



Iowa Department of Transportation

SPECIAL PROVISIONS FOR LIMESTONE

Black Hawk County
EDP-1185(644)--7Y-07

Effective Date
June 19, 2012

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

097045.01 DESCRIPTION.

A. Summary.

Extent of limestone stonework as indicated on the plans including:

- Providing and installing new Limestone Columns.
- Providing and installing new Limestone Archways.

B. Quality Assurance.

1. **Single-Source Responsibility for Stone.** Obtain the limestone from a single quarry with resources to provide materials of consistent quality in appearance and physical properties, including the capacity to cut and finish material without delaying the progress of the work.
2. **Installer Qualifications.** Engage an experienced Contractor who has completed stonework similar in material, design, and extent to that indicated and that has resulted in construction with a record of successful in-service performance.

C. Submittals.

1. **Product Data.** Submit manufacturer's technical data for limestone, stonework accessories, and other manufactured products required.
2. **Shop Drawings.** Submit cutting and setting drawings indicating sizes, dimensions, sections and profiles of stones; arrangement and provisions for jointing, supporting, anchoring, and bonding stonework; and details showing relationship with, attachment to, and reception of related work.

3. **Graffiti Control Products.** Submit manufacturer's technical data for product intended to minimize the effects of graffiti and other environmental factors for review. Product shall provide long-term protection with minimum maintenance required.

D. Field-Constructed Mock-Up.

Prepare mock-ups for the following types of dimension stonework. Purpose of mock-ups is further verification of selections made for color and finish under sample submittals and establishing standard of quality for aesthetic affects expected in completed work. Build mock-ups to comply with following requirements:

- Mock-up for limestone work shall consist of the in-place installation of one Limestone Column, as shown in the plans.
- Mock-up may be a dry-fit (i.e., no mortar required).
- Notify Engineer 1 week in advance of the dates and times when the mock-up will be erected.

E. Delivery, Storage and Handling.

1. Deliver masonry materials to project in undamaged condition.
2. Store and handle stone and related materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breakage, chipping, or other causes.
3. Do not use pinch or wrecking bars.
4. 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.

F. Project Conditions.

1. **Protect Stonework During Erection as Follows.** Cover top of walls with non-staining waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24 inches down both sides and hold securely in place.
2. Prevent staining of stone from mortar, grout, sealants and other sources. Immediately remove such materials from stone without damage to latter.

G. Environmental Requirements.

1. Maintain materials and ambient air to a minimum 40°F prior to, during, and 48 hours after completion of work.
2. At the end of working day, or during rainy weather, cover exposed stonework with non-staining waterproof coverings, securely anchored.
3. Cold Weather Protection: Comply with the following requirements: Remove ice or snow formed on stonework beds by carefully applying heat until top surface is dry to the touch.

097045.02 MATERIALS.

A. Limestone.

1. Provide matched blocks from a single quarry for each type, variety, color and quality of stone required. Extract blocks from a single bed of quarry stratum.

2. Absorption (ASTM C97): 7-8% average.
3. Bulk Specific Gravity (ASTM C97): 2-2.5 average.
4. Density (ASTM C97): 130-135 pounds per cubic foot.
5. Compressive Strength (ASTM C170): 10,000 psi min.
6. Modulus of Rupture (ASTM C99): 1100 psi min.
7. Flexural Strength (ASTM C880): 900 psi min.
8. Type: Buff colored, select grade, with finish and size as defined on plans.

B. Stone Fabrication.

1. **General:** Fabricate stonework in sizes and shapes required to comply with requirements indicated, including details on Plans and final shop drawings.
2. Cut stones to produce pieces of thickness, size and shape indicated or required and within fabrication tolerances recommended by applicable stone association or, if none, stone source, for faces, edges, beds, and backs.
3. Slope exposed top surfaces of stone and horizontal sill surfaces for natural wash.
4. Carefully inspect finished stones at fabrication plant for compliance with requirements relative to qualities of appearance, material, and fabrication; replace defective stones with ones that do comply. Grade and mark stones for overall uniform appearance when assembled in place. Natural variations in appearance are acceptable if installed stones match range of colors and other appearance characteristics represented in approved samples and field-constructed mock-ups.

C. Graffiti Control.

Provide clear, solvent-based product specifically formulated to weatherproof limestone and other masonry elements and protect treated surfaces without altering natural color.

097045.03 CONSTRUCTION.

A. General.

1. Execute stonework by skilled mechanics, and employ skilled stone fitters at the site to do necessary field cutting as stones are set.
2. **Inspection:** Verify that support work and site conditions are ready to receive work of this Section. Verify that items built-in under other Sections are properly located and sized. Beginning of installation means acceptance of existing conditions and support work.
3. **Preparation:** Establish layout. Protect from disturbance. Clean stone surfaces which have become dirty or stained prior to setting to remove soil, stains and foreign materials. Clean stones by thoroughly scrubbing stones with fiber brushes followed by a thorough drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh filler or abrasives. Do not use wire brushes or implements which can mark or damage exposed surfaces.

B. Limestone Installation.

Erect stone in accordance with stone supplier's instructions.

C. Graffiti Control.

1. Contractor shall provide all materials, labor and equipment to provide all exposed stone with two applications of graffiti control.
2. Surface to be sealed must be clean and thoroughly dry. Surface and air temperatures should be at least 50°F. at time of application and for 8 hours following. First application shall be at least 28 days after completion of actual stonework.
3. Application shall be by brush, roller or airless sprayer, the surface should be flooded to the point of maximum absorption. Coverage will vary from 150 to 400 square feet per gallon under normal weather conditions; coating will dry to touch in 50 minutes and dry hard in 4 hours. After 24 hours, apply a second coat. Care shall be taken to ensure other finish surfaces and plantings in the area are not coated.

097045.04 METHOD OF MEASUREMENT.

The Engineer shall measure the volume of limestone that is satisfactorily installed in accordance with the plans and this Special Provision, as required by the contract documents..

097045.05 BASIS OF PAYMENT.

For the volume of limestone installed and measured for payment, the Contractor shall be paid the contract unit price. This payment shall be full compensation for the limestone installed.

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