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321400 - A - Unit Paving

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SECTION 32 1400 - UNIT PAVING

1.1 SUMMARY

A. Section Includes:

1. Concrete pavers set in aggregate, bituminous and mortar setting beds.
2. Porous Paver: Shall be considered on a case by case basis. Standard still in progress.
3. Steel or Aluminum edge restraints.

1.2 SUBMITTALS

A. LEED Submittals:

1. Product Certificates for Credit MR 5.1 and Credit MR 5.2: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.

1.3 CONCRETE PAVERS

- #### A. Regional Materials: Provide concrete pavers that have been manufactured within 500 miles (800 km) of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.

- #### B. Concrete Pavers: Solid interlocking paving units complying with ASTM C 936 and resistant to freezing and thawing when tested according to ASTM C 67, made from normal-weight aggregates.

1. Thickness: 2-3/8 inches (60 mm).
2. Face Size and Shape: 4-by-8-inch (102-by-203-mm) rectangle.
3. Color: Blends of greys or grey/sand.
4. Manufacturers:

- a. Genest Pavers; Sanford, ME.
- b. Ideal Pavers; Westford, MA, distributed through Goodrich (Epping, NH).
- c. Unilock Pavers; Uxbridge, MA, distributed through Land Care (Madbury, NH).

- #### C. Steel Edge Restraints: Manufacturer's standard painted steel edging 3/16 inch (4.8 mm) thick by 4 inches (100 mm) high OR 1/4 inch (6.4 mm) thick by 5 inches (125 mm) high with loops pressed from or welded to face to receive stakes at 36 inches (900 mm) o.c., and steel stakes 15 inches (380 mm) long for each loop.

1. Manufacturers:
 - a. Border Concepts, Inc.
 - b. Collier Metal Specialties, Inc.
 - c. J. D. Russell Company (The).
 - d. Sure-loc Edging Corporation.
 - e. Duraedge
2. Color: As selected by University from manufacturer's full range.

D. Aluminum Edge Restraints: Manufacturer's standard straight, 1/8-inch- (3.2-mm-) thick by 4-inch- (100-mm-) high OR straight, 3/16-inch- (4.8-mm-) thick by 4-inch- (100-mm-) high OR L-shaped, 1/8-inch- (3.2-mm-) thick by 1-3/8-inch- (35-mm-) high OR L-shaped, 3/16-inch- (4.8-mm-) thick by 2-1/4-inch- (57-mm-) high extruded-aluminum edging with loops pressed from face to receive stakes at 12 inches (300 mm) o.c., and aluminum stakes 12 inches (300 mm) long for each loop.

1. Manufacturers:
 - a. Brickstop Corporation.
 - b. Curv-Rite, Inc.
 - c. Permaloc Corporation.
 - d. Sure-loc Edging Corporation.

1.4 ACCESSORIES

- A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.
- B. Compressible Foam Filler: Preformed strips complying with ASTM D 1056, Grade 2A1.

1.5 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with ASTM D 448 for Size No. 8.
- B. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33 for fine aggregate.
- C. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 (1.18-mm) sieve and no more than 10 percent passing No. 200 (0.075-mm) sieve.
- D. Drainage Geotextile: Nonwoven needle-punched geotextile fabric, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 1. Apparent Opening Size: No. 40 (0.425-mm) sieve, maximum; ASTM D 4751.
 2. Permittivity: 0.5 per second, minimum; ASTM D 4491.

- E. Herbicide: Commercial chemical for weed control, registered with the EPA. Provide in granular, liquid, or wettable powder form. Green Products only.

1.6 BITUMINOUS SETTING-BED MATERIALS

- A. Fine Aggregate for Setting Bed: ASTM D 1073, No. 2 or No. 3.
- B. Asphalt Cement: ASTM D 3381, Viscosity Grade AC-10 or Grade AC-20.
- C. Neoprene-Modified Asphalt Adhesive: Paving manufacturer's standard adhesive consisting of oxidized asphalt combined with 2 percent neoprene and 10 percent long-fibered mineral fibers containing no asbestos.
- D. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 (1.18-mm) sieve and no more than 10 percent passing No. 200 (0.075-mm) sieve.

1.7 MORTAR SETTING-BED MATERIALS

- A. Regional Materials: Provide aggregate, cement, and lime for mortar that has been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- B. Portland Cement: ASTM C 150, Type I or Type II.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Sand: ASTM C 144.
- E. Latex Additive: Manufacturer's standard acrylic resin or styrene-butadiene-rubber water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed, and not containing a retarder.
- F. Water: Potable.

1.8 GROUT MATERIALS

- A. Regional Materials: Provide aggregate and cement for grout that has been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.
- B. Polymer-Modified Tile Grout: ANSI A118.7, sanded.
 - 1. Polymer Type: Acrylic resin or styrene-butadiene rubber in liquid-latex form for addition to prepackaged dry-grout mix.
- C. Grout Colors: As selected by University from manufacturer's full range.

- D. Water: Potable.

1.9 BITUMINOUS SETTING-BED MIX

- A. Mix bituminous setting-bed materials at an asphalt plant in approximate proportion, by weight, of 7 percent asphalt cement to 93 percent fine aggregate unless otherwise indicated. Heat mixture to 300 deg F (149 deg C).

1.10 MORTAR AND GROUT MIXES

- A. General: Comply with referenced standards and with manufacturers' written instructions. Discard mortars and grout if they have reached their initial set before being used.
- B. Mortar-Bed Bond Coat: Mix neat cement and latex additive to a creamy consistency.
- C. Portland Cement-Lime Setting-Bed Mortar: Type M complying with ASTM C 270, Proportion Specification.

1.11 INSTALLATION

- A. Joint Pattern: Basket weave or herringbone; with a border.
 - 1. Pattern and selected paver shall withstand snowplowing operations and service vehicle traffic.
- B. Provide unit pavers under all bicycle racks.

END OF SECTION 32 1400

ATTACHMENTS:

Attachment A: Crosswalk Detail ICPI-13

Attachment B: Sidewalk Detail ICPI-17