



**SPECIAL PROVISIONS
FOR
STONE MASONRY**

**Polk County
TAP-T-8477(613)--8V-77**

**Effective Date
May 19, 2015**

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 - GENERAL

1.1 SUMMARY:

- A. Provide masonry work as shown and specified. The work includes:
 - 1. Stone masonry.

1.2 REFERENCES:

- A. Drawings.

1.3 QUALITY ASSURANCE:

- A. Materials and methods of construction shall comply with the following standards and association recommendations:
 - 1. American Society for Testing and Materials, (ASTM).
- B. Comply with the applicable requirements of local governing authorities and American National Standards Institute (ANSI) A41.1, Building Code Requirements for Masonry, for the types of stone masonry construction indicated.
- C. Source Limitations for Stone: Obtain stone units through one source from a single manufacturer.
- D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.
- E. Installation: Performed only by experienced masons with satisfactory record of

performance on complete projects of comparable size and quality.

- F. Provide each type of material from only one quarry or manufacturer to ensure consistent color range and texture.

1.4 SUBMITTALS:

- A. Submit manufacturer's product data for each type of stone and accessory required.
- B. Submit cutting and setting shop drawings for cut and cast stone work showing dimensions and arrangement.
- C. Submit samples of each type and color of stone required. Include the full range of exposed color and texture proposed for the work. Provide cut stone samples not less than 12 inches by 12 inches in size. Final approval of all colors must be obtained prior to any fabrication beginning.
- D. Provide 2 foot by 2 foot mock-up panel to remain on site during construction.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Stone masonry materials: Deliver, store, and handle materials in accordance with stone fabricators recommendations. Use non-staining materials for blocking and packing. Stack materials off the ground on non-staining skids. Protect from damage and soiling. Coordinate delivery of materials to minimize the need for on-site storage and to avoid delaying the Work.
- B. Pack, handle, and ship stone units in suitable packs or pallets.
 - 1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone units, if required, using dollies with wood supports.
 - 2. Store stone units on wood skids or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.
- C. Masonry accessories: Deliver, store, and handle masonry accessories to prevent weather damage and deterioration.

1.6 PROJECT CONDITIONS:

- A. Do not use metal accessories with loose coatings, including ice, which will reduce bond.
- B. Protect partially-completed stone masonry work against weather damage and moisture, when work is not in progress. Cover tops of walls with strong, waterproof, non-staining membrane. Extend membrane at least 2 feet down both sides of walls and hold securely in place.
- C. Brace unsupported and newly-laid masonry walls. Maintain bracing in place until walls reach design strength.
- D. Cold weather construction:
 - 1. Precondition masonry materials to maintain 50°F. when installed.
 - 2. Do not install stone masonry work when the temperature of the outside air is below 40°F. and falling unless suitable means acceptable to the Engineer are provided to protect work from cold and frost and ensure that mortar will set

without freezing. Comply with International Masonry Industry All-Weather Council cold weather construction and protection recommendations.

3. No masonry work will be permitted when outside air temperature is below 25°F.
 4. Do not use frozen materials or materials mixed or coated with ice or frost.
 5. Do not build on frozen work. Remove and replace masonry work damaged by frost or freezing.
 6. Protect completed masonry work against freezing for not less than four days after laying.
- E. Protect adjacent work from damage, soiling, and staining during masonry work operations.

PART 2 - PRODUCTS

2.1 CUT STONE MATERIALS:

- A. Stone Materials: Stone shall be standard grade, free of crack or seam which may impair its structural integrity or function and shall comply with industry standards and practices
- B. Products: Subject to compliance with requirements as set forth in ASTM C568, Classification: Category III, High Density. Stone shall be provided with the following physical properties:
1. Absorption: ASTM C97, 2.0% maximum.
 2. Density: ASTM C 97, 150 pounds per cubic foot minimum.
 3. Modulus of Rupture: ASTM C 99, 1000 psi minimum.
 4. Compressive Strength: ASTM C 170, 15,000 psi average
 5. Abrasive Resistance: ASTM C 241, R12.0 minimum.
 6. Freeze Thaw Durability: ASTM D 5312, mass loss after 35 cycles, 0%.
 7. Wetting and Drying Durability: ASTM D 5313 mass loss after 80 cycles, 0 to 0.10 of 1%.
- C. Provide sound stone uniform in color and texture, free from mineral stains, other foreign matter, and defects detrimental to appearance and durability. Color range, texture, and finish of cut stone materials shall be within range of Engineer's accepted samples.
- D. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A 240/A 240M, ASTM A 276,
- E. Available Manufacturers: Provide one of the following.
1. Valders Limestone, Buff flamed finish on caps, coping and banding. Splitface texture on sign field.
 2. Glacier Stone, Canyon Creek, flamed finish on caps, coping and banding. Splitface texture on sign field.
 3. Cordova Stone, Alabaster Groundface finish on caps, coping and banding. Rockface Texture on sign field.

2.2 CUT STONE FABRICATION:

- A. Fabricate stone work as indicated or as accepted and detailed on final shop drawings.
- B. Fabrication Tolerances:
1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.

2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
 3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
- C. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces
- D. Cut accurately to shape and dimensions indicated or accepted final shop drawings.
1. Dress joints, bed, and vertical, straight at 90 degree angle to face. Provide drips and washes as indicated.
 2. Joint width: Cut to allow uniform 1/4 inch wide joints unless previously stated otherwise.
 3. Thickness: Provide thickness indicated.
 4. Jointing: Provide as indicated; when not indicated, in accordance with industry standards and practices.

2.3 MORTAR MATERIALS:

- A. Portland cement: ASTM C150, Type I, natural color.
- B. Masonry cement: ASTM C91.
- C. Hydrated lime: ASTM C207, Type S.
- D. Aggregate:
1. Masonry mortar: ASTM C144, clean masonry sand, not over 10% to pass #100 sieve.
 2. Masonry grout: ASTM C404, clean pea gravel, maximum 3/8 inch size.
- E. Water: Clean, fresh, and potable.
- F. Colored mortar pigment: Lime-proof and alkali-proof mineral oxide pigments. Color as indicated on drawings. Submit color samples with shop drawings.

2.4 MORTAR AND GROUT MIXES:

- A. Type N mortar: ASTM C270 proportions by volume. Minimum average compressive strength at 28 days of 2500 psi, either:
1. 1 part portland cement, 1/4 part hydrated lime, not less than 2 1/4 and not more than 3 times the sum of the volumes of cement used of damp, loose sand.
- B. Coarse grout: ASTM C476 proportions by volume. Minimum average compressive strength at 28 days of 2500 psi:
1. 1 part portland cement, 0 to 1/10 part hydrated lime, not less than 1 and not more than 2 times the volume of cement used of damp, loose coarse aggregate.
- C. Measure and batch material either by volume or weight. Use accurate measuring devices to ensure uniformity and coloration of mix. Shovel count measurement of sand is not acceptable.

- D. Mix cementitious material and aggregate in a clean mechanical mixer for at least 5 minutes. Add water in amount to provide satisfactory workable consistency of mortar.
- E. Proportion colored mortar pigment with other ingredients to match the approved samples.
- F. Retemper mortar as required within 2 hours of mixing to replace water lost by evaporation. Use and place mortar in final position within 2 1/2 hours of the initial mixing. Discard mortar after 2 1/2 hours of the initial mixing.

2.5 ACCESSORIES

- A. Anchors: Type and size indicated, fabricated from stainless steel complying with ASTM A 240/A 240M, ASTM A 276, or ASTM A 666, Type 304.
- B. Dowels: Round stainless-steel bars complying with ASTM A 276, Type 304, and 1/2 inch diameter.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine substrates and installation conditions. Do not start stone masonry work until unsatisfactory conditions are corrected.

3.2 PREPARATION:

- A. Establish lines, levels, and coursing.
 - 1. Clean cut stone work before setting by thoroughly scrubbing with fiber bristle brushes and clean water. Drench stone with clean water just prior to setting.
- B. Do not use masonry units with chips, cracks, voids, stains, or other visible defects.
- C. Excavation
 - 1. Contractor shall excavate to the lines and grades shown on the project grading plans. Contractor shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted infill material, or as directed by the Engineer, at the Contractor's expense.
 - 2. Contractor shall verify location of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation. Excavation support, if required, is the responsibility of the Contractor.
- D. Foundation Preparation
 - 1. Following the excavation, the foundation soil shall be examined by the Engineer to assure actual foundation soil strength meets or exceeds the assumed design bearing strength. Soils not meeting the required strength shall be removed and replaced with infill soils, as directed by the Engineer.
 - 2. Foundation soil shall be proofrolled and compacted to 95% standard Proctor density and inspected by the Engineer prior to placement of leveling pad materials.
- E. Leveling Pad Construction
 - 1. Leveling pad shall be placed as shown on the plans. The leveling pad should extend laterally at least a distance of 6 inches from the toe and heel of the lower most masonry unit.

2. Granular leveling pad material shall be compacted to provide a firm, level bearing surface on which to place the first course of units. Well-graded sand can be used to smooth the top 1/2 to 1/4 inch of the leveling pad. Compaction will be with mechanical plate compactors to achieve 95% of maximum standard Proctor density (ASTM D 698).

3.3 INSTALLATION OF CUT STONE:

- A. Set stone in accordance with drawing details and final shop drawings for stone work. Provide anchors, supports, and other attachments shown, or necessary to secure stonework in place. Shim and adjust accessories as required for proper setting of stone.
- B. Erect cut stone work plumb and true with joints uniform in width and accurately aligned.

3.4 CLEANING:

- A. Remove and replace stone units which are loose, broken, stained, or otherwise damaged. Provide new matching units, install as specified.
- B. Clean stonework not less than six days after completion of work, using clean water and stiff-bristle brushes. Do not use wire brushes, acid type cleaning agents or other cleaning compounds with caustic or harsh fillers.
- C. Cleaning agents and methods shall be acceptable to the Engineer.
- D. Upon completion of the work, remove from site all excess materials, debris, tools, and equipment. Repair damage resulting from stone masonry work operations.

3.5 MEASUREMENT AND PAYMENT

- A. Stone Veneer
 1. Measurement and payment for this item shall be made on a per square foot basis. Included with this item is all labor, equipment and materials necessary for furnishing and installing the stone veneer. All fasteners, connectors, mortar, pins, anchors and sealant necessary shall be considered incidental to the unit price.
- B. Masonry Capstone
 1. Measurement and payment for this item shall be made on a per square foot basis. Included with this item is all labor, equipment and materials necessary for furnishing and installing the masonry capstone. Capstones along the top of brick walls and decorative stone copings included in this price. All fasteners, connectors, mortar, pins, anchors and sealant necessary shall be considered incidental to the unit price.