically indicated otherwise.

a. Provide internal gutter system for draining water from stone cladding in accordance with the Indiana Limestone Institute Design Handbook.

END OF SECTION