



**SPECIAL PROVISIONS  
FOR  
ORNAMENTAL BRICK COLUMNS**

**Emmet County  
TAP-U-2417(606)--8I-32**

**Effective Date  
February 20, 2018**

**THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS. THESE ARE SPECIAL PROVISIONS AND SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**PART 1 -- GENERAL**

**1.1 Special Provision Includes**

- A. This special provision includes all labor, materials, equipment, supervision and items of pertinence required to furnish and install the finished Ornamental Brick Columns.
- B. This special provision includes specifications for face brick, limestone veneer, concrete footing and core, mortar, grout, reinforcing bars, welded wire fabric, and column lantern necessary to furnish and install the brick columns.

**1.2 Measurement and Payment**

- A. Measurement: Ornamental Brick Columns as indicated on the plans, complete-in-place and accepted will be measured as each for each individual completed column
- B. Payment: Each Ornamental Brick Column measured as provided above will be paid for at the price bid which shall be full compensation for all labor, materials, equipment fabrication, installation, supervision, and items of pertinence required to fabricate and install each Ornamental Brick Column.
- C. Includes: Unit price includes, but not limited to, excavation, conduit and wire, concrete footing and core, reinforcements, brick veneer, limestone veneer and caps, sandblasted limestone text panels, tinted grout, column lantern, and photo eye

### 1.3 References

- A. ASTM A 526/A 526M – Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
- B. ASTM A 615/A 615M – Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- C. ASTM C-33
- D. ASTM C 67 – Test Methods of Sampling and Testing Brick and Structural Clay Tile.
- E. ASTM C 90 – Specification for Hollow Load-Bearing Concrete Masonry Units.
- F. ASTM C 144 – Specification for Aggregate for Masonry Mortar.
- G. ASTM C 150 – Specification for Portland Cement.
- H. ASTM C 207 – Specification for Hydrated Lime for Masonry Purposes.
- I. ASTM C 216 – Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale).
- J. ASTM C 260
- K. ASTM C 270 – Specification for Mortar for Unit Masonry.
- L. ASTM C 404 – Specification for Aggregates for Masonry Grout.
- M. ASTM C 476 – Specification for Grout for Masonry.
- N. ASTM C 494
- O. ASTM C 128
- P. ASTM C 31

### 1.4 Submittals

- A. Product Data: Provide manufacturer's product data for each type of masonry unit, and manufactured product, including certifications that each type complied with specified requirements.
- B. Shop Drawings: Submit shop drawings detailing each limestone element including sign panels and cap dimensions, column lantern and photo eye, finish, and reinforcements, for approval by Engineer.
- C. Samples for Initial Selection Process:
  - 1. Limestone - Submit three samples 6 inches by 6 inches showing, color range, vein direction, markings, surface finish of each product specified.
  - 2. Face Brick - Submit unit masonry samples showing color and texture.
  - 3. Column Lantern – Submit color samples of finish for selection.
  - 4. Grout – Submit color samples for selection.

### 1.5 Quality Assurance

- A. Single Source Responsibility for Masonry and limestone Units: Obtain exposed masonry and limestone units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface of visually related surfaces.
- B. Single Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

### 1.6 Mock-Up

- A. Prior to installation of masonry work, erect sample brick column to further verify selections made for color and textural characteristics, under sample submittals of masonry unity and mortar, and to represent completed masonry work for qualities of appearance, materials and construction.
  - 1. Build mock-up for the brick column including mortar, accessories, cap, and structural elements.
  - 2. Retain mock-up during construction as standard for judging completed masonry work. Mock-up may be incorporated into project if properly located and if it is acceptable.

### 1.7 Delivery, Storage, and Protection

- A. Deliver masonry materials to project site in undamaged condition.
- B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, or other causes. Limit moisture absorption of concrete masonry units during delivery and until time of installation to the maximum percentage specified for Type I units for the average annual relative humidity as reported by the US Weather Bureau Station nearest project site.
- C. Store cementitious materials off the ground, under cover, and in dry location.
- D. Store aggregates where grading and other required characteristics can be maintained.
- E. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.
- F. Limestone to be stored in a secure area in original packaging. Protect from damage by other trades.

### 1.8 Environmental Conditions

- A. Protection of Work: During erection, cover top of columns and footings with waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.
- B. Extend cover a minimum of 2 feet down both sides and hold cover securely in place.
- C. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed. Remove immediately grout or mortar in contact with such masonry.
- D. Protect base of columns and footings from rain-splashed mud and mortar splatter by means of coverings spread on ground and over column and footing surface.

- E. Protect sills, ledges, and projections from droppings of mortar.

## 1.9 Environmental Requirements

### A. Cold Weather Protection:

1. Do not lay masonry units which are wet or frozen.
2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to touch.
3. Remove masonry damaged by freezing conditions.

### B. For clay masonry units with initial rates of absorption (suction) which require them to be wetted before laying, comply with the following requirements:

1. For units with surface temperatures above 32°F, wet with water heated to above 69.8°F.
2. For units with surface temperatures below 32°F, wet with water heated to above 129.2°F.

### C. Perform the following construction procedures while masonry work is progressing. Temperature ranges indicated below apply to air temperature existing at time of installation except for grout. For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 42.8°F.

1. 39.2°F to 32°F:
  - a) Mortar: Heat mixing water to produce mortar temperature between 39.2°F and 120.2°F.
  - b) Grout: Follow normal masonry procedures.
2. 32°F to 24.8°F:
  - a) Mortar: Heat mixing water and sand to produce mortar temperatures between 39.2°F and 120.2°F maintain temperature of mortar on boards above freezing.
  - b) Grout: Heat grout materials to 89.6°F to produce in-place grout temperatures of 69.8°F at end of work day.
3. 24.8°F to 19.4°F:
  - a) Mortar: Heat mixing water and sand to produce mortar temperatures between 39.2°F and 120.2°F; maintain temperature of mortar on boards above freezing.
  - b) Grout: Heat grout materials to 89.6°F to produce in-place grout temperature of 69.8°F at end of work day.
  - c) Heat both sides of walls under construction using salamanders or other heat sources.
4. 19.4°F and below:
  - a) Mortar: Heat mixing water and sand to produce mortar temperatures between 39.2°F and 120.2°F.
  - b) Grout: Heat grout materials to 89.6°F to produce in place grout temperature of 69.8°F at the end of work day.
  - c) Masonry Units: Heat masonry units so they are above 19.4°F at time of laying
  - d) Provide enclosure and auxiliary heat to maintain an air temperature of at least 39.2°F for 24 hours after layout units.
5. Do not heat water for mortar and grout to above 159.8°F.

- D. Protect completed masonry and masonry not being worked on in the following manner. Temperature ranges indicated apply to mean daily air temperatures except for grouted masonry, temperature ranges apply to anticipated minimum night temperatures.
1. 39.2°F to 32°F: Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.
  2. 32°F to 24.8°F: Completely cover masonry with weather-resistive membrane for at least 24 hours.
  3. 24.8°F to 19.4°F: Completely cover masonry with weather-resistive insulating blankets or similar protection for at least 24 hours; 40 hours for grouted masonry.
  4. 19.4°F and below: Except as otherwise indicated, maintain masonry temperature above 32°F for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps, or other methods proven to be satisfactory. For grouted masonry, maintain heated enclosure to 39.2°F for 48 hours.

## **PART 2 -- MATERIALS**

### **2.1 Brick**

- A. Provide face brick conforming to ASTM C 216, Grade SW, Type FBS. Brick shall be from the same production run. Provide brick masonry as follows:
1. Compressive strength, individual: Not less than 2500 psi.
  2. Compressive strength, average of 5: Not less than 3000 psi.
  3. Water absorption, individual: Not more than 10%; ASTM C 67.
  4. Water absorption, average of 5: Not more than 8%
  5. Initial rate of absorption (suction), as defined in Section 9 of ASTM C67 shall not be greater than 10 gallons per minute per 30 square inches.
  6. Size: Modular, 2 1/4 inches by 3 5/8 inches by 7 5/8 inches.
  7. Color and Texture:
    - a) Color shall be a blend of burgundy and dark red and texture shall be velour. See the sample submittal requirements for details. Color to match existing brick columns on site.
  8. Acceptable brick manufacturers include the following:
    - a) Sioux City Brick and Tile Company (Sioux City, IA)
    - b) Endicott Clay Products Company (Fairbury, NE)
    - c) Belden Brick Company (Canton, OH)
    - d) Other suppliers submitted to and approved by the Engineer.
  9. Joint Size: 3/8 inch typical uniform width.

### **2.2 Limestone**

- A. ASTM C 119 Limestone, single source supplied, natural, deep-ledge quarried, free of efflorescence per ASTM C 6750.
1. Medium Density Limestone: ASTM C 568 Class II.
- B. Color and Texture:

1. Color to be cream with honed finish on all sides. See the sample submittal requirements for details.

C. Size: refer to plan details

### **2.3 Column Lantern Unit and Photo Eye**

A. Column lantern unit as detailed in the construction documents

B. All circuitry to follow requirements of the Standard Specifications and all local and state codes and ordinances.

### **2.4 Mortar Materials**

A. Portland Cement: ASTM C 150, Type I, except Type III may be used for cold weather construction. Provide natural color or 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% passing the No. 16 sieve.

D. Water: Clean and potable

E. Mortar color: to be selected from manufacturer standard color palette

### **2.5 Mortar Mix**

A. Provide mortar complying with ASTM C 270. Mix using known volume measures. Do not batch by shovel

1. Limit cementitious materials in mortar to Portland cement-lime

2. Provide Type S mortar for all masonry

### **2.6 Masonry Cleaners**

A. Keep stone work as clean as possible as work progresses. Upon completion clean stone thoroughly with water or detergent and water and fiber brushes. Thoroughly rinse when complete with clean water. Do not use acids or wire brushes.

B. Special consideration and protection shall be provided when brickwork is cleaned above the limestone. Strong acid compounds used for cleaning brick will burn and discolor the limestone.

### **2.7 Welded Steel Wire Fabric**

A. In accordance with ASTM A 185

B. Minimum gauge: 20

C. Mesh: 1/2 inch

D. Hot-dipped galvanized wire in accordance with ASTM A 82, with ASTM A 153, Class B-2 coating

E. Width: 1 inch less than width of masonry

## 2.8 Steel

- A. Steel shall comply with ASTM 615 and be Grade 60.
- B. Shop bends only.

## PART 3 -- EXECUTION

### 3.1 Installation

- A. Wetting Clay Brick: Wet brick made from clay or shale which have ASTM C 67 initial rates of absorption (suction) of more than 30 grams per 30 square inches per minute. Use wetting methods which ensure each clay masonry unity being nearly saturated but surface dry when laid. Do not wet concrete masonry units.
- B. Cleaning Reinforcing: Before placing, remove loose rust, ice, and other coatings from reinforcing.
- C. Provide for and install ornamental railing attachment as shown on the plans.
- D. Setting Precast:
  - 1. Set accurately as shown on approved shop drawings. Set methods are:
    - a) Mud Set
    - b) Weld
    - c) Setting Clips/Hangers
    - d) Thin Set
    - e) Bolt
    - f) Tab Set
  - 2. Alignment of precast should be straight and true to all dimensions, not to vary more than 1/8 inch in length, height, or width.
  - 3. Install anchors as shown on details.
  - 4. Fill joints between with manufacturer-approved caulk or as specified.

### 3.2 CONSTRUCTION Tolerances

- A. Maximum variation from plumb for vertical lines and surfaces of columns shall be 1/4 inch in 10 feet.
- B. Variation in Cross-Sectional Dimension: For all elements, from dimensions shown, do not exceed -1/4 inch nor +1/2 inch.
- C. Variation in Mortar joint Thickness: Do not exceed bed joint thickness indicated by more than  $\pm 1/8$  inch, with a maximum thickness limited to 1/2 inch. Do not exceed head joint thickness indicated by more than  $\pm 1/8$  inch.

### 3.3 Laying Masonry Columns

- A. Lay out columns in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement-type joints, returns, and offsets. Avoid the use of less than half-size units at corners.

- B. Lay-up columns to comply with specified construction tolerances, with courses accurately spaced and coordinate with other work.
- C. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not shown, lay in running bond with vertical joint in each course centered on units or courses above and below.
- D. Stopping and Resuming Work: Rack back half unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

### 3.4 Mortar Bedding and Jointing

- A. Lay solid brick size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- C. Set stone caps in full bed or mortar. Fill dowel, anchor, and similar holes solid. Wet stone joint surface thoroughly before setting; for stone surfaces which are soiled, clean bedding, and exposed surfaces with fiber brush and soap powder followed by thorough rinsing with clear water.
- D. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8 inch joints.
- E. Cut joints flush for masonry walls that are to be concealed or to be covered by other materials, unless otherwise indicated.
- F. All exposed mortar joints to be concave.
- G. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units that have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

### 3.5 Repair, Pointing, and Cleaning

- A. Remove and replace masonry units which are loose, chipped, broken, stained, or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings, and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.
- 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 column; leave half column unclean for comparison purposes. Obtain approval of sample cleaning by Owner's Representative prior to proceeding with cleaning of masonry.



3. Protect adjacent stone and on-masonry surfaces from contact with cleaner by waterproof masking tape.
  4. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clean 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.