

SECTION 04 43 00
NATURAL STONE VENEER

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies requirements for construction of natural stone veneer. The existing stone veneer panel is to be salvaged and reinstalled. Damaged stone panels are to be replaced to match existing. This section is only applicable if existing panels are found to be a Natural Stone material - contractor to verify type of material.

1.2 RELATED WORK

- A. Mortars and grouts: Section 04 05 13, MASONRY MORTARING, Section 04 05 16, MASONRY GROUTING.
- B. Sealants and sealant installation: Section 07 92 00, JOINT SEALANTS.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Samples:
 - 1. Stone Veneer, submit 2 sets of each kind of stone proposed, sample size 1'-0" x 1'0" showing finish, texture, and color to be supplied.
 - 2. Samples of stainless steel anchors, ties, and joint reinforcing 1200 mm (48 inches) long.
- C. Certificates:
 - 1. Certificates signed by manufacturer, including name and address of contractor, project location, and the quantity, and date or dates of shipment of delivery to which certificate applies.
 - 2. Indicating that the following items meet specification requirements:
 - a. Stone veneer.
- D. Manufacturer's Literature and Data:
 - 1. Anchors, ties, and reinforcement.
 - 2. Submit manufacturer's instructions for use of mortar color
- E. Shop Drawing:
 - 1. Provide cutting and setting drawings indicating unit location
 - A. Indicate pertinent dimensioning, layout, anchorages, construction details, method of installation, adjacent existing construction and jointing.
- F. Contractor to test existing stone panels to determine type of stone. Provide written document indicating findings of test.

1.4 SAMPLE FIELD PANEL

- A. Not required.

1.5 WARRANTY

Warrant exterior masonry walls against moisture leaks and subject to terms of "Warranty of Construction", FAR clause 52.246-21, except that warranty period shall be five years.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
- A82/A82M-07.....Standard Specification for Steel Wire, for
Concrete Reinforcement
 - A153/A153M-09.....Standard Specification for Zinc Coating (Hot-
Dip) on Iron and Steel Hardware
 - A167/99(2009).....Standard Specification for Stainless and Heat-
Resisting Chromium-Nickel Steel Plate, Sheet,
and Strip
 - A240/A240M-12aStandard Specification for Chromium and
Chromium-Nickel Stainless Steel Plate, Sheet,
and Strip for Pressure Vessels and for General
Applications
 - A666-10.....Standard Specification for Annealed or Cold-
Worked Austenitic Stainless Steel Sheet, Strip,
Plate, and Flat Bar
 - A580/A580M-12a.....Standard Specification for Stainless Steel Wire
 - C97.....Standard Test Methods for Absorption and Bulk
Specific Gravity of Dimension Stone
 - C99.....Standard Test Method for Modulus of Rupture of
Dimension Stone
 - C119-08.....Standard Terminology Relating to Dimension Stone
 - C170.....Standard Test Method for Compressive Strength of
Dimension Stone
 - C568-08a.....Standard Specifications for Limestone Dimension
Stone
 - C1242-05.....Standard Guide for Selection, Design, and
Installation of Dimension Stone Anchoring
Systems
 - C1515-01.....Standard Guide to Cleaning of Exterior Dimension
Stone, Vertical and Horizontal Surfaces, New or
Existing

C1528-09.....Standard Guide for Selection of Dimension Stone
for Exterior Use

D1056-07.....Standard Specification for Flexible Cellular
Materials - Sponge Expanded Rubber

D7089-06.....Standard Practice for Determination of the
Effectiveness of Anti-Graffiti Coating for Use
on Concrete, Masonry, and Natural Stone Surfaces
by Pressure Washing

C. Masonry Industry Council:

All Weather Masonry Construction Manual, 2000.

D. Federal Specifications (FS):

FF-S-107C-00.....Screws, Tapping and Drive

E. International Masonry Industry All Weather Council (IMIAC): Recommended
Practices and Guide Specification for Cold Weather Masonry Construction

F. Indiana Limestone Handbook (22nd Edition or most current edition)

1.7 QUALITY ASSURANCE

A. Obtain stone from a single quarry with consistent color range and
texture throughout work. Stone to match existing.

B. Stone fabricator to have successfully fabricated stone similar to
quality specified for a period of not less than 5 years and is equipped
to provide quality shown.

1.8 ENVIRONMENTAL REQUIREMENTS

A. During freezing or near freezing weather, provide equipment and cover to
maintain a minimum of 40 degrees F to protect stone work completed or in
progress.

B. At end of working day, or during rainy weather, cover stone work exposed
to weather with waterproof coverings, securely anchored extending at
least 2 feet down both sides of walls.

C. Maintain materials and surrounding air to minimum 40 degrees F prior to,
during, and 48 hours after completion of work.

D. Do not use frozen materials or materials mixed or coated with ice or
frost. Do not use salt to thaw ice in anchor holes or slots. Do not
lower freezing point of mortar by use of admixtures or antifreeze
agents, and do not use calcium chloride in mortar or grout.

E. Do not build on frozen work; remove and replace stonework damaged by
frost or freezing.

1.9 PRODUCT DELIVERY

A. Protect stone during storage and construction against moisture, soiling
staining, and physical damage.

- B. Handle stone to prevent chipping, breakage, soiling, or other damage. Do not use pinch or wrecking bars without protecting edges of stone with wood or other rigid materials.
- C. Store stone on wood skids or pallets covered with non-staining, waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones. Protect stored stone from weather with waterproof, non-staining covers or enclosures, allow air to circulate around stones.
- D. Protect mortar materials and stonework accessories from weather, moisture, and contamination with earth and other foreign materials.

2.0 DEFECTIVE WORK

- A. Any piece of stone showing, flaws, imperfections, and/or unwanted coloration upon receipt at the building site shall be referred to the VA for acceptance or non-acceptance. If not acceptance the contractor shall replace the defective panel with another for review by the VA.
- B. Any chipping shall be cause for rejection and replacement of the stone panel.

PART 2 - PRODUCTS

2.1 ACCEPTABLE STONE PRODUCTS

- A. General: All stone shall be of grade indicated below, free of cracks, seams, or other traits which may impair its structural integrity or function.
- B. Stone Veneer: Density to match existing stone panels. Meet ASTM C615 for Granite veneer, C616 for Quartz based stone or ASTM C568 for Limestone as follows: Classification: III High-Density.
 - 1. Face Size: As indicated on drawings and field verified by contractor
 - 2. Color Range, finish, by manufacturer/producer to match existing (White/Gray).
 - 3. Texture: Fine to average-grained stone, permitting a controlled minimum of natural product variations - subject to VA approval.
 - 4. Consult manufacturer for material requirements to match existing

2.2 REINFORCEMENT AND ANCHORAGES

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply paragraphs below, unless otherwise indicated.
 - 1. Stainless Steel.
- B. Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but at least 25.4 mm (1 inch) cover on outside face. Outer ends of wires are bent 90 degrees and extend 50 mm

(2 inches) parallel to face of veneer. Anchors are to match sizes of existing units.

- C. Stone Anchors: Use split bend design to match existing sizes and design.
1. Where existing anchors are screw anchored to P.I.P. core, use screw-on split bend anchor. Acceptable Product: Heckmann Building Products Inc.; No. 274.
 - a. Thickness: Match existing.
 - b. Length: Field verify to length required between the bends.
 - c. Width: Minimum 1-1/4" width recommended.
 - d. Bend with Hole: 1 1/4" minimum recommended. Hole should be minimum of 1/16" larger than your screw size. (for example, 3/8" screw will use a 7/16" diameter hole).
 - e. Split-Bend: Minimum 3/4" width recommended. (specify as i.d. dimension)
 - f. Material: Stainless Steel - Type 304
 - 1) Sheet Metal: ASTM A 167 or ASTM A 240/A 240M.
 2. If existing anchors are NOT split bend design, submit product data for closet matching product during submittal phase. Acceptable Manufacturer: Heckmann Building Products Inc.

2.3 ACCESSORIES

- A. Joint Sealant: Refer to Section 07 92 00.
- B. Weep Holes: Leave-out of full head mortar joints.
- C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Strips, full-depth of cavity and 250 mm (10 inches) wide, with dovetail shaped notches 175 mm (7 inches) deep that prevent mesh from being clogged with mortar droppings.
- E. Mortar: Refer to Section 04 05 13.

2.4 STAIN PREVENTION

- A. Where necessary as determined by the stone manufacturer/installer, such as when limestone is used at/below grade or at horizontal water stops, dampproof unexposed stone surfaces. Joint surfaces should be dampproof as indicated by Indiana Limestone Handbook and standard industry practices.
- B. Dampproof all concrete surfaces on which limestone will rest. Dampproof adjacent concrete, haunches etc..

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other Sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
- D. Beginning of installation means installer accepts existing conditions.

3.2 PREPARATION

- A. Verify items provided by other Sections of work are properly sized and located.
- B. Establish lines, levels, and coursing. Protect from disturbance.
- C. Provide temporary bracing during erection of masonry work. Maintain in place until building structure provides permanent bracing.
- D. Scaffolding: Provide, erect, maintain, move, and finally remove scaffolding and staging required for masonry installation. Construct and maintain scaffolding in compliance with applicable ordinances, laws, rules and regulations. Scaffolding shall be sufficiently substantial to support workmen, and necessary materials and equipment. Provide adequate guard rails for protection of property, workmen, and passerby.

3.3 COURSING

- A. Place masonry to lines and level indicated.
- B. Arrange and trim stones for adequate fit in a range ashlar Pattern with course heights as indicated, random lengths, uniform joint widths with offset between vertical joints as indicated.

3.4 PLACING AND BONDING

- A. Placement method of stone panels is to match existing columns adjacent to project area. Existing joints appear to be sealant. Verify existing method used and match with new construction.
- B. If mortar joints are present, lay masonry in full bed of mortar (horizontal, vertical, and collar joints), properly jointed with other work. Buttering corners of joints and deep or excessive furrowing of mortar joints is not permitted.
- B. Fully bond intersections, and external and internal corners.
- C. Do not shift, or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- D. Remove excess mortar on surface and in cavities.

- E. Perform job site saw cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges.

3.5 TOLERANCES

- A. Alignment of Columns: Maximum of 6 mm (1/4 inch) from true line.
- B. Variation from Unit to Adjacent Unit: 0.8 mm (1/32 inch) maximum.
- C. Variation from Plane of Wall: 6 mm (1/4 inch) in 3 m (10 feet) and 12 mm (1/2 inch) in 6 m (20 feet) or more.
- D. Variation from Plumb: 6 mm (1/4 inch) per story non-cumulative, 12 mm (1/2 inch) in two stories or more.
- E. Variation from Level Coursing: 3 mm (1/8 inch) in 1 m (3 feet); 6 mm (1/4 inch) in 3 m (10 feet); 6 mm (1/4 inch) maximum.
- F. Variation of Joint Thickness: 3 mm (1/8 inch) in 1 m (3 feet).
- G. Maximum variation from Cross Sectional Thickness of Walls: Plus or minus 6 mm (1/4 inch).

3.6 JOINTING

- A. Joint size:
 - 1. At stone/stone joints 3/8 in. (9.5 cm).
 - 2. At stone/stone joints in vertical position 1/4 in. (6 mm) (3/8 in. (9.5 mm) optional). MATCH EXISTING CORNER JOINT SIZE.
 - 3. Stone/stone joint exposed on top 3/8 in. (.5 mm).
- B. Joint Materials: JOINTS ARE TO MATCH EXISTING. VERIFY MATERIAL OF EXISTING JOINTS (Backer rod/tape and sealant). COORDINATE INTENT WITH VA COTR AND ARCHITECT PRIOR TO STARTING WORK.
 - 1. Mortar, Type N, ASTM C 270.
 - 2. Use a full bed of mortar at all bed joints.
 - 3. Flush vertical joints full with mortar.
 - 4. Leave all joints with exposed tops or under relieving angles open for sealant.
 - 5. Leave head joints in coping and projecting components open for sealant.
- B. Location of joints:
 - 1. As shown on shop drawings.
 - 2. At control and expansion joints unless otherwise shown.

3.7 REINFORCEMENT AND ANCHORAGES

- A. Attach wall ties to wall studs (or other solid and secure framing members) for veneer construction at maximum 400 mm (16 inches) oc vertically and 400 mm (16 inches) oc horizontally. Place at maximum 200 mm (8 inches) oc (or every third course) each way around perimeter of openings, within 300 mm (12 inches) of openings.

- B. Anchor stone veneer to unit masonry with metal veneer anchors as follows:
1. Secure wire anchors by inserting pintles into eyes of masonry wall reinforcement projecting from horizontal mortar joints.
 2. Embed anchors in veneer mortar joints to within 25 mm (1 inch) of face.
 3. Stone veneer to be anchored as per existing field verify.

3.8 MASONRY FLASHINGS

- A. Extend flashings to exterior face of veneer, turn up a minimum of 200 mm (8 inches) and seal onto face of substrate.
- B. Lap end joints minimum 150 mm (6 inches) and seal watertight per manufacturer's recommendation.
- C. Use flashing manufacturer's recommended adhesive and termination sealant.
- D. Create end dams at end of vertical elements to channel water to nearest weep hole away items which might allow water to travel vertically.

3.9 LINTELS

- A. Install loose steel lintels as scheduled or shown. Leave space at end of lintels to expand.

3.10 WEEPS AND VENTS

- A. Install weep holes in veneer at 600 mm (24 inches) on center horizontally, above through-wall flashing, and at bottom of walls.

3.11 BUILT-IN WORK

- A. As work progresses, build-in steel anchor tab for ornamental fence and other items to be built in the work supplied by other Sections.
- B. Build-in items plumb and level.
- C. Do not build-in organic materials subject to deterioration.

3.12 CUTTING AND FITTING

- A. Cut and fit for steel tab used to anchor ornamental fence sections. Cooperate with other Sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of limestone may be impaired.

3.13 INSTALLATION

- A. All work performed under this section shall be in accordance with the Specifications, Drawings and Manufacturer's Instructions and Recommendations. In the event of a conflict, the stricter requirement shall prevail.

3.14 CLEANING

- A. Remove excess mortar and smears.
- B. Replace defective mortar. Match adjacent work.
- C. Coordinate cleaning of soiled surfaces with Architect to determine intent, using non-acidic solution which will not harm masonry or adjacent materials. Consult masonry manufacturer for acceptable cleaners. Leave surfaces thoroughly clean and free of all mortar and other soiling.
- D. Use non-metallic tools in cleaning operations.
- E. ASTM C1515 and D7089.
- F. Clean after joints (and cap joints) are sealed and water cannot enter the wall/column.

3.15 PROTECTION

- A. Maintain protective boards at exposed external corners which may be damaged by construction activities.
- B. Provide protection without damaging completed work.
- C. Keep expansion joint voids clear of mortar.

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