

SECTION 323219 – BRICK AND LIMESTONE WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. Provide all labor, materials and equipment as necessary to complete all work as indicated on the Drawings and specified herein.
- B. This section includes the installation of brick and limestone walls on concrete foundations, and includes limestone coping, limestone sandblasting and carving, flashing, and dampproofing.
- C. Brick materials specified herein shall be furnished under an allowance as indicated in Division 01 Section "General Requirements – Price and Payment Procedures."

EDITOR: Ensure Division 01 contains brick allowance specified as [\$____]/1000.

1.3 REFERENCES

- A. Except as herein specified or as indicated on the Drawings, the Work of this section shall comply with the following:
 - 1. SMACNA (latest publication): "Architectural Sheet Metal Manual."

1.4 SUBMITTALS

- A. Shop Drawings: Submit masonry Shop Drawings for approval prior to limestone fabrication.
- B. Samples:
 - 1. Submit Samples of brick and limestone for approval.
 - 2. Limestone Samples shall be submitted for finish, color range (an acceptable range comprising 3 approved Samples) and grade.
 - 3. Samples shall indicate quarry and stone fabricator.

1.5 PROJECT CONDITIONS

- A. Construction Requirements During Work Progress:
 - 1. Air Temperature 40 Degrees F to 32 Degrees F: Heat either sand or mixing water to produce mortar temperature between 40 degrees F and 120 degrees F.

2. Air Temperature 32 Degrees F to 25 Degrees F: Heat both sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F. Maintain temperature of mortar on boards above freezing. Completely cover masonry for 24 hours.
3. Air Temperature 24 degrees F to 20 degrees F: Heat both sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F. Maintain temperature of mortar on boards above freezing. Cover masonry with insulation blankets for 24 hours and provide approved heat sources on both sides of masonry construction. Provide wind breaks when wind velocity exceeds 15 mph.
4. Air Temperature Below 20 Degrees F: Heat both sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F. Provide enclosures and approved heat sources to maintain temperatures on both sides of masonry construction above 32 degrees F for 24 hours minimum. Temperature of masonry units when laid shall be 30 degrees F minimum.

1.6 SEQUENCING AND SCHEDULING

- A. Provide Owner with expected delivery dates.

PART 2 - PRODUCTS

2.1 FLASHING

- A. 0.015-inch type 302/304, dead soft stainless steel flashing.
- B. Comply with SMACNA.

2.2 DOWELS, ANCHORS AND ACCESSORIES

- A. Stainless steel, type 302/304.

2.3 COPING STONE ANCHORS

- A. Stainless steel.

2.4 CAULK

- A. Approved expansion joint filler.

2.5 SOLDER

- A. 50/50 tin/lead solder, ASTM B32, with rosin flux.

2.6 BRICK

- A. To be selected by Owner.

2.7 CONCRETE

- A. Refer to Division 03 Section “Cast-In-Place Concrete for Building Construction.”

2.8 MORTAR

- A. Portland Cement: ASTM C150, Type I.
- B. Masonry Cement: ASTM C91, Type S, for uses indicated in Article 2.8 G.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Mortar Sand: ASTM C144.
- E. Water: Clean, potable and free from deleterious amounts of acids, alkalis or organic materials.
- F. Acceptable Manufacturers:

- 1. Masonry Cement: Medusa Corp.; Peerless Cement Company.
- 2. Lime: Lime Division, USG Industries, Inc.

- G. Setting Mortar Mix:

- 1. In accordance with ASTM C-270, Type N.
- 2. Machine mix in a batch, drum-type mixer for not less than 5 minutes. The use of continuous mortar mixer is unacceptable. Prepare lime putty by soaking hydrated lime long enough to ensure complete hydration. Add lime putty to mixer after cement, sand, and water have been mixed for two minutes. Mix the mortar only for immediate use. Do not use anti-freeze admixture. For exterior walls, incorporate a waterproofing admixture in accordance with manufacturer’s directions.

- H. Pointing Mortar Mix: 1 part cement, 1 part lime, 6 parts sand, and enough water to make workable.

2.9 GROUT

- A. In accordance with ASTM C-476; aggregates for grout shall be in accordance with ASTM C-404.
- B. Grout Mix: 1 part Portland cement by volume; 0 to 1/10 part lime or lime putty by volume; fine aggregate (measured in a damp, loose condition) 2-1/4 to 3 times the sum of volumes of cementitious materials; coarse aggregate (measured in a damp, loose condition) 1 to 2 times the sum of volumes of cementitious materials; potable water, sufficient to obtain 8 to 10 inch slump.

2.10 LIMESTONE

- A. Indiana Oolitic Limestone:
 - 1. Grade: Standard.
 - 2. Color: "Buff."
 - 3. Finish: Honed (can vary).

2.11 DAMPPROOFING

- A. "Thoroseal Foundation Coating" by Thoro System Products.

2.12 FABRIC DAMPPROOFING

- A. Composed of glass fabric and blended asphalt; total weight 40 ounces per square foot.
- B. Acceptable Products:
 - 1. "Asphalt-Coated Glass" by Advanced Building Products.
 - 2. "Asphalt Glass Cloth Cote" flashing by AFCO.
 - 3. "York Asphalt Coated Glass Fabric" by York.

2.13 CONCRETE MASONRY UNITS

- A. In accordance with ASTM C-33, unit having a dry weight of not less than 125 pounds per cubic foot. Nominal Dimensions: 8-inch x 16-inch; 3-core units.

2.14 EXPANSION JOINT FILLER

- A. 1/2-inch thick where indicated; closed cell PVC or neoprene sheet filler material.
- B. Acceptable Products:
 - 1. Everlastic Vinyl Gasket by Williams Products, Inc.
 - 2. "NS" Closed Cell Neoprene Sponge by Hohmann and Barnard, Inc.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine work-in-place on which specified work is in any way dependent to ensure that conditions are satisfactory for the installation of specified work.
- B. Report defects in work-in-place on which specified work is in any way dependent to ensure that conditions are satisfactory for the installation of specified work.

3.2 PREPARATION

- A. Field Measurements: Take field measurements for prefabricated units as necessary to verify or supplement, or both, dimensions indicated on the Drawings.
- B. Surface Preparation: Remove laitance, loose aggregate and other materials that prevent mortar from bonding to foundation.

3.3 INSTALLATION

A. General:

- 1. Construction Tolerances: Walls shall be plumb and level.
- 2. Variation in Mortar Joint Thickness: Do not exceed bed thickness indicated by more than plus or minus 1/8-inch, with a maximum thickness limited to 1/2-inch. Do not exceed head joint thickness indicated by more than plus or minus 1/8-inch.
- 3. Wetting of Brick Masonry Units: Wet brick having ASTM C67 absorption rate over 0.025 ounce per square foot per minute. Use wetting method which ensures that each masonry unit is nearly saturated but surface dry when laid. Use warm water in cold weather.
- 4. Cut masonry units with motor-driven saw designed to cut with clean, sharp, unchipped edges. Cut units as required to provide pattern indicated on the Drawings and to fit adjoining work neatly. Use full units without cutting wherever possible.

B. Laying Masonry Walls:

- 1. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint width and to properly locate openings, movement-type joints, returns and offsets.
- 2. Lay Up of Concrete Masonry Units (If Applicable): Lay in full bed of setting mortar with head joint full; align vertical cores to create a continuous unobstructed opening. Consolidate grout in place by vibration to completely fill core. Install vertical reinforcing rods in center of masonry core.
- 3. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.
- 4. Brick Patterns: As detailed on Drawings.
- 5. Stopping and Resuming Work:
 - a. Rake back 1/2 masonry unit length in each course where possible; tooth only where necessary and approved by Project Representative.

- b. Clean exposed surfaces of masonry that are partially or totally set, wet water absorbent units lightly and remove loose masonry units and mortar prior to laying fresh masonry.
 - c. Keep masonry clean and free of excess mortar.
 6. Brace green walls in a substantial manner where necessary, or where directed.
- C. Mortar Bedding and Jointing:
 1. Mortar Bedding:
 - a. Lay solid masonry units with completely filled mortar joints. Do not furrow bed joints. Butter ends of masonry units with sufficient mortar to fill head joints. Rock closures in place with head joints thrown against 2 adjacent masonry units in place. Fill vertical, longitudinal joints by parging either face of backing or back of facing.
 - b. Do not pound corners and jambs to fit stretcher units after they are set in position. Where an adjustment must be made after mortar has started to harden, remove mortar and replace with fresh mortar.
 2. Jointing:
 - a. Thickness of horizontal and vertical joints shall be nominal 3/8-inch adjusted to provide masonry unit coursing indicated on Drawings.
 - b. Mortar joints in exposed masonry shall be tooled when "thumbprint" hard with round or other approved jointer.
 - c. Mortar joints in surfaces to be concealed by finished construction shall be cut flush.
- D. Structural Bonding and Anchoring: Utilize metal ties, or with other ties which provide an equivalent method of anchorage, located at vertical intervals not over 24 inches o.c. and extending at least 4 inches into masonry.
- E. Through-Wall Flashing:
 1. Install continuous flashing as a cap to the parapet wall. Caulk around stainless steel pins that penetrate copper flashing as coping stone anchors.
 2. Hem free edges of metal. Make ample provisions for expansion and contraction. Hemmed edge shall not exceed 3/8-inch. Project Representative shall approve first section before proceeding.
 3. Solder joints.

4. Set new coping stone on new mortar bed and anchors with new head joint mortar, in accordance with this specification section for stone and mortar. When mortar is thumbprint hard, tool joints for a tight, concave joint.
5. Provide flexible control joints in coping stone and stainless steel flashing at new wall control joint locations.
6. Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.
7. Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.
8. Installation shall be similar to Plate 48, Figure A by SMACNA.

F. Limestone Installation:

1. Dampproof unexposed surfaces, as specified in accordance with manufacturer's recommendations. Allow dampproofing to cure.
2. Wetting of Limestone: Drench with clear, potable water just prior to setting.
3. Use lead or plastic setting pads under heavy stones to avoid squeezing out mortar.
4. Place each stone square, plumb and level into place utilizing proper hoisting equipment; hammer to solid bed with uniform bearing over entire bottom surface. If stone does not level properly, rehoist, repair bed and reset. Wedging or stuffing is unacceptable. Set in full beds of mortar with vertical joints flashed full. Stone shall not have marks of setting tools.
5. Joints shall have a uniform width of 3/8-inch. Rake bed and head joints not less than 1-inch in preparation of pointing.
6. Install dowels anchors and accessories. Fill holes with setting mortar.
7. Patching or concealing of defects with any composition, or adhering let-in piece, is unacceptable. Remove defective stones.
8. Setting Coping Stones: Place a neat, smooth troweled coat of setting mortar; set through-wall flashing in place. At joints to be caulked, remove from cavity efflorescence, loose mortar, and similar substances which would be detrimental to caulk adhesion. Caulk with expansion joint filler.
9. Point Joints: Point mortar in 2 stages:
 - a. Fill joint half full to minimize shrinkage cracks, by allowing to set.

- b. Fill joint with pointing mortar and tool with compacted concave surface to provide maximum protection against leakage.

3.4 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar pointed to eliminate evidence of replacement.
- B. Point solidly all voids and holes. Cut out defective mortar joints and point with mortar.
- C. Cleaning:
 1. Thoroughly clean face brick.
 2. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.
 3. Test cleaning methods on sample wall panel approximately 10 square feet in area; leave half panel uncleaned for comparison purposes. Obtain Project Representative's approval of sample cleaning before proceeding with cleaning of masonry.
 4. Protect limestone surfaces.
 5. Pre-soak or saturate area to be cleaned. Flush the wall with water, from the top down.
 6. Starting at the top of wall, apply job-mixed detergent solution by means of the bucket and brush hand-cleaning method.
 7. When the use of proprietary masonry cleaning compound is approved by the Architect, apply compound in compliance with the directions of the compound manufacturer.
 8. After cleaning, rinse wall surfaces thoroughly with clean water.

3.5 PROTECTION

- A. Wall Covering: During wall construction, cover top of wall with strong waterproof membrane at end of each day or shut down. Cover partially completed walls when work is not in progress. Extend cover minimum of 24 inches down both sides. Hold cover securely in place.
- B. Staining: Prevent mortar or grout from staining the face of masonry to be left exposed. Remove immediately mortar and grout in contact with the face of such masonry.
- C. Cold Weather Protection:
 1. Mean Daily Air Temperature 40 Degrees F to 32 Degrees F: Protect masonry from rain for 24 hours by covering with weather-resistive membrane.

2. Mean Daily Air Temperature 32 Degrees F to 25 Degrees F: Completely cover masonry with weather-resistive membrane for 24 hours.
3. Mean Daily Air Temperature 25 Degrees F to 20 Degrees F: Completely cover masonry with insulating blankets or approved equal protection for 24 hours.
4. Mean Daily Air Temperature Below 20 Degrees F: Maintain masonry temperature above 32 degrees F for 24 hours by enclosure and approved heat source, by electric blankets, by infrared lamps or by other approved methods.

END OF SECTION 323219