

SECTION 04810

CONCRETE STONE MASONRY ASSEMBLIES



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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete stone masonry units.
- B. Special shapes.
- C. Mortar for unit masonry.
- D. Reinforcement, anchorages, and accessories.

1.2 RELATED SECTIONS

- A. Section 04200 – Unit Masonry: Concrete masonry block, anchors, and accessories for veneer back-up construction.
- B. Section 05400 – Cold Formed Metal Framing: Steel stud and sheathing for veneer back-up construction.
- C. Section 06100 – Rough carpentry: Wood stud and sheathing for veneer back-up construction.
- D. Section 07110 – Dampproofing: Cavity dampproofing of masonry back-up.
- E. Section 07270 – Air and Moisture Barriers.
- F. Section 07600 – Flashing and Sheet Metal Trim: Through wall and cavity flashing.
- G. Section 07900 – Joint Sealants: Control joints and seals at adjacent materials.

1.3 REFERENCES

- A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures.
- B. ACI 530.1/ASCE 6/TMS 602 - Specifications for Masonry Structures and Commentaries.
- C. ASTM A 36 - Standard Specification for Carbon Structural Steel.
- D. ASTM A 153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- E. ASTM A 666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
- F. ASTM C-55 – Standard Specification for Concrete Brick.
- G. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
- H. ASTM C 150 - Standard Specification for Portland Cement.
- I. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
- J. ASTM C 270 - Standard Specification for Mortar for Unit Masonry.
- K. ASTM C 387 - Standard Specification for Packaged, Dry, Combined Materials for Mortar and Concrete.
- L. ASTM C 568 - Standard Specification for Limestone Dimension Stone.
- M. ASTM E 514 - Test method for Water Penetration and Leakage Through Masonry.
- N. IMIAC - International Masonry Industry All-Weather Council: Recommended Practices and Guide Specification for Hot and Cold Weather Masonry Construction.
- O. NCMA – National Concrete Masonry Association.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Test Reports: Submit test reports from an independent testing agency indicating compliance with referenced standards.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Selection Samples: For each finish product specified, two complete sets of representative colors selections representing manufacturer's full range of representative colors and textures.
- D. Verification Samples: For each product specified, two full size samples representing actual product, colors and textures.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with applicable requirements of governing authorities and codes. Comply with applicable requirements for installation of masonry work per ACI 530 and ACI 530.1.
- B. Single Source Responsibility for Masonry Units: Obtain all exposed masonry units of uniform texture and color, or a uniform blend within ranges accepted from a single manufacturer.
- C. Mock-Up: Provide a mock-up for evaluation of product and application workmanship.
 - 1. Install in area and of size designated by Architect.
 - a. Construct mockup to illustrate backup wall, exterior sheathing, air barrier, cavity wall, connectors, weep holes, cavity vents, and through wall flashing.
 - b. Construct mockup panel 48 inches (1219 mm) by 48 inches (1219 mm) to illustrate stone masonry units, coursing, anchorage, mortar joints and color, pattern of finished wall and control joints.
 - c. Cleaning materials to be used on final masonry work shall be used on the Mock-up to verify compatibility with masonry units.
 - 2. Do not proceed with work until finish color, texture, pattern, joint sizes, and installation workmanship are approved by Architect.
 - 3. Correct mock-up area as required to produce acceptable work.
 - 4. Mock-up may be incorporated into final construction upon Architect's approval.

1.6 QUALIFICATIONS

- A. Installer Qualifications: Company specializing in installing products of this Section with minimum 10 years documented experience.
- B. Design anchors under direct supervision of Professional Engineer experienced in design of this Work and licensed at the location of the work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver mortar materials in original unbroken, undamaged packages with manufacturers labels intact and visible. Store off the ground and undercover until used on the work.
- B. Store or pile sand on a plank platform and protect from dirt and rubbish. Store mortar materials and sand in such a manner as to prevent deterioration or contamination by foreign materials.
- C. Deliver masonry units to the site banded on pallets with protective pallet covers. Prevent damage to units.
- D. Lift skids with proper and sufficiently long slings or forks with protection to prevent damage to units. Protect edges and corners.
- E. Store masonry units in a manner designed to prevent damage and staining of units Single stack pallets on level ground with waterproof covering to protect from inclement weather.
- F. Do not use calcium-chloride or de-icing salts to remove ice from masonry surfaces.

1.8 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.
 - 1. Maintain materials and surrounding air to minimum 50 degrees F (10 degrees C) prior to, during, and 48 hours after completion of masonry work.
 - 2. Cold Weather Protection: When outside air is below 40 degrees F (4.5 degrees C), pre-condition materials and finish work per requirements of IMIAC.
 - 3. Hot Weather Protection: Protect masonry from direct exposure to wind and sun when erected in ambient air temperature of 99 degrees F (37 degrees C) in shade with relative humidity less than 50 percent per requirements of IMIAC.
- B. Coordination: Coordinate with other Work that is integrated with or built-in masonry. Coordinate masonry flashing with flashing specified elsewhere to insure a complete, watertight flashing system to shed water to building exterior.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Oldcastle Architectural Companies; 375 Northridge Road, Suite 250, Atlanta, Georgia 30350. ASD. Tel: (770) 804- 3363. Fax: (770) 804-3369. Email: sales@oldcastleapg.com. Web: <http://www.dufferinstone.com>.
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 PRODUCTS

- A. Concrete Stone Masonry Veneer Units: Dufferin Stone Masonry Units as manufactured and distributed by Oldcastle Architectural Group.
 - 1. Solid units with physical dimensions and characteristics complying with ASTM C 55 and the physical properties of ASTM C 568, Class II.
 - 2. Wall assembly capable of complying with ASTM E 514, Class E.
 - 3. Special shapes and sizes, including 45 degree angle stone and stone surround shapes, as indicated on the drawings for the pattern specified.
 - 4. Color: Minimum of three variegated color blending as selected from manufacturers standard selections.
 - 5. Size: 4 inches (102 mm) in width nominal with face dimensions selected from a minimum of 15 face sizes to match ashlar pattern as indicated on Drawings or established in the approved mock-up.
- B. Anchors: Provide anchors to suit design requirements for material and installation requirements.
 - 1. Wall Ties: Formed steel wire, hot dip galvanized to ASTM A 153, B2 finish:
 - a. _____ inches (_____ mm) thick.
 - b. Adjustable type.
 - c. Eye and pintle type.

2. Anchors and Supports:
 - a. Stainless steel, ASTM A 666, Type 304.
 - b. Steel, ASTM A 36, galvanized after fabrication to ASTM A 153, B2 finish.
- C. Mortar Materials:
1. Portland Cement: to ASTM C150, Type I.
 - a. Gray.
 - b. White.
 - c. Color as selected.
 2. Hydrated Lime: to ASTM C 207:
 - a. Type S.
 - b. Type N.
 3. Mortar Aggregate: to ASTM C 144, standard masonry type; clean, dry, protected against dampness, freezing, and foreign matter.
 4. Premix Mortar: ASTM C 387:
 - a. Gray.
 - b. White.
 - c. Color as selected.
 - d. Type S.
 - e. Type N.
 5. Premix Colored Mortar: ASTM C 978:
 - a. Color _____.
 - b. Color as selected.
 - c. Type S.
 - d. Type N.
 6. Water: Potable, clean and free of deleterious amounts of acids, alkalis or organic materials.
 7. Mortar Color: Mineral oxide pigment color as selected.
 8. Integral Water Repellent: shall be factory blended granular or liquid type as approved by the Architect.

2.3 ACCESSORIES

- A. Flashing: Provide flashing as specified in Section 07600.
- B. Weeps: Preformed plastic insect resistant vents with sloping louvers.
- C. Cavity Vents: Molded polyvinyl chloride insect resistant grilles.

2.4 MORTAR MIX

- A. Proportion mortar for masonry in accordance with ASTM C270:
 1. Type M.
 2. Type S.
 3. Type N.
- B. Mix mortar in accordance with ASTM C270 and in quantities require for immediate use.
 1. Add color and water repellents in accordance with the manufacturers printed instructions.
 2. Re-temper mortar only within two hours of mixing

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify field conditions are acceptable and ready to receive work.
- B. Verify that built-in items are in proper location and ready for roughing into masonry work.
- C. If back-up wall construction is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Protect adjacent work areas and finish surfaces from damage during product installation.
- B. Provide for temporary bracing as required during construction.

3.3 INSTALLATION

- A. General: Install in accordance with ACI 530/ASCE 5/TMS 402 and the manufacturer's instructions.
- B. Coursings: Install masonry construction anchored solidly to backing, properly aligned, plumb, and true in required layout, making straight, level courses, unless otherwise indicated.
 - 1. Place varying size of stones to provide a random Ashlar pattern as approved.
 - 2. Maintain mortar joint thickness of 3/8 inch (10 mm) to 3/4 inch (19 mm) either horizontally or vertically.
 - 3. Tool joints as follows:
 - a. Flush.
 - b. Concave.
 - c. Recessed.
- C. Placing and Bonding: Lay masonry in full bed of mortar with full head joints, properly jointed with other work. Buttering corners of joints, deep or excessive furrowing of mortar joints is not permitted.
 - 1. Back-bevel bed joints to remove excess mortar droppings in cavity as work progresses.
 - 2. Fully bond intersections and external corners.
 - 3. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
 - 4. Provide for expansion and control joints as indicated on the Drawings.
 - 5. Do not adjust masonry units after placing. Where resetting of masonry is required, remove, clean units and reset in new mortar.
 - 6. Leave joints under shelf angles and elsewhere as indicated or required open to receive sealant.
- D. Anchors: Provide anchors to suit design requirements indicated or required.
 - 1. Masonry backing: Wire anchors or adjustable anchors. Minimum spacing 18 inches (450 mm) horizontally and 32 inches (800 mm) vertically.
 - 2. Steel stud backing: Adjustable anchors attached with corrosion-resistant screws having a minimum nominal shank diameter of 0.19 inch (4.8 mm). Minimum spacing 18 inches (450 mm) horizontally and 32 inches (800 mm) vertically.

3. Wood stud backing: Corrugated sheet metal anchors, wire anchors or adjustable anchors. Attach to backing with a corrosion-resistant 8d common nail, or a fastener with equivalent or greater pullout strength. Minimum spacing 18 inches (450 mm) horizontally and 32 inches (800 mm) vertically.
 4. Increase quantity of wall ties around perimeter of openings, at wall terminations and corners, and along parapet walls, placed within 8 inches (203 mm) of openings and edges of masonry.
- E. Build-in items furnished by other trades, and leave accurate openings necessary for subsequent installation of other Work to maintain required strength and appearance of masonry construction.
1. Fill solidly with mortar around conduit and sleeves passing through masonry Work.
 2. Build-in loose steel angle lintels, providing bearing indicated in full mortar bed.
- F. Prevent grout, mortar, and soil from staining face of masonry. Remove grout and mortar from these surfaces immediately.
- G. Protect base of masonry walls from rain splashed mud and mortar splatters.
- H. Install weep holes in veneer masonry at maximum 24 inches (610 mm) on center horizontally above through-wall flashing, above shelf angles, lintels, bottom of walls, and elsewhere as indicated on Drawings.
- I. Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.
- J. Install cavity vents a maximum 24 inches (610 mm) on center horizontally at top of each cavity space, below shelf angles and elsewhere as indicated on the Drawings.
- K. Install through-wall flashing over exterior windows, relieving angles, doors, tops of walls, at the inside base of cavity walls, and under sills. Extend ends of sill flashing beyond jamb line and turn up into wall to create an end dam to divert moisture toward the wall face. Extend flashing over veneer, turn up minimum 8 inches (200 mm) and bed into mortar joint of masonry, or seal to sheathing.

3.4 TOLERANCES

- A. In accordance with ACI 530.1 ASCE6/TMS602
- B. Maximum Variation of Joint Thickness: Plus minus 1/8 inch (3 mm).
- C. Maximum Offset From Adjacent Unit: 1/8 inch (3 mm).

3.5 CLEANING

- A. Keep walls clean daily during installation using brushes or rags. Do not allow excess mortar lumps or smears to harden on the finished surfaces.
- B. After mortar is thoroughly set and cured, clean masonry as per methods recommended by NCMA and as follows:
 - 1. Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposed. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 2. Remove large mortar particles by hand with wooden paddles and non-metallic scrapers or chisels
 - 3. Clean concrete stone masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.
- C. Replace defective mortar as required to match adjacent work.

3.6 PROTECTION

- A. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products.
- B. Protect installed products until completion of project.
- C. Protect concrete stone from contact with mortar, soil, and other materials capable of staining or discoloring the finished product.
- D. Touch-up, repair or replace damaged products before Substantial Completion.
- E. Remove construction debris from project site and legally dispose of debris.

END OF SECTION