



Iowa Department of Transportation

**SPECIAL PROVISION
FOR
LIMESTONE VENEER MEDIAN WALL**

**Johnson County
STP-U-1557(638)--70-52**

**Effective Date
December 17, 2013**

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

PART 1 GENERAL

1.01 SUMMARY

- A. SECTION INCLUDES
 - 1. This part of the Specifications includes all labor, materials, equipment, and supervision required to construct a LIMESTONE VENEER MEDIAN WALL.
 - 2. This section includes the specifications for limestone (native Iowa limestone), mortar, mortar additives, sealant and limestone accessories.

1.02 MEASUREMENT AND PAYMENT

- A. Basis of Measurement: One LIMESTONE VENEER MEDIAN WALL complete.
- B. Basis of Payment: Payment for LIMESTONE VENEER MEDIAN WALL includes all labor, materials, equipment, and supervision required to install LIMESTONE VENEER MEDIAN WALL.
- C. Unit Price for LIMESTONE VENEER MEDIAN WALL includes shop drawings, limestone veneer, structural concrete footing as per Section 2403 of the Standard Specifications, reinforcing, material delivery to site, installation, cleaning and repair, and other materials necessary for furnishing and installing the LIMESTONE VENEER MEDIAN WALL, complete.

1.03 QUALITY ASSURANCE

- A. Materials and methods of construction shall comply with the American Society for Testing and Materials (ASTM) and applicable requirements of local governing authorities.
- B. Limestone Standards:
 - 1. Native Iowa limestone -- min. 55 percent calcium chloride as CaCo_4 .
 - 2. Compressive strength (ASTM C 170 - 50).
 - a. Minimum - 6500 psi.
 - b. Average - 7500 psi.
 - 3. Absorption (ASTM C 97 - 47) -- maximum 7.0 percent.
- C. Installation: Performed only by experience stone wall builders with satisfactory record of performance on complete projects of comparable size and quality.
- D. Provide all limestone from one quarry to ensure consistent color range and texture.
- E. Do not change source or brands of materials during the course of the work.

1.04 SUBMITTALS

- A. Product data for limestone and accessories required.
- B. Limestone: Samples required; include the color and texture proposed for the work.
- C. Shop drawings for limestone veneer assembly required.
- D. Shop drawings for limestone accessories required.
- E. Mortar: Product data and color samples as shown on plans.
- F. Latex Mortar Additive: Product data.

- G. Limestone Sealant: Product data.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stone: Deliver, store, and handle limestone materials in accordance with stone suppliers recommendations.
 1. When blocking and packing use non-staining materials.
 2. Protect stone from damage and soiling.
- B. Stone Accessories: Deliver, store, and handle masonry accessories to prevent weather damage and deterioration.
- C. Mortar Materials: Store cementitious materials off the ground, under cover, and in dry location.

1.06 PROJECT CONDITIONS

- A. Do not use metal accessories with loose coatings, including ice, which will reduce bond.
- B. Protect partially-completed limestone work against weather damage and moisture, when work is not in progress. Cover tops of limestone with strong, waterproof, non-staining membrane.
- C. Cold Weather Construction:
 1. Do not use frozen materials or materials mixed or coated with ice or frost.
 2. Do not build on frozen ground or frozen work. Remove and replace stone work damaged by frost or freezing.
 3. Precondition masonry materials to maintain 50°F when installed.
 4. Do not install limestone 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 to ensure that mortar will set without freezing. Comply with International Masonry Industry All-Weather Council cold weather construction and protection recommendations.
 5. No masonry work will be permitted when outside air temperature is below 25°F.
 6. Do not use anti-freeze or calcium chloride in any mortar.
 7. Protect completed masonry work against freezing for not less than four days after laying.
- D. Protect adjacent work from damage, soiling, and staining during masonry work operations.
- E. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.
- F. Protect base of LIMESTONE VENEER MEDIAN WALL from rain-splashed mud or mortar splatter by means of coverings spread on ground and over limestone surface.
- G. Protect limestone from droppings of mortar.

PART 2 PRODUCTS

2.01 LIMESTONE

- A. Match material color and texture of stacked limestone blocks installed at the Interstate-80 and Coral Ridge Avenue Interchange.
- B. Surface finishes: As shown on plans.
- C. Sizes: As shown on plans.
- D. Grade/quality: Standard.
- E. Provide sound limestone uniform in color and texture, free from mineral stains, other foreign matter, and defects detrimental to appearance and durability.
- F. Color range, texture, and finish of limestone shall be within range of Engineer's accepted samples.

2.02 LIMESTONE SEALANT

- A. Clear, siloxane water repellent sealer for limestone.
- B. Sealant to penetrate limestone surface without altering limestone surface color or texture.

2.03 LATEX MORTAR ADDITIVE

- A. Manufacturer
 - 1. Laticrete International, Inc. (customerservice@laticrete.com)
 - 2. HB Fuller Company (Phone: 651-236-5900)
 - 3. Super-Tek (info@super-tek.com)

2.04 MORTAR MATERIALS

- A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide white cement as required to produce required mortar color.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Aggregate for Mortar: ASTM C 144, except for joints less than 1/4 inch use aggregate graded with 100 percent passing the No. 16 sieve.
- D. Water: Clean and potable.
- E. Mortar Color: Match mortar color used on limestone features along Highway 965 south of Interstate 80.

2.05 MORTAR MIXES

- A. General: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar.

- B. Mixing: Combine and thoroughly mix cementitious, water, and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types or mortar required, unless otherwise indicated.
 - 1. Limit cementitious materials in mortar to Portland cement-lime.
 - 2. Use Type N mortar for LIMESTONE VENEER MEDIAN WALL.
- D. Setting mortar: ASTM C 270 Type N one part non-staining (white) masonry cement, one part hydrated lime, and six parts white, damp loose sand.
- E. Pointing mortar: one part non-staining (white) masonry cement, one part hydrated lime, and 6 parts white damp loose sand, with latex additive.
- F. Grout: one part non-staining (white) masonry cement, one and one half part white damp loose sand.
- G. Measure and batch materials either by volume or weight. Use accurate measuring devices to ensure uniformity and coloration of mix. Shovel count measurement of sand is not acceptable.
- H. Mix cementitious materials, aggregate, and latex additive in accordance with additive manufacturer's specifications.
- I. Retemper mortar as required within two hours of mixing. Use and place mortar in final position within 2 1/2 hours of the initial mixing. Discard mortar after 1 1/2 hours of the initial mixing.

2.06 STAINLESS STEEL ACCESSORIES

- A. Stainless steel anchors – AISI Type 304.

2.07 SHIMS/SPACERS

- A. Furnish and set to maintain level lines.
- B. Set as needed to maintain limestone mortar joint widths.
- C. Stainless steel: AISI Type 304

2.08 STEEL REINFORCING

- A. As specified on the plans.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine substrates and installation conditions.
- B. Examine subgrade grade and confirm CIP concrete base is level.
- C. Do not start construction until unsatisfactory conditions are corrected.

3.02 PREPARATION

- A. Establish lines, levels, and coursing.
- B. Do not use limestone units with unacceptable chips, cracks, voids, stains, or other visible defects as determined by the Engineer.

3.03 INSTALLATION OF STONE

- A. Set and anchor limestone in accordance with the details shown on the plans.
- B. Shim for proper setting of stone.
- C. Erect LIMESTONE VENEER MEDIAN WALL plumb and true with joints widths and alignments as shown on the plans.

3.04 REINFORCING

- A. Install as shown on the plans.

3.05 CONSTRUCTION TOLERANCES

- A. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 3/4 inch. Do not exceed head joint thickness indicated by more than plus or minus 1/8 inch.

3.06 MORTAR BEDDING AND JOINTING

- A. Lay limestone units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not sluch head joints.
- B. Maintain joint widths shown, except for minor variations required to maintain bond alignment.
- C. Rake joints as shown on plans.

3.07 LIMESTONE SEALING

- A. Air clean limestone surfaces.
- B. Protect surface mounted signs and letters.
- C. Apply sealant in accordance with manufacturer's recommendation.

3.08 CLEANING AND REPAIR

- A. Remove and replace stone units which are loose, broken, stained, or otherwise damaged. Provide new matching units, install as specified.
- B. Upon completion of the work, remove from site all excess materials, debris, tools, and equipment. Repair damage resulting from stone masonry work operations.
- C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

2. Test cleaning methods on sample; leave one half column uncleaned for comparison purposes. Obtain Engineer's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
 4. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
 5. Use bucket and brush hand cleaning method described in BIA "Technical Note No. 20 Revised" to clean brick masonry made from clay or shale using job mixed detergent solution.
 6. Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.
- D. Protection: Provide final protection and maintain conditions in a manner acceptable to installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.