DIVISION 4
MASONRY

SECTIONS:

4.1 UNIT MASONRY
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4.3 MASONRY RESTORATION AND CLEANING

SECTION 4.1 UNIT MASONRY

4.1 A General:

1. Submittals – Submit face brick sample for approval. Submit sample of new face brick required to match existing brick in patched areas of existing walls.

2. Standards –

   Comply with the following standards and guidelines in execution of all masonry work:

   "Specifications for Clay Masonry Construction" SCPI 1962
   "Concrete Masonry Handbook" Portland Cement Association 1976
   "Cleaning Clay Products Masonry" BIA Technical Notes #20.

3. Environment Conditions –

   a. Cold weather protection: do not place masonry units when air temperature is below 40° F.

   b. Hot weather protection: protect masonry construction from direct exposure to wind and sun when erected in an ambient air temperature of more than 99° F.

4. Job Conditions – Protect masonry materials during storage and construction from wetting by rain, snow or ground water and from soilage. Do not use metal reinforcing or ties having loose rust or other coatings, including ice, which will reduce or destroy bond.

4.1 B Products:

1. Face Brick – ASTM C216-75a, grade SW, type FBX, standard size. Special sizes, shades and colors to provide conformity with neighboring characteristics may be required.

2. Back-up Brick – ASTM C62-69, grade MW, type FBS, standard size Building brick may be used for back-up to face brick and at other interior wythes in repaired or new masonry walls.

3. Used Salvaged Brick – cleaned, salvaged face brick from existing structures may be used for patching and repairs if of same type, size and color as existing brick in wall to be patched. Cleaned, salvaged brick may be used for small areas of masonry wall repair where the face is to be concealed by new work and finishes at interior locations in any structure.

4. Hollow Load Bearing Concrete Masonry Units – ASTM C90-70, type I, grade S, FS SS-C-621B, 8 inch by 16 inch nominal dimensions. This unit shall be used only at above grade locations.

5. Solid Load Bearing Concrete Masonry Units – ASTM I45-70, type I, grade P, FS SS-C-621B, 12 inch by 16 inch nominal dimensions, 75% solid. This unit shall be used at foundation wall and other below grade locations.

6. Concrete Building Brick – ASTM C55-70, type I, grade G, standard size, solid – for soaps, make-up and bearing pads.

7. Mortar – ASTM C270-73, type S; BIA MI, type S; ASTM C387-69, type S. (For repointing, Historical Commission may require a different mix. See Section 4.3.)

   a. Portland Cement: ASTM C150-74, type I
   b. Hydrated Lime: ASTM C207-74, type S
   c. Aggregate: ASTM C144-70
   d. Water: clean and potable
   e. Proportions: 1 part Portland Cement, over 1/4 but less than 1/2 part Hydrated Lime, and 3-1/2 parts damp loose aggregate, plus water to proper consistency.
   f. Admixtures: admixtures shall not be used.

8. Joint Reinforcement – welded wire ladder or truss type, single wire, 8 ga. galvanized, width to suit wall thickness.

   Approved manufacturers:

   AA Wire Products Company
   Durowall
   Heckman Building Products, Inc.
   Holman and Barnard, Inc.
   National Wire Products Industries

9. Metal Ties – steel, corrugated or wire, galvanized — 9 ga. if wire; 20 ga. 1 inch by 5 1/2 inch if corrugated.

10. Cleaning agents – Proprietary solvents as recommended by unit masonry manufacturer. Dilute (5%) solution of Hydrochloric Acid. (For old masonry, Historical Commission may require the use of alternative cleaning methods. See Section 4.3.)

4.1 C Execution:

1. New Masonry Walls –

a. Anchor new walls to floor joists perpendicular to wall at every fourth joist with 18 ga. galv. 1 inch metal twisted strap. Anchor new walls parallel to joists at midspan or at no less than 8 ft. intervals using 1/8 inch by 1 inch wide galv. steel strap of sufficient length to engage a minimum of 3 adjacent wood joists. Install at bottom of joists and bend strap for solid anchorage into masonry wall construction.

b. Cut masonry units with motor-driven saw designed to cut masonry with clean, sharp, unchipped edges. Cut units as required to provide continuous pattern to fit adjoining work neatly. Use full units without cutting wherever possible.

c. Wet brick having absorption rates (ASTM C67) greater than 0.025 oz. per square inch per minute so that rate of absorption when laid does not exceed this rate. Do not wet concrete masonry units or use such units if wet.

d. Lay up walls plumb and true with courses level, accurately spaced and coordinated with other work neatly. Joints to be 3/8 inch unless otherwise shown. Lay masonry in running bond pattern unless otherwise indicated.

e. As the work progresses, build in items specified under this and other sections of the specifications. Fill in solidly with masonry around built-in items. Fill space between frames and masonry solidly with mortar. (Do not fill in around basement joists: see *Parging – masonry around basement joists*, below.) Where builtin items and anchors are to be embedded in cores of hollow concrete masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.

f. Lay brick and other solid masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints. Keep cavity clean and free of mortar droppings. Do not furrow bed joints. Rock closures into place. Do not pound corner or jambs to fit stretcher units after setting in place.

g. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells; also bed webs in mortar where adjacent to cells or cavities to be reinforced or to be filled with concrete or grout.

h. If units are displaced after mortar has stiffened, remove, clean joints and units of mortar and relay with fresh mortar. When joining fresh masonry to set or partially set masonry: remove loose masonry and mortar; clean and lightly wet exposed surface of set masonry prior to laying fresh masonry. If necessary to stop off a horizontal run of masonry, rack back in each course. Toothing is not permitted.

i. Key new masonry into existing walls a minimum half unit length every third course vertically.

j. Bond new masonry walls using continuous wire joint reinforcement spaced not more than 16 inch vertically. In addition, provide joint reinforcement at bottom (first) joints in 2 courses at 8 inches vertically, and at bed joints 8 inches above head and 8 inches

below sill at all masonry openings, extending 24 inches beyond opening on both sides at both joints.

k. At small area wall patching such as at closure of existing windows, corrugated metal ties shall be used at 2 sq. ft. intervals to provide bond.

l. Provide concealed flashings in masonry work as required. Prepare masonry surfaces smooth and free from projections which might puncture flashing. Place through-wall flashing on bed of mortar and cover with mortar. Seal flashing penetrations with mastic before covering with mortar. Terminate flashing 1/2 inch from face of wall, unless otherwise shown. Extend flashing beyond edge of lintels and sills (if any) at least 4 inches and turn up edge on sides to form pan to direct moisture to exterior. Provide weep holes in the head joints of the first course of masonry immediately above concealed flashings. Space 24 inches o.c., unless otherwise shown. Place and leave sash cord wick in head joint. Keep weepholes and areas above flashing free of mortar droppings.

m. Retain sealant joints around outside perimeter of exterior door, window frames and other wall openings.

n. Tool all joints in exposed surfaces including exterior of CMU foundation walls, when thumb print hard using round jointing tool to produce a well dressed concave joint. All other joints including walls to be stuccoed shall be cut flush.

o. Parging – back parge all face brick as the work progresses. Parge interior and exterior surfaces of all new foundation walls. See Division 7 for dampproofing coatings.

p. Protection of work – Protect sills, ledger and off-sets from mortar droppings, remove droppings from new work. Cover tops of walls with non-staining waterproof coverings when work is not in progress. At cavity walls, if any, place wood strips with attached wire pulls on metal ties (joint reinforcement) and clean wood strip prior to placing succeeding rows of metal ties or joint reinforcement.

q. Clean exposed face brick masonry surfaces with 5% muriatic acid solution, brushed, flushed and thoroughly rinsed, or with a solvent cleaner intended for cleaning masonry. Use solvent cleaner as recommended by the face brick manufacturer or supplier and in accordance with manufacturer's instructions.

2. Mortar Mix – Mix mortar ingredients for a minimum of 4 minutes in a mechanical batch mixer. Use water clear and free of deleterious materials which would impair the work. Do not use mortar which has been begun to set, or if more than 2 hours has elapsed since initial mixing.

3. Parging basement/foundation walls –

a. New walls – Parge interior and exterior surfaces of all new foundation walls. Parging shall be a mix of one part Portland cement to 3 parts sand. Rough casting on interior

face of new foundation walls to be installed in 2 coats to minimum 1/2 inch thickness, carried up between joists and smoothly finished to sand texture with wood float.

b. Existing walls – Remove loose mortar, mortar dust, loose parging, whitewash and cementitious coatings, and all other loose materials to expose sound portions of walls. Plug and point all obvious cracks and sources of seepage and water infiltration (see Division 7, Dampproofing). Patch and point to replace failed and removed mortar to bring surface out to generally smooth plane, then parge to meet existing wall surfaces. Apply 2 coats parging. Allow 24 hours curing time between successive coats in bringing the wall surface out to the required plane. All rough-casted walls are to have spongefloat finish.

c. Masonry around basement joists – To permit drying, joist ends should not be cemented in. Leave 1/2-inch gap between parging and surface of joist.

SECTION 4.2 STONE

4.2 A General:

1. Provide stone work as required on the Drawings and Work List including but not limited to stone front steps, sills and lintels.

4.2 B Products:

1. Provide stone to match existing materials or as called for on the Drawings or Work List. Provide samples for approval.

4.2 C Execution:

1. Raise and reset existing stone steps as required. Provide new concrete foundation. Exercise care in disassembly to prevent damage to existing parts. Reset using stonesetter's mortar with latex additive. If existing steps are white marble, half of the aggregate used in the mortar shall be white aggregate.

2. Repair spalls in existing stonework as required using matching stone materials, and appropriate mortars and cements. If repair work calls for cementing, use special cement commercially prepared and sold for that use – provide product data. If repair calls for build-up of missing parts by mortar patching, provide aggregate in mortar to produce matching color of patching materials to stone. Use stainless steel anchors and non-staining bonding agent in patching spalled or broken stonework. See 4.3 B 2.

3. Provide new stone steps, lintels, sills and other pieces and assemblies as required using stone of type, color and configuration shown on drawings or specified. Install using conventional mortars, materials and methods appropriate to the piece and its position in the structure.

SECTION 4.3 MASONRY RESTORATION AND CLEANING

4.3 A General:

1. Before any masonry restoration and cleaning work is done, the contractor shall review the work in the field with the Inspector to determine exact scope and locations and to get approval of procedures, methods and materials to be employed in the work.

2. Standards –

   The following guidelines apply to repointing, cleaning or repair of masonry on historic buildings:

   "Preservation Briefs: 1. The Cleaning and Waterproof Coating of Masonry Buildings," U.S. Department of the Interior, National Technical Information Service 1975

   "Preservation Briefs: 2. Repointing Mortar Joints in Historic Brick Buildings," U.S. Department of the Interior, National Technical Information Service 1980

   "The Maintenance and Repair of Architectural Sandstone," New York Landmarks Conservancy 1982

4.3 B Execution:

1. Repointing – In all walls requiring repointing over fifty percent or more of the total surface area, the entire wall shall be repointed. Rake out all joints, remove all loose mortar and additional mortar as necessary to provide adequate purchase surface for new mortar, and repoint to uniform surface and condition using round point tool or a tool shaped as required to provide pointed joints to match existing joint style – see "Preservation Briefs: 2."

2. Restoration of existing brownstone, sandstone and other decorative stone facings and trims – see "The Maintenance and Repair of Architectural Sandstone."

   a. Restore small areas of spalling, broken and missing stonework with mortar or stucco patching materials colored to match existing stonework. Restone and tool to match line, color, and detail of existing stonework. Provide and install nonstaining anchors and metal lath as required. See *Stucco* in Division 9.

   b. Restore other stonework by covering with stucco to match color and approximate detail and configuration of existing stonework. See *Stucco* in Division 9.

3. Patching Simulated Masonry and Other Cementitious Facings –

a. Restore with stucco or mortar mix matching color of existing facing material. See *Stucco* in Division 9.

4. Cleaning Existing Masonry –

a. Remove graffiti, deteriorated paint coatings, and other unsightly surface blemished from existing faces of walls as required.

b. Removal methods may include water washing, solvent cleaning, and steam cleaning; in all cases, the method to be employed shall be submitted for prior approval. Sandblasting shall not be used. Pressures in power water washing shall not exceed 500 lb./square inch. The Historical Commission can provide information on appropriate cleaning products.

c. Solvent cleaner shall be used in strict accordance with the manufacturer's printed instructions.

d. All masonry cleaning operations shall be scheduled and accomplished prior to other finishing work such as trim painting, flashing and sheet metal or siding work and painting.