

**824 - CONCRETE SIDEWALK, STEPS AND RAMPS**

**SECTION 824**

**CONCRETE SIDEWALK, STEPS AND RAMPS**

**824.1 DESCRIPTION**

Construct concrete sidewalk, steps and sidewalk ramps with detectable warning strips compliant with the Public Rights-of-Way Accessibility Guidelines (PROWAG) and according to the Contract Documents.

Construct sidewalk ramps (detectable warning) compliant with PROWAG on existing sidewalk ramps and according to the Contract Documents.

**BID ITEMS**

- Sidewalk Construction (\*) (\*\*)
- Sidewalk Ramp
- Sidewalk Ramp (Detectable Warning)
- Grade 3.0 Concrete
- Reinforcing Steel
- \*Thickness
- \*\*"AE" denotes air-entrained concrete.
- No entry denotes concrete without air.

**UNITS**

- Square Yard
- Square Yard
- Square Yard
- Cubic Yard
- Pound

**824.2 MATERIALS**

Provide materials that comply with the applicable requirements.

Concrete and Mortar .....	<b>SECTIONS 401 &amp; 403</b>
Aggregates for On Grade Concrete .....	<b>SECTION 1116</b>
Paving Bricks Compliant with PROWAG .....	<b>DIVISION 1300</b>
Reinforcing Steel .....	<b>DIVISION 1600</b>
Preformed Joints Type B .....	<b>DIVISION 1500</b>
Joint Sealing Compound .....	<b>DIVISION 1500</b>
Mortar sand (FA-M) .....	<b>DIVISION 1100</b>
Silicon joint sealant (Type NS) .....	<b>DIVISION 1500</b>
Ramp Panels Compliant with PROWAG .....	<b>DIVISION 1700</b>

**824.3 CONSTRUCTION REQUIREMENTS**

**a. Excavation.** Excavate to the required depth and to a width that will permit the installation and bracing of the forms. Shape the foundation and compact to a firm even surface conforming to the section shown in the Contract Documents. Remove all soft and yielding material and replace with acceptable material.

**b. Forms.** Extend forms for the full depth of the concrete. Use straight forms, free from warp and of sufficient strength to resist the pressure of the concrete without springing. Brace and stake forms so the forms remain true to line and grade until their removal.

Slipform equipment may be approved by the Engineer and used on a satisfactory performance basis.

**c. Placing Concrete.** Unless shown otherwise in the Contract Documents, construct concrete sidewalks, steps and ramps in a single course of Grade 3.0 concrete. Thoroughly moisten the foundation immediately prior to the placing of concrete. Place concrete according to **SECTION 401**. Uniformly consolidate the concrete without voids.

Finish the surface with a wooden float. Finish all outside edges of the slab and all joints with a ¼ inch radius edging tool.

**d. Reinforcement.** Place reinforcing steel for steps, sidewalks or ramps as shown in the Contract Documents. Support bars on metal bar chairs and securely wire to prevent displacement during concrete placement.

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### **e. Sidewalk Ramps with Detectable Warning Strips Compliant with PROWAG – New Construction.**

(1) Paving Brick. Set the truncated dome paving bricks in a mortar bed as detailed in the Contract Documents. Construct the surface of truncated dome paving brick between the truncated domes flush with the adjacent sidewalk ramp surface. Fill the joints between the truncated dome paving bricks with broomed-in mortar sand.

The Engineer will check the completed truncated dome paving brick surfaces with a 10-foot straightedge. The completed paving brick surfaces may not deviate more than  $\frac{3}{8}$  inch, unless the contour of the area exceeds this tolerance.

(2) Cast-In-Place Prestressed Panels. Prior to the concrete achieving initial set, recess areas to receive prestressed panels below finished grade at locations shown in the Contract Documents. Use a wood float or tool recommended by the manufacturer to achieve the proper depth and refinish the disturbed area. Prior to placement, pre-dampen the back side of the panel with clean water. Follow the manufacturer's recommendations for preparing the panel when mortar is specified between the panel and fresh concrete.

Install the panels immediately in recess areas of fresh concrete and lightly tap the panels to grade using a rubber mallet to establish bond and 100% surface contact. Square the edges of the panels to provide a symmetrical alignment. Set the depth flush with the adjacent surfaces. Keep the tolerances between panels and surrounding surfaces within  $\frac{1}{16}$  inch.

Maintain a  $\frac{3}{16}$  inch caulk joint between panels and seal with a Type NS silicon joint sealant.

Edge around the panels as shown in the Contract Documents. Clean any concrete residue off of the panels with a damp sponge to provide a clean appearance.

Protect the panels from concrete curing compound overspray.

(3) Hardened Concrete Placement of Prestressed Panels. Recess the area  $\frac{3}{16}$  inch more than the thickness of the prestressed panels.

Clean the surfaces of all dust, oil, grease, curing or sealing compounds, laitance or other surface contaminants. Mechanically abrade the concrete surface to provide a smooth surface profile.

Fill cracks or voids with compounds that are approved by the panel manufacturer.

Remove any high spots on the substrate by mechanical methods.

Cut a large enough opening to permit expansion joints, when applicable.

Install panels with a high-strength polymer modified concrete according to the manufacturer's installation instructions.

(4) Cast-In-Place Composite Panels. Install according to the manufacturer's instructions. Provide a manufacturer's representative on site to instruct the Contractor and KDOT personnel in the correction installation procedures for the composite panels used.

Prior to the concrete achieving initial set, finish the concrete and recess areas to receive the composite panels below finished grade according to the manufacturer's instructions. Use a wood float or tool recommended by the manufacturer to achieve the proper depth, and refinish the disturbed area. When possible, install a single, standard size panel large enough to comply with the length and width requirements in the Contract Documents. If installation of a single panel will not satisfy the dimensional requirements in the Contract Documents, arrange the installation of standard size panels so the total joint length and panel cutting is minimized. Cut only those prequalified panels listed as used for "all applications".

When cutting panels, utilize auxiliary anchor points, as recommended by the panel manufacturer. Select enough additional anchor points so that no anchor is more than 5 inches from the edge (measured perpendicular to the nearest edge) and adjacent anchors are no more than 24 inches apart.

**f. Sidewalk Ramps (Detectable Warning).** Construct the detectable warning section on an existing sidewalk ramp, according to the manufacturer's instructions and this specification, including **subsection 824.3e**. Construct according to slopes and tolerances in the Contract Documents. Perform any necessary sidewalk ramp removal required to construct the detectable warning, without damaging the subgrade or sub-base. Install any necessary Grade 3.0 concrete required to construct the detectable warning.

Properly dispose of all waste material, and leave the area in a neat presentable condition.

**g. Curing.** Immediately after the finishing operation, cure the sidewalk, ramps and steps according to **DIVISION 700**.

**h. Contraction, Construction and Expansion Joints.** Form contraction joints at intervals shown in the Contract Documents. If not shown, form by placing a metal template having a minimum thickness of  $\frac{1}{8}$  inch into

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the concrete a minimum of  $\frac{1}{3}$  of the depth of the concrete, or by cutting entirely through the fresh concrete with a trowel.

Construct expansion joints as shown in the Contract Documents.

Form construction joints around all appurtenances such as manholes, utility poles, etc., extending into and through the sidewalk, and install  $\frac{1}{4}$  inch Type B preformed joint filler in these joints. Install expansion joint filler of the thickness shown in the Contract Documents between concrete sidewalks and any fixed structures such as a building or bridge. Extend the joint filler or expansion joint material for the full depth of the walk.

Round the edges of contraction, construction and expansion joints with a  $\frac{1}{4}$  inch radius edging tool.

**i. Backfilling.** Backfill the area adjacent to new sidewalks, ramps or steps and satisfactorily compact with suitable material. Observe adequate precautions to prevent damage to the sidewalks, ramps or steps during the compacting operations.

Dispose of excess excavated material as shown in the Contract Documents or as directed by the Engineer.

### 824.4 MEASUREMENT AND PAYMENT

Excavation for the construction of sidewalks, ramps and steps will not be measured separately for payment, but will be considered subsidiary work, except when such excavation may be considered as a part of, and may be measured in conjunction with the embankment excavation. In such instances, the excavation will be included in the quantity of embankment excavation computed as a line item on the contract.

The Engineer will measure sidewalk and sidewalk ramps by the square yard of the various thickness indicated.

The Engineer will measure sidewalk ramp (detectable warning) by the square yard when it is a bid item in the contract. When sidewalk ramp (detectable warning) is not a bid item in the contract, the work is subsidiary to the bid item sidewalk ramp.

The Engineer will measure steps by the cubic yard of Grade 3.0 concrete.

The Engineer will measure reinforcement by the pound according to **SECTION 711**.

Payment for "Sidewalk Construction", "Sidewalk Ramp", "Grade 3.0 Concrete" and "Reinforcing Steel" at the contract unit prices is full compensation for the specified work.

Payment for "Sidewalk Ramp (Detectable Warning)" at the contract set unit price includes all excavation, compaction of subgrade or subbase if required, removal of sidewalk ramp, concrete construction, disposal of waste material, and all material, labor, equipment, tools, supplies, incidentals and mobilization necessary to complete the work.