



**SPECIAL PROVISIONS
FOR
UNIT PAVING**

**Polk County
EDP-PA26(002)--7Y-77**

**Effective Date
October 15, 2024**

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

231042.01 DESCRIPTION.

A. General.

The work of this special provision consists of installation of concrete pavers on asphaltic setting bed atop concrete subslab and on granular subbase.

B. References: ASTM International, latest edition.

- C 67, Sampling and Testing Brick and Structural Clay Tile
- C 97, Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone
- C 170, Standard Test Method for Compressive Strength of Dimension Stone
- C 241, Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic
- C 568, Specification for Limestone Dimension Stone
- C 880, Standard Test Method for Flexural Strength of Dimension Stone
- C 936, Solid Concrete Interlocking Paving Units
- D 698, Standard Test Methods for Laboratory Compaction Characteristics of Soil
- D 1353, Abrasion Resistance of Stone by Taber Abraser

C. Submittals

1. General.

Submittals shall be prepared and submitted in accordance with Article 1105.03 of Standard Specifications.

2. Concrete Pavers.

- a. Five full-size units of each type of unit paver indicated.
- b. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C936.
- c. Testing must be completed on product delivered to project site. Test results must reference project and delivery or palate information to be able to tie on site product to

testing data. Installation prior to receipt of testing data will be at the Contractor's own risk. No extra compensation will be paid for removal of product that fails to meet specifications. Historic test results may be submitted for initial approval prior to ordering the product.

- 3. Joint Sand.**
 - a. Product Data
 - b. Sieve analysis indicating conformance with this Special Provision.
- 4. Bituminous Setting Bed Materials.**
 - a. Product data on binder and adhesive
 - b. Sieve analysis for aggregates
 - c. Mix design
- 5. Aggregate Setting Bed Materials.**

Sieve analysis for aggregates.

D. Quality Assurance

- 1. Source limitations.**

Obtain each type of unit paver, joint material, and setting material from one source with resources to provide materials and products of consistent quality in appearance and physical properties.
- 2. Mockups.**

Construct up to three 10 feet by 10 feet sample panels, for each paver type showing full range of paver sizes and colors selected. Build mockups to comply with the following requirements, using materials indicated for final unit of work, including same base construction, special features for expansion joints, and contiguous work as indicated.

 - a. Locate mockups on-site in the location and of the size indicated or, if not indicated, as directed by Engineer.
 - b. Notify Engineer 1 week in advance of the dates and times when mockups will be constructed.
 - c. Demonstrate the proposed range of aesthetic effects and workmanship.
 - d. Obtain Engineer's acceptance of mockups before start of final unit of Work.
 - e. Retain and maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - f. If accepted, mockup can be maintained as part of completed Work.
 - g. If mock-up is not part of permanent work, or is not accepted, demolish and remove from the project site when directed by the Engineer.
- 3. Pre-Installation Conference.**

Conduct conference at Project site. Before submitting unit pavers, require representatives, including the following, of each entity directly concerned with concrete pavement, to attend conference:

 - a. Contractor's superintendent.
 - b. Unit pavers subcontractor.
 - c. Unit pavers suppliers.
 - d. Engineer.
- 4. Delivery, Storage, and Handling.**
 - a. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
 - b. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
 - c. Store aggregates where grading and other required characteristics can be maintained,

and contamination avoided.

- d. Store liquids in tightly closed containers protected from freezing.
 - e. Store asphalt cement and other bituminous materials in tightly closed containers.
 - f. Storage of product on the wet side of the levee is prohibited. Remove any extra materials at the end of the working day.
- 5. Project Conditions.**
- a. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
 - b. Weather Limitations for Bituminous Setting Bed: Install bituminous setting bed only when ambient temperature is above 40°F and when base is dry. Apply asphalt adhesive only when ambient temperature is above 50°F and when temperature has not been below 35°F for 12 hours immediately before application. Do not apply when setting bed is wet or contains excess moisture.

231042.02 MATERIAL.

A. Concrete Pavers.

1. Concrete pavers shall be solid interlocking paving units complying with ASTM C 936 and resistant to freezing and thawing when tested according to ASTM C 67, made with normal-weight aggregates.
2. **Basis-of-Design Product.**
The design is based on Wausau Tile, Inc. subject to compliance with requirements, provided the named product or a comparable product by one of the following:
 - a. Wausau Tile, Inc., Wausau, Wisconsin. Contact: Jeff Grambling (800) 388-8728
 - b. Hanover pavers will not be allowed due to previous failures within the City of Des Moines.
 - c. Or approved equal.
3. **Products, Unit Pavers – Type 1.**
Pavers shall be 3 inches thick. The face size and shape will be 12 inches by 24 inches nominal. Pattern shall be as shown on plans. The color blend shall be:
 - Wausau Tile, Inc. Matrix V19-128 - 15% of mix
 - Wausau Tile, Inc. Matrix V19-157 – 27.5% of mix
 - Wausau Tile, Inc. Matrix V19-158 – 57.5% of mix
4. **Products, Unit Pavers – Type 2.**
Pavers shall be 2 3/8 inches thick. The face size and shape will be 12 inches by 18 inches nominal and 12 inches by 24 inches nominal. Pattern shall be as shown on plans. The color and size blend shall be:
 - Wausau Tile, Inc. Matrix V19-128, 12 inches by 24 inches; 10% of mix.
 - Wausau Tile, Inc. Matrix V19-157, 12 inches by 18 inches; 15% of mix.
 - Wausau Tile, Inc. Matrix V19-157, 12 inches by 24 inches; 15% of mix.
 - Wausau Tile, Inc. Matrix V19-158, 12 inches by 18 inches; 30% of mix.
 - Wausau Tile, Inc. Matrix V19-158, 12 inches by 24 inches; 30% of mix.

B. Granular Subbase Setting-Bed Materials.

1. Granular subbase material meeting Section 4121 of the Standard Specifications.
2. Engineering fabric per Section 4196 of the Standard Specifications.

C. Bituminous Setting-Bed Materials.

1. Primer for Base: Per Section 2303 of the Standard Specifications; Grade: MC-70
2. Bituminous Setting Bed: Per Section 2303 of the Standard Specifications; 1 inches Type A Binder and Surface Course Mixtures.
3. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2% neoprene and 10% long-fibered mineral fibers containing no asbestos.

D. Bituminous Setting-Bed Mix.

Mix bituminous setting-bed materials at an asphalt plant in approximate proportion, by weight, of 7% asphalt cement to 93% fine aggregate, unless otherwise indicated. Heat mixture to 145°F to 165°F.

E. Aggregate Setting-Bed Materials.

Aggregate for Leveling Course: Crushed stone with 90% fractured faces. Wash all stone materials to ensure less than 2% passing the No. 200 sieve complying with Table 4109.02-1, Gradation No. 29 of the Standard Specifications.

F. Joint Filler Materials.

1. Limestone Chip for Joints: Stabilized crushed limestone 3/8 inch chip meeting gradation number 1 per Aggregate Gradation Table of the Standard Specifications.
2. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100% passing No. 16 sieve and no more than 10% passing No. 200 sieve. Provide sand of color needed to produce required joint filler color.
3. **Polymeric Sand for Joints for Type 2 Pavers.**
 - a. Sand containing polymers and weed inhibitors to bind sand following activation by water, with 100% passing No. 16 sieve and no more than 10% passing No. 200 sieve. Provide sand of color needed to produce required joint filler color.
 - b. **Products.**
 - 1) Techniseal HP NextGel Jointing Sand
 - 2) Alliance Gator G2
 - 3) Polybind G2 Complete.
 - 4) Or equal, approved by Engineer.

G. Paver Sealer.

Intensifying sealer shall be as manufactured by Wausau Tile, Inc. Contact: Jeff Grambling (800) 388-8728

231042.03 CONSTRUCTION.

A. Examination.

1. Examine areas indicated to receive paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Placing Granular Subbase Setting Bed.

1. Compact soil subgrade uniformly to at least 95% of ASTM D698 laboratory density.
2. Proof-roll prepared subgrade to identify soft pockets and areas of excessive yielding.

Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by the Engineer, and replace with compacted backfill or fill as directed.

3. Place engineering fabric over prepared subgrade, overlapping ends and edges at least 12 inches.
4. Place granular subbase, compact by tamping with place vibrator, and screed to 6 inch depth.

C. Placing Bituminous Setting Bed.

1. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance. Clean concrete substrates to remove dirt, dust, debris, and loose particles.
2. Prime concrete slab surface with asphalt primer applied in accordance with Section 2303 of the Standard Specifications (Rate = 0.02 to 0.025 gallons per square yard).
3. Prior to bituminous setting bed installation, install protective cover over adjacent PCC pavement surfaces to avoid pavement staining and other surface damage.
4. Install the setting bed over the base surface, place 1 inch spacer bars directly over the base.
 - a. If grade must be adjusted, set wood chucks under depth control bars to proper grade.
 - b. Set two bars parallel to each other to serve as guides for striking board.
 - c. The depth control bars must be carefully set to bring pavers, when laid, to proper grade.
5. Place some bituminous bed between parallel depth control bars. Pull this bed with the striking board over bars several times.
 - a. After each passage, low porous spots must be showered with fresh bituminous material to produce a smooth, firm, and even setting bed.
 - b. As soon as this initial panel is completed, advance the first bar to the next position, in readiness for striking the next panel.
 - c. Carefully fill up any depressions that remain after removing the depth control bars and wood chocks.
6. The setting bed shall be rolled with a 600 pound walk-behind, power roller to a nominal depth of 3/4 inch while still hot; the thickness shall be adjusted so that when the concrete pavers are placed, the top surface of the pavers will be at the required finished grade.
7. After the setting bed has cooled, a coating of 2% neoprene-modified asphalt adhesive shall be applied by mopping or squeegeeing or troweling over the top surface of the bituminous setting bed so as to provide a bond under the pavers; if the adhesive is troweled, the trowel shall be serrated with serrations not to exceed 1/16 of an inch.
8. Limitations: Placement of the setting bed and application of the modified asphalt adhesive shall comply with Article 2303.03, C, 4 of the Standard Specifications.

D. Concrete Paver Installation.

1. Do not use unit pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable. A block splitter may be used.
2. Tolerances: Do not exceed 1/16 inch unit-to-unit offset from flush (lippage) nor 1/8 inch in 24

inches and 1/4 inch in 10 feet from level, or indicated slope, for finished surface of paving.

3. Joint treatment: Place pavers with hand-tight joints. Fill joints by sweeping sand over surface until the joints are filled. Remove excess sand after joints are filled. When utilizing Polymeric Joint filler, water down joints, per manufacturers specifications.

E. Paver Sealer

Apply pavement sealer at manufacturer's specified rates and methods.

F. Repairing and Cleaning

Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

231042.04 METHOD OF MEASUREMENT.

Measurement for Unit Paving, Concrete Pavers, Type 1 and Type 2 will be made on a per square yard basis measured by the Engineer.

231042.05 BASIS OF PAYMENT.

A. Unit Paving, Concrete Pavers, Type 1.

Payment for Unit Paving, Concrete Pavers, Type 1 shall be per square yard. Included with item is all labor, equipment, and materials necessary for furnishing and installation of the concrete pavers. Mock-ups, Bituminous primer, setting bed, adhesive, and joint filler shall be incidental to the Unit Paving, Concrete Pavers Bid, type 1 item. Concrete subslab under the bituminous setting bed, shall be paid as part of the Subslab, Reinforced P.C. Concrete, 6 In. bid item.

B. Unit Paving, Concrete Pavers, Type 2.

Payment for Unit Paving, Concrete Pavers shall be per square yard. Included with item is all labor, equipment, and materials necessary for furnishing and installation of the concrete pavers. Mock-ups and joint filler shall be incidental to the Unit Paving, Concrete Pavers, Type 2 Bid item. Granular Subbase under Unit Paving, Concrete Pavers, Type 2 shall be covered under the Granular Subbase bid item.