

SECTION 044200 - EXTERIOR STONE COPINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dimension stone set with individual anchors as wall caps and benches.

B. Related Requirements:

1. Section 042000 "Unit Masonry" for masonry wall construction.

1.2 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Shop Drawings: Show fabrication and installation details for dimension stone cladding assembly, including dimensions and profiles of stone units.

1. Show locations and details of joints both within dimension stone cladding assembly and between dimension stone cladding assembly and other construction.
2. Show locations and details of anchors.
3. Show direction of veining, grain, or other directional pattern.

C. Stone Samples: Sets for each variety, color, and finish of stone required; not less than 12 inches square.

D. Colored Pointing Mortar Samples: For each color required.

E. Sealant Samples: For each type and color of joint sealant required.

1.3 INFORMATIONAL SUBMITTALS

A. Material Test Reports:

1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous five years.

1.4 FIELD CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Remove and replace dimension stone cladding damaged by frost or freezing conditions.

Comply with cold-weather construction and protection requirements for masonry contained in ACI 530.1/ASCE 6/TMS 602.

- B. Hot-Weather Requirements: Comply with hot-weather construction and protection requirements for masonry contained in ACI 530.1/ASCE 6/TMS 602.
- C. Environmental Limitations for Sealants: Do not install sealants when ambient and substrate temperatures are outside limits permitted by sealant manufacturer or below 40 deg F (5 deg C) or when joint substrates are wet.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from single quarry.

2.2 LIMESTONE

- A. Material Standard: Comply with ASTM C 568.
 - 1. Classification: II Medium-Density except as follows: absorption, 5 percent by weight maximum; density, 144 lb/cu. ft. minimum; compressive strength, 4,000 psi minimum; and modulus of rupture 700 psi minimum.
- B. Description: Oolitic limestone.
- C. Varieties and Sources: Subject to compliance with requirements, acceptable suppliers include, but are not limited to, the following:
 - 1. Russell Stone Products 2706 Northfield Road Charlottesville, VA 22901 Attn: John Grubb PH; 434-760-1229.
- D. Varieties and Sources: Indiana limestone quarried in Lawrence, Monroe, or Owen Counties, Indiana.
 - 1. Indiana Limestone Grade and Color: Silver/Buff Standard grade, according to grade and color classification established by ILI.
- E. Finish: Smooth Finish

2.3 ANCHORS AND FASTENERS

- A. Fabricate anchors from stainless steel, ASTM A 240/A 240M or ASTM A 666, Type 304; temper as required to support loads imposed without exceeding allowable design stresses. Fabricate dowels and pins for anchors from stainless steel, ASTM A 276, Type 304.

2.4 MORTAR MATERIALS

- A. Refer to Section 042000 for masonry wall construction.

2.5 STONE ACCESSORIES

- A. Setting Shims: Strips of resilient plastic, non-staining to stone, of thickness needed to prevent point loading of stone on anchors and of depths to suit anchors without intruding into required depths of pointing materials.
- B. Cementitious Damp proofing for Limestone: Cementitious formulation recommended by ILI and non-staining to stone; compatible with joint sealants and noncorrosive to anchors and attachments.
- C. Weep and Vent Tubes: Medium-density polyethylene tubing, 1/4-inch (6-mm) OD, of length required to extend from exterior face of stone to cavity behind.
- D. Sealants for Joints in Dimension Stone Cladding: Manufacturer's standard chemically curing, elastomeric sealants of base polymer indicated below that comply with applicable requirements in Section 079200 "Joint Sealants" and do not stain stone.

2.6 STONE FABRICATION

- A. Dress joints (bed and vertical) straight and at right angle to face unless otherwise indicated. Shape beds to fit supports.
- B. Finish exposed faces and edges of stone to comply with requirements indicated for finish and to match approved samples.
- C. Cut stone to produce uniform joints 3/8 inch (10 mm) wide and in locations indicated.
- D. Contiguous Work: Provide chases, reveals, reglets, openings, and similar features as required to accommodate contiguous work.
- E. Fabricate molded work, including washes and drips, to produce stone shapes with a uniform profile throughout entire unit length, with precisely formed arris slightly eased to prevent snipping, and with matching profile at joints between units.

2.7 MORTAR MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions. Do not use admixtures unless otherwise indicated.
- B. Portland Cement-Lime Setting Mortar: Comply with ASTM C 270, Proportion Specification, for types of mortar indicated below:
 - 1. Set limestone with Type N mortar.

- C. Pointing Mortar: Comply with ASTM C 270, Proportion Specification, for types of mortar indicated. Provide pointing mortar mixed to match Architect's sample and complying with the following:
1. Pigmented Pointing Mortar: Do not exceed pigment-to-cement ratio of 1:10, by weight.
 2. Point limestone with Type N mortar.

PART 3 - EXECUTION

3.1 SETTING DIMENSION STONE CLADDING, GENERAL

- A. Coat limestone with damp proofing to extent indicated below:
1. Stone at Grade: Beds, joints, and back surfaces to at least **12 inches (300 mm)** above finish-grade elevations.
 2. Stone Extending Below Grade: Beds, joints, back surfaces, and face surfaces below grade.
- B. Execute dimension stone cladding installation by skilled mechanics and employ skilled stone fitters at Project site to do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone.
- C. Set stone to comply with requirements indicated. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure dimension stone cladding in place. Shim and adjust anchors, supports, and accessories to set stone accurately in locations indicated, with uniform joints of widths indicated, and with edges and faces aligned according to established relationships and indicated tolerances.
- D. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.
1. Sealing expansion and other joints is specified in Section 079200 "Joint Sealants."
 2. Keep expansion joints free of mortar and other rigid materials.
- E. Install concealed flashing at continuous shelf angles, lintels, ledges, and similar obstructions to downward flow of water, to divert water to building exterior. Extend flashing **6 inches (150 mm)** at ends and turn up not less than **2 inches (50 mm)** to form end dams.
- F. Keep cavities open where unfilled space is indicated between back of stone units and backup wall; do not fill cavities with mortar or grout.
1. Place weep holes in joints where moisture may accumulate, including at base of cavity walls and above shelf angles and flashing. Locate weep holes at intervals not exceeding **24 inches (600 mm)**.

3.2 SETTING DIMENSION STONE CLADDING WITH MORTAR

- A. Set stone in full bed of mortar with head joints filled unless otherwise indicated.

1. Provide compressible filler in ends of dowel holes and bottoms of kerfs to prevent end bearing of dowels and anchor tabs on stone. Fill remainder of anchor holes and kerfs with mortar.
- B. Embed ends of sills in mortar; leave remainder of joint open until final pointing.
- C. Point stone joints by placing sealant with concave surface.
- D. Rake out mortar from sealant-pointed joints to depths required for sealant and sealant backing but not less than **1/2 inch (12 mm)**. Rake joints to uniform depths with square bottoms and clean sides.

3.3 JOINT-SEALANT INSTALLATION

- A. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants."

3.4 INSTALLATION TOLERANCES

- A. Variation from Level: For lintels, sills, water tables, parapets, horizontal bands, horizontal grooves, and other conspicuous lines, do not exceed **1/4 inch in 20 feet** maximum.
- B. Variation of Linear Building Line: For positions shown in plan and related portions of walls and partitions, do not exceed **1/4 inch in 20 feet (6 mm in 6 m)** or **1/2 inch in 40 feet (12 mm in 12 m)** or more.
- C. Variation in Joint Width: Do not vary from average joint width more than plus or minus **1/8 inch (3 mm)** or a quarter of nominal joint width, whichever is less. For joints within **60 inches (1500 mm)** of each other, do not vary more than **1/8 inch (3 mm)** or a quarter of nominal joint width, whichever is less from one to the other.
- D. Variation in Plane between Adjacent Stone Units (Lipping): Do not exceed **1/16-inch (1.5-mm)** difference between planes of adjacent units.

3.5 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean dimension stone cladding as work progresses. Remove excess sealant and smears as sealant is installed.
- B. Final Cleaning: Clean dimension stone cladding no fewer than six days after completion of pointing and sealing, using clean water and stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning agents containing caustic compounds or abrasives, or other materials or methods that could damage stone.

END OF SECTION 044200