042000  MASONRY ASSEMBLIES

PART 1:  GENERAL

1.01  MORTAR MIX

A. Contact Cornell Project Manager for archived mortar test results for appropriate campus building. If not available in the University archives, Architect/Engineer shall be responsible for laboratory chemical analysis & testing for mortar mix matching to determine sand color proportions, sand gradations, & mortar mix proportions.

B. AGGREGATES: The Architect/Engineer should be aware that local aggregates have the potential for AAR (Alkali Aggregate Reaction).

1. Alkali-Silica Reaction (ASR):
   a. ASR is the most common form of alkali-aggregate reaction (AAR) in concrete; the other, much less common form, is alkali-carbonate reaction (ACR). ASR and ACR are therefore both subsets of AAR. ASR is caused by a reaction between the hydroxyl ions in the alkaline cement pore solution in the concrete and reactive forms of silica in the aggregate. A gel is produced, which increases in volume by taking up water and so exerts an expansive pressure, resulting in failure of the mortar.

2. Alkali-silica reactivity (ASR) Evaluation: (ASTM C-33, Appendix X1.2.1.3)
   a. Certain materials are known to be potentially deleteriously alkali-silica reactive (Reference ASTM C-33). Determination of the presence and quantities of these materials by petrographic examination is helpful in evaluating potential alkali reactivity.

3. Related Specifications and Information Sources:
   a. ASTM C33: Standard Guide for Concrete Aggregates
      1) Appendix X1: Methods for Evaluating Potential for Deleterious Expansion due to Alkali Reactivity of Aggregate.
   c. New York State Department of Transportation: (NYSDOT) Aggregate Source Acceptance Procedure.
   d. NYSDOT – Technical Services – Materials – Approved List; Sources of Fine and Coarse Aggregates.
C. MORTAR MIX DESIGN SUBMITTAL REQUIREMENTS

1. PRODUCT DATA
   a. Provide product data sheets for each type of material specified in the mortar mix design. The product data is to include test data substantiating that proposed products comply with specifications.
   b. The aggregate source for sands needs to be tested and pass as per ASTM C295 Petrographic Examination of Aggregates for Concrete to determine if ASR is present, on a biennial basis.

2. MATERIAL SAMPLES
   a. Mix Design Samples: Provide each type of pointing mortar in the form of sample mortar strips, 6 inches long by ½ inch wide, set in aluminum or plastic channels.

3. MOCKUPS
   a. Upon approval of Mix Design Samples, an in-situ mockup is to be performed for final approval of the mortar installation. A minimum of five (5) mortar samples shall be installed in designated areas for consideration by the Design Professional and the Owner for final selection of project mortar composition, color, joint profile, and texture. Mortar Samples may vary in sand composition and cement color, but must comply with the overall mortar specification.

1.02 WEEPS & VENTS

A. Provide weeps at the base of all masonry cavity walls (Hohmann & Barnard QV Quadro-vent or similar). Tubes or rope weeps are prohibited.

B. Provide vents at the top of all masonry cavity walls.

1.03 MORTAR NET

A. Provide mortar net full-height and full-width of all masonry cavity walls.

1.04 MASONRY TIES

A. Use of corrugated masonry wall ties (Hohmann & Barnard CWT - Corrugated Wall Tie and similar) are prohibited on exterior applications.
1.05  CAPSTONES

A. Provide continuous through-wall flashings under all capstones. Provide two stainless steel dowels per capstone. Through-wall flashings shall have welded thimble coordinated with dowel locations.

B. Capstones shall have an adequate overhang or provide integral drip edge with hem on through-wall flashing.

C. Sealant head joints between capstones shall be protected with a lead weather cap.

1.06  STAIRS

A. Porous or sedimentary stone is prohibited for use as stair treads.