



**SPECIAL PROVISIONS
FOR
DECORATIVE TILES**

**Poweshiek County
IM-080-5(355)183--03-79**

**Effective Date
January 22, 2020**

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

150602.01 DESCRIPTION.

These Special Provisions cover the handling, preparation and installation of decorative glazed Terra Cotta tiles. Refer to details and notes in the plans for the locations and dimensions of the cavities in new structural concrete that are intended to receive the decorative tile units. Take extreme care in all aspects of handling, transport, storage and construction associated with the decorative tile units.

150602.02 MATERIALS.

A. Decorative Tiles.

1. Decorative Tiles: Use only the decorative Terra Cotta tiles supplied by the City of Grinnell for incorporation into the project. Decorative tiles will be in storage in the City of Grinnell, and within approximately 5 miles of the jobsite. Notify the Engineer a minimum of 2 weeks before the start of related work to arrange for access to the decorative tiles. Decorative tiles shall not be delivered to the jobsite until the commencement of associated tile installation work by the Contractor.
2. Protection of Tile Units: Decorative tiles will be delivered by the fabricator to the City of Grinnell packed, at a minimum, in cushioned crates with corrugated cardboard separators between tile units. For transporting the daily use quantities needed by the Contractor, packing of tile units shall be in similar cushioned crates with cardboard separators between units. Whenever possible, use the original packing crates and other materials protecting the units in the city storage facility. Thoroughly inspect decorative tile units at the storage facility before removing them. If damaged tile units are discovered at the city's storage facility, do not remove the damaged units. Immediately report the discovery of damaged tile units to the Engineer.
3. Handling, Transport and Storage: Deliver to the jobsite only the decorative tiles that will be needed for installation that day. During handling and transport, keep intact all packing and padding of decorative tiles to protect units from damage. Do not drop the decorative tiles. Do not stack items of any kind on top of decorative tiles during transport or storage on the job

site. Packing shall remain in place during storage unless condensation occurs within the packing, whereupon packing shall be removed and units suitably protected from damage. Store only in a single layer and on secure, flat and smooth surfaces or pallets. Protect decorative tiles from soil, other contaminants, and from the weather at all times to prevent staining prior to installation. If any tiles are not installed but remain on the jobsite overnight, they shall be stored as previously described and in a secure, locked facility and protected from theft, vandalism, weather, and damage. If transportation to a secure facility is necessary, packing and handling shall be as previously described.

4. Damaged Decorative Tile Replacement: Any decorative tiles that are damaged after leaving the city's storage facility and are determined by the Engineer to be unsuitable for use on the project shall be replaced at the Contractor's cost, with no cost to the project or to the City of Grinnell. Fabrication of replacement tile units shall only be by the original tile fabricator, with no substitutions allowed.

B. Mortar and Grout Materials.

1. Setting mortar shall be a premium grade dry-set mortar mixed with acrylic latex additive in compliance with ANSI A118.15e bond strength requirements.
2. Grouts shall comply with ASTM C 476.
3. Portland Cement: ASTM C 150, Type I or II, low alkali per ASTM C 150 Table 2.
4. Hydrated Lime shall comply with ASTM C 207, Type S.
5. Masonry cements, gypsum Portland cements, or blended cements shall not be used.
6. Submit product data for all materials prior to ordering.

C. Sand.

Use only clean, washed natural or manufactured silica sand, graded according to ASTM C 144. Sand shall contain no more than 50 parts per million of chloride ions and shall be free of organic contaminants.

D. Water.

Potable, clean and free from oil, alkali, organic matter or other deleterious material.

E. Weeps.

Cotton or polyester rope, 1/4 to 3/8 inch diameter.

F. Accessories.

All accessories including tools used for mortar and pointing work shall be non-corrosive and in accordance with applicable specifications and with best practices for terra cotta decorative tile work of the type described by the plans and these Special Provisions.

150602.03 CONSTRUCTION.

A. Pre-installation Meeting.

At least 2 weeks prior to commencement of any work related to decorative tile installation, meet with the Engineer and the decorative tile fabricator to review installation methods and materials. All contractor personnel who are intended for decorative tile-related work assignments shall be present at this meeting. All meeting attendees shall be familiar with the requirements contained in these Special Provisions.

B. Installer Qualifications.

Only personnel who were in attendance at the pre-installation meeting and who were given installation instruction at the meeting shall be permitted to engage in work directly related to installing the decorative tiles. If some contractor personnel have training and experience in general unit masonry work, it is preferred that these personnel be the primary installers of the decorative tiles. All personnel engaged in decorative tile work of any kind shall be familiar with all the requirements contained in these Special Provisions.

C. Project Conditions and Wall Cavity Preparation.

Do not begin decorative tile installation until final integral thin veneer brick surface cleaning adjacent to the tile cavities is complete. Do not begin decorative tile installation until all other construction operations that could pose a risk of damage to the decorative tiles have been completed. Secure the work area using suitable control measures to ensure that the public and workers not involved in the installation cannot disturb the work during the entire mortar curing period (min. 30 days).

1. Cold Weather: perform work in compliance with setting mortar manufacturer's requirements and ACI 530.1 current edition.
2. Hot Weather: perform work in compliance with setting mortar manufacturer's requirements and ACI 530.1 current edition.
3. At the end of the working day, or during rainy weather, cover decorative tile masonry work with waterproof coverage and securely anchor as necessary.
4. Protect surrounding surfaces, especially brick surfaces, from damage including staining from mortar or grout. Any mortar or grout that comes into contact with brick surfaces shall be immediately and thoroughly removed to prevent permanent stains. At all times, keep cleaning supplies including potable water and stiff nylon brushes in close proximity to the active tile installation work area.
5. Prior to decorative tile installation, test fit the panels in prepared cavities. See the plan details for additional information. Immediately notify the Engineer of any discrepancies in the dimensions of the concrete cavities.
6. Prior to installing the "Medallion" (Unit A) tiles at the abutments and the "Medallion" (Unit A) and "Stem" (Unit B and Unit B Half) tiles on the pier columns, place weep ropes in cavities. Two weeps are required for each abutment "Medallion" tile. Two continuous weeps for each pier column face are required, placed at 1/3 points along the width of each of the two panel types (see plan details). Secure weep ropes to the back and along the bottom of cavity, with enough length to reach the top of the cavity and to obtain 1 inch minimum exposure beyond the face of the wall at the bottom.

C. Decorative Tile Installation.

1. Comply with setting mortar manufacturer's requirements, ACI 530.1 current edition for Hot and Cold Weather Construction and the following: install decorative tiles only in temperatures between 40°F and 95°F. Do not begin installation work if freezing temperatures may occur within 72 hours after completion of work.
2. Soak decorative tile units in a container of clean water for a minimum of one hour immediately prior to installation. Units shall be noticeably damp but not dripping at the time of setting. Drain the units sufficiently to eliminate surface water.
3. At the beginning of setting units each working day, soak wall cavities with clean water applied by a hose and fine spray nozzle. Soak cavity surfaces with water no more than one hour

before setting of decorative tile unit(s).

4. Mix and proportion the cementitious materials for setting beds and pointing:
 - a. **Setting Mortar.**

Premium grade dry-set mortar mixed with acrylic latex additive in compliance with ANSI 118.15e bond strength requirements. Mix according to manufacturer's written instructions.
 - b. **Pointing Mortar.**
 - 1) Use Type O mortar (pre-hydrated for repointing) in accordance with ASTM C 270, with the following material mix proportions by volume:
 - Portland Cement: 1 part
 - Hydrated Lime: 2 parts
 - Sand: 9 parts
 - 2) Color of pointing mortar shall be light grey and made consistent for the entire job.
5. Fill large cells on the back of the decorative tile with setting mortar or suitable grout.
6. Immediately prior to commencement of unit setting, brush a coat of neat Portland Cement and water onto the affected wall cavity surfaces and the entire back and embedded sides of the soaked decorative tile unit to be set.
7. Spread half of the setting mortar coat onto the affected wall cavity surfaces and the other half over the back and embedded sides of the decorative tile unit.
8. Screed the setting mortar on the decorative tile unit to a uniform thickness, except where filling gaps, frogs, voids or other inconsistencies.
9. Screed the setting mortar in the wall cavity to a true and plumb level using a notched trowel with sufficient depth to achieve greater than 95% mortar contact with both the tile and the substrate. Apply mortar in a single direction, parallel to the tile's short dimension. Apply only as much mortar to the substrate as can be covered with tile before the product skins over.
10. Use sufficient mortar to create a slight excess, which will be forced out at the joints around the edges of the unit when pressed into place.
11. Firmly place the unit within the cavity by pressing into place, then push side to side in a direction perpendicular to the trowel lines to collapse them and eliminate all voids in the setting bed. Take care to embed the unit to the position indicated in the plan details. Do not tap or strike the tile unit with any object.
12. Apply tile in level and plumb courses as detailed in the plans. Bond lines shall be true and parallel. Equally space tiles across the entire horizontal run or vertical stack. Adjust joints as needed to achieve equal joint widths and overall coursing in accordance with the plans.
13. Completely fill all voids and joints within the cavity with setting mortar and make watertight. Rake out the face joints to 3/4 inch below the adjacent brick surface to allow for pointing.
14. After final adjustments in setting, install non-corrosive centers or wedges to maintain tile positions and spacing.
15. Immediately after setting, clean any errant mortar from adjacent brick surfaces before it sets. Use only potable water and stiff nylon brushes to clean the brick.
16. Remove any decorative tile unit that is tipped away from the cavity for readjustment, is too deeply embedded, or is improperly set for any reason. Remove and clean away all mortar from units and cavity surfaces, and reset in accordance with the above procedures.

17. Support each "Medallion" type decorative tile unit, in addition to any non-corrosive centers or wedges, with braced wooden shores exerting a constant upward pressure until the mortar has set for a minimum of 72 hours. Take special precautions such as using padding to ensure that the shores do not mar or otherwise damage the "Medallion" tiles. Other decorative tile types do not require shoring.
18. After setting and mortar curing, but prior to pointing, clean all exposed surfaces with natural-fiber brushes, non-ionic mild soap powder or detergent and clean water.
- 19. Pointing.**
- a. Refer to ACI 530.1 current edition for Hot and Cold Weather Construction.
 - b. Before pointing, remove all spacers, centers or wedges from joints.
 - c. Wet joint thoroughly and repeatedly prior to pointing and between pointing lifts. Allow water to soak in so that no surface water is visible.
 - d. Point in two lifts; pack joints to within 3/8 inch of surface on first lift; allow first lift to set prior to pointing second lift.
 - e. As soon as mortar has taken its initial set, tool joint surfaces to be slightly concave. Do not allow mortar to extend over the edges of decorative tile units or surrounding brick.
 - f. After initial 24 hour set, moisten until cured. Allow mortar to cure completely prior to cleaning operations, with a minimum cure time of 30 days. Protect from frost and rain for a minimum of 21 days.
 - g. Clean up after pointing operations are complete. Remove mortar stains, excess mortar, etc. from surrounding surfaces. Remove lumps of mortar from decorative tiles only with sharpened wood or plastic paddles. Do not use acid cleaners. Do not use high pressure water. Rinse thoroughly with clean water after cleanup.

20. Clean-up.

Upon completion of decorative tile installation operations, remove tools, equipment, shoring, debris and other materials resulting from these operations from the site. Leave the area broom clean.

E. Inspection.

The Engineer will inspect all phases of the work to verify that it is in accordance with the requirements of these Special Provisions. The Contractor shall facilitate this inspection as required, including providing the Engineer with advance notice of scheduled work, allowing ample time for the inspections and access to the work. Inspections may include, but are not limited to, decorative tile unit preparation, mortar preparation, unit setting, shoring, mortar curing, pointing, cleanup and final appearance. The inspection by the Engineer does not relieve the Contractor of the responsibility to comply with all requirements of this section.

150602.04 METHOD OF MEASUREMENT.

No measurement of installed work shall be made.

150602.05 BASIS OF PAYMENT.

- A. Payment will be Lump Sum for Decorative Tiles, Install Only.
- B. Payment is full compensation for furnishing all labor, equipment, transport, and materials used to prepare and install the furnished terra cotta decorative tile units in accordance with all requirements listed in the plans and these Special Provisions.