SPECIAL PROVISIONS
FOR
PAVERS ON CONCRETE BASE

Des Moines County
EDP-0977(653)--7Y-29

Effective Date
June 15, 2021

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

155064.01 DESCRIPTION.

A. Summary.
Section Includes concrete pavers set in aggregate setting beds over concrete bases.

B. Preinstallation Meetings.
Conduct preinstallation conference at Project site.

C. Action Submittals.

1. Product Data: For the following:
- **a.** Pavers.
- **b.** Sand setting bed.
- **c.** Polymetric sand for filling unit paver joints.

2. Physical Samples for Verification.
Full-size units of each type, size, color, and finish of unit paver indicated. Provide units indicative of full range of specified product color, including both reds and browns. Physical samples will be reviewed on site and compared to existing paver installation.

D. Informational Submittals.

1. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

2. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements. For solid interlocking

paving units, include test data for freezing and thawing according to ASTM C 67.

E. Delivery, Storage, and Handling.

1. 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.

2. Store jointing materials on elevated platforms, under cover, and in a dry location. Do not use materials that have become damp.

F. Field Conditions.
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.

155064.02 MATERIALS.

A. Manufacturers
Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

B. Concrete Pavers.

1. Solid interlocking paving units meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.

2. Average compressive strength 8000 psi with no individual unit under 7200 psi.

3. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.

4. Resistance to 50 freeze-thaw cycles, when tested according to ASTM C1645, with no breakage greater than 1.0% loss in dry weight of any individual unit. Conduct this test method not more than 12 months prior to delivery of units.

5. Manufacturer: Subject to compliance with requirements, provide products by Unilock or approved equal.

6. Thickness: 2.75 inches.

7. Face Size and Shape: Varies as follows; provide the specified number of units per bundle typical of the manufacturer's "random bundle" distribution:
- **a.** unit A: 6.75 inches by 5 inches; 32 units/bndl.
- **b.** unit B: 13.25 inches by 5 inches; 32 units/bndl.
- **c.** unit C: 17.75 inches by 5 inches; 32 units/bndl.
- **d.** unit D: 8.75 inches by 7.5 inches; 32 units/bndl.
- **e.** unit E: 13.25 inches by 7.5 inches; 32 units/bndl.
- **f.** unit F: 17.75 inches by 7.5 inches; 16 units/bndl.
- **g.** unit G: 10.25 inches by 5 inches; 16 units/bndl.

8. Color: Heritage Brown.

9. Finish Texture: 50% Smooth, 50% Il Campo.

10. Pattern: Artline 'A'

C. Setting-Bed Materials
Provide Setting Bed Sand as follows:

1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.

2. Do not use limestone screenings, stone dust, or sand material that does not conform to conform to the grading requirements of ASTM C 33.

3. Do not use mason sand or sand conforming to ASTM C 144.

4. Utilize sands that are as hard as practically available where concrete pavers are subject to vehicular traffic.

5. Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 1 below:

TABLE 1 – GRADATION REQUIREMENTS FOR SETTING BED SAND

ASTM C 33	
Sieve Size	**Percent Passing**
3/8 in	100
No. 4	95 to 100
No. 8	85 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10
No. 200	0 to 1

D. Polymeric Joint Sand.

1. Provide Polymeric Joint Sand as manufactured by:
- **a.** Techniseal RG+
  - **1)** Product Type: Dry mix, contains polymeric binding agent, activated with water.
  - **2)** Color: Tan
- **b.** Unicare HP Polymeric Max Sand
  - **1)** Product Type: Dry mix, contains polymeric binding agent, activated with water.
  - **2)** Color: Tan

2. Provide Polymeric Joint Sand meeting the minimum material and physical properties as follows:
- **a.** Compression Strength: proven resistance to compression of 550 PSI after drying for 7 days under controlled conditions (73°F at 50% humidity). Test sand sample shape: cylinder (2 inch diameter by 4 inches).
- **b.** Gradation as shown Table 2 below.

TABLE 2 – GRADATION REQUIREMENTS FOR JOINT SAND

ASTM C 144		
Sieve Size	**Natural Sand Percent Passing**	**Manufactured Sand Percent Passing**
No. 4	100	100
No. 8	95 to 100	95 to 100
No. 16	70 to 100	70 to 100
No. 30	40 to 75	40 to 75
No. 50	10 to 30	20 to 40
No. 100	2 to 15	10 to 25
No. 200	0 to 1	0 to 10

*NOTE: Coarser sand than that specified in Table 2 above may be used for joint sand including C 33 material as shown in Table 1. Use material where the largest sieve size easily enters the smallest joints. For example, if the smallest paver joints are 2 mm wide, use sand 2 mm and smaller in particle size. If C 33 sand is used for joint sand, extra effort may be required in sweeping material and compacting the pavers in order to completely fill the joints.

155064.03 CONSTRUCTION.

A. Examination.

Examine areas indicated to receive paving for compliance with requirements for installation tolerances and other conditions affecting performance for the following before placing the Concrete Pavers.

- Verify the Concrete Underlayment has cured.
- Verify the Concrete Underlayment thickness, strengths, surface tolerances and elevations conform to specified requirements.
- Verify location, type, and elevations of edge restraints, concrete curbing, concrete collars around utility structures, and drainage inlets.
- Proceed with installation only after unsatisfactory conditions have been corrected.

B. Preparation.

1. Verify the concrete underlayment is clean and dry, certified by Contractor as meeting material, installation and grade specifications.

2. Stockpile setting bed sand and joint sand such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.

3. Verify that weep holes at concrete underlayment have been filled with clear drain rock and protected with geotextile fabric.

4. Keep area where pavement is to be constructed free from sediment during entire job. Remove and replace all geotextile, joint sand and setting bed sand materials contaminated with sediment with clean materials.

C. Installation.

1. **Concrete Base Slab.**
   Prepare and place concrete base slab as outlined in Special Provisions for Cast-in-Place Concrete and as detailed on plans.

2. **Sand Setting Bed**
   - **a.** Provide and spread Setting Bed Sand evenly over the Concrete Underlayment and screed to a nominal thickness of 1 inch.
     - **1)** Protect screeded Setting Bed Sand from being disturbed by either pedestrian or vehicular traffic.
     - **2)** Screed only the area which can be covered by pavers in one day.
     - **3)** Do not use Setting Bed Sand material to fill depressions greater in the base surface.
   - **b.** Keep moisture content constant and density loose and constant until Concrete Pavers are set and compacted.
   - **c.** Screed the Setting Bed Sand using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards.
   - **d.** Carefully maintain spread Setting Bed Sand in a loose condition, and protected against incidental compaction, both prior to and following screeding. Loosen any incidentally compacted sand or screeded sand left overnight before further paving units are placed.
   - **e.** Provide lightly screeded Setting Bed Sand in a loose condition to the predetermined depth, only slightly ahead of the paving units.
   - **f.** Fully protect screed Setting Bed Sand against incidental compaction, including compaction by rain. Remove any screeded Setting Bed Sand that is incidentally compacted prior to laying of the paving units. Do not permit either pedestrian or vehicular traffic on the screeded Setting Bed Sand.
   - **g.** Inspect the Setting Bed Sand course prior to commencing the placement of the Concrete Pavers.

3. **Concrete Pavers.**
   - **a.** Replace Concrete Pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.
   - **b.** Mix Concrete Pavers from a minimum of three bundles simultaneously drawing the paver vertically rather than horizontally, as they are placed, to produce uniform blend of colors and textures. (Color variation occurs with all concrete products. This phenomenon is influenced by a variety of factors, e.g. moisture content, curing conditions, different aggregates and, most commonly, from different production runs. By installing from a minimum of three bundles simultaneously, variation in color is dispersed and blended throughout the project).
   - **c.** Exercise care in handling face mix concrete pavers to prevent surfaces from contacting backs or edges of other units.
   - **d.** Provide Concrete Pavers using laying pattern as indicated. Adjust laying pattern at pavement edges such that cutting of edge pavers is minimized. Cut all pavers exposed to vehicular tires no smaller than one-third of a whole paver.
   - **e.** Use string lines or chalk lines on Setting Bed Sand to hold all pattern lines true.
   - **f.** Set surface elevation of pavers 1/8 inch above adjacent drainage inlets, concrete collars or channels.
   - **g.** Place units hand tight against spacer bars. Adjust horizontal placement of laid pavers to align straight.
   - **h.** When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.
   - **i.** Provide space between paver units of 1/32 inch wide to achieve straight bond lines.
   - **j.** Prevent joint (bond) lines from shifting more than ±1/2 inch over 50 fee from string lines.
   - **k.** Fill gaps between units or at edges of the paved area that exceed 3/8 inch with pieces cut to fit from full-size unit pavers.
   - **l.** Prevent all traffic on installed Concrete Pavers until Joint Sand has been vibrated into joints. Keep skid steer and forklift equipment off newly laid Concrete Pavers that have not received initial compaction and Joint Sand material.

m. Vibrate Concrete Pavers into leveling course with a low-amplitude plate vibrator capable of a to 5000 pounds compaction force at 80 to 90 Hz. Perform at least three passes across paving with vibrator. Vibrate under the following conditions:
  1) After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
  2) Compact installed Concrete Pavers to within 6 feet of the laying face before ending each day's work. Cover Concrete Pavers that have not been compacted and leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Setting Bed Sand from becoming disturbed.

n. Protect face mix Concrete Paver surface from scuffing during compaction by utilizing a urethane pad.

o. Remove any cracked or structurally damaged Concrete Pavers and replace with new units prior to installing Joint Sand material.

4. Joint Sand.
Install Polymeric Joint Sand per manufacturers recommended instructions.

D. Field Quality Control.

1. Verify final elevations for conformance to the plans after sweeping the surface clean.

2. Prevent final Concrete Paver finished grade elevations from deviating more than ±3/8 inch under a 10 foot straightedge or indicated slope, for finished surface of paving.

3. Lippage: No greater than 1/32 inch difference in height between Concrete Pavers and adjacent paved surfaces.

E. Repairing, Cleaning and Sealing.

1. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that 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.

2. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean. Clean Concrete Pavers in accordance with the manufacturer’s written recommendations.

F. Protection.
Protect completed work from damage due to subsequent construction activity on the site.

155064.04 METHOD OF MEASUREMENT.
Unit Pavers will be measured by square foot of area completed and accepted

155064.05 BASIS OF PAYMENT.

A. Payment for Unit Pavers will be for the measured quantity at the contract unit price per square foot.

B. This payment shall be full compensation for, fabrication, delivery to site, furnishing material, labor, tools necessary, and installation of items. Excavation, installation of concrete base slab, sand setting bed and jointing sand shall be incidental to bid item.