# Section 602 Concrete Sidewalks, Loading Zones, Safety Islands, and Steps

## 602.1 Description

(1) This section describes constructing sidewalks, loading zones, safety islands, and steps including landings, of concrete, with or without reinforcement.

(2) Unless specifically specified in the contract, sidewalks or steps built integral with and as a part of bridges or culverts are not included.

## 602.2 Materials

(1) Furnish materials conforming to the following:

| | |
|---|---|
| Expansion joint filler | 415.2.3 |
| Concrete | 501 |
| Reinforcement | 505 |
| Electrical conduit | 652 |

(2) Provide grade A, A2, A-FA, A-S, A-T, A-IL, A-IS, A-IP, or A-IT concrete conforming to 501 as modified in 716. Provide QMP for class II ancillary concrete as specified in 716.

(3) Furnish cast iron detectable warning fields for curb ramps from the department's APL for the color defined in the Curb Ramp Detectable Warning Field bid items.

## 602.3 Construction

### 602.3.1 General

(1) The engineer will inspect concrete built under 602 for transverse cracking as specified in 415.3.17 for ancillary concrete. Repair cracked concrete as the engineer directs.

### 602.3.2 Sidewalks

#### 602.3.2.1 Preparing the Foundation

(1) Form the foundation by excavating or filling to the required elevation of the concrete bottom, or subbase bottom if specified. Tamp or compact the foundation to ensure stability. In cuts, make the foundation wide enough to allow placing forms and performing concrete placement and finishing. On embankments, construct the foundation at least 2 feet wider than the proposed sidewalk and extend it at least one foot beyond each end of the sidewalk.

(2) Unless specified otherwise, fill holes, ruts, and other depressions in the foundation with materials similar to those in the existing foundation. The contractor may use granular subbase or aggregate base.

(3) If the plans show, place granular subbase or aggregate base to the thickness and section the plans show.

#### 602.3.2.2 Forms

(1) Furnish and use wood or metal forms straight and of sufficient strength to resist springing, tipping, or other displacement during depositing and consolidating the concrete. If using wood forms, provide surfaced planks, at least 2-inch nominal thickness stock except for sharply curved sections. If using metal forms, ensure they are the engineer-approved section with a flat surface on top. Use forms as deep as the depth of the sidewalk. Securely stake, brace, and hold the forms firmly to the required line. Make the forms tight to prevent mortar leakage. Clean and oil before placing concrete against them.

#### 602.3.2.3 Placing and Finishing Concrete

(1) The engineer will check and approve the foundation, forms, and reinforcement if required, before placing the concrete. Place the concrete on a moist foundation, deposit it to the required depth, and consolidate sufficiently to bring the mortar to the surface, then strike-off and finish to a true and even surface. Before the mortar sets, brush or lightly broom the surface. Before performing the final surface finish, check the sidewalk surface with a 10-foot straightedge, and correct areas that vary 1/4 inch from the testing edge by adding or removing concrete while the concrete is still plastic.

(2) If the engineer allows, the contractor may construct concrete sidewalks with suitable, engineer-approved, slip-form equipment. The contractor may omit wood floating if the slip-form equipment produces a suitable finish.

(3) Construct curb ramps at the locations and conforming to the details and dimensions the plans show. Embed detectable warning field arrays in plastic concrete conforming to manufacturer-recommended procedures. Do not install on hardened concrete. Do not field cut plates except where the ends of radial arrays abut ramp edges. Smooth the edges of field cuts.

#### 602.3.2.4 Reinforcement

(1) If required, use reinforcement conforming to, and place it as specified on, the plans.

#### 602.3.2.5 Joints

(1) For sidewalks of uniform width, construct transverse joints at right angles to the sidewalk centerline, and construct longitudinal joints parallel to the centerline, unless specified otherwise. For sidewalks of variable or tapering widths, make the transverse and longitudinal joints at right angles to each other, if possible, and construct the joints as the engineer laid them out the field.

(2) Use contraction joints to divide the sidewalk into sections.

(3) Place 1/2-inch wide transverse expansion joint filler through the sidewalk at uniform intervals not greater than 96 feet apart.

(4) Place 1/2-inch wide expansion joint filler between the sidewalk and back of abutting parallel curb or gutter; and place one-inch wide expansion joint filler between sidewalk and buildings or other rigid structures.

(5) Place 1/2-inch wide expansion joint filler between sidewalk approaches and the back of curb or gutter or edge of pavement.

(6) No joint may deviate more than 5 degrees from perpendicular to the surface of the finished. Ensure that joint axes do not deviate more than 1/2 inch from a straight line, or from the designated alignment at any point. If constructing the joints in sections, do not use offsets or concrete struts between adjacent units.

(7) If constructing the sidewalk in partial width slabs, place transverse joints so they match the like joints in adjacent slabs. If widening existing sidewalks, place transverse joints in line with like joints in the existing sidewalk.

(8) If possible, do not divide sidewalks into sections less than 3 feet, or greater than 12 feet in any dimension. Produce the unit areas by using metal slab division forms extending to the concrete's full depth, or by contraction joints, as specified below.

(9) A contraction joint in sidewalk may consist of a slot or groove, at least one inch deep and 1/4 inch wide. Form them by inserting a metal parting strip in the concrete after striking off and consolidating, and while the concrete is still plastic. As soon as the concrete retains its shape, remove the parting strip and edge-finish the joint.

(10) The contractor may form contraction joints by cutting the concrete not less than 1/4 of the depth through with a pointed trowel or other suitable tool. Edge-finish the joint.

(11) The contractor may saw sidewalk contraction joints at least one inch in depth and approximately 1/8 inch wide. Perform the sawing as soon as possible after the concrete sets sufficiently to prevent raveling during sawing and before shrinkage cracking occurs.

(12) Extend the expansion joint filler to the concrete's full depth and make the top slightly below the finished surface of the sidewalk.

(13) For sidewalk, consolidate the concrete thoroughly at expansion joint faces to fill the voids, and finish the surface smooth and true to grade. Also round sidewalk edges along forms, un-sawed joints, and metal slab division forms with a 1/2-inch radius edger. For all other work under this section, use mechanical vibration at expansion joint faces to fill the voids, and finish the surface smooth and true to grade.

(14) Do not seal joints.

#### 602.3.2.6 Protecting and Curing

(1) Cure the concrete as specified in 415.3.12.

(2) Protect sidewalks as specified for concrete pavement in 415.3.14, except that the engineer may allow the contractor to open sidewalks to pedestrian traffic after the concrete has developed sufficient strength to prevent damage to the surface.

#### 602.3.2.7 Backfilling and Restoring the Site of the Work

(1) If the sidewalk does not touch curb, curb & gutter, pavement, or other structures and if the concrete is cured and the forms removed, then backfill the spaces along the sides with satisfactory soil and thoroughly compact. For the backfill conform to the section the plans show. Dispose of surplus excavation and restore the work site to a neat and orderly condition.

### 602.3.3 Loading Zones

(1) Construct raised loading zones in streets, if included in the contract, of concrete conforming to the requirements above, and at the locations, and as specified in the details and dimensions the plans

show. If constructing loading zones on bases covered with a wearing surface, place the loading zone directly on base. If constructing loading zones on concrete pavements, place the loading zones on the finished surface. Tie loading zones to the pavement with at least four 3/4-inch diameter dowel or tie bars, 10 inches long. Use construction methods conforming to 602.3.2. Provide openings for traffic signals, if any, as directed.

### 602.3.4 Steps

(1) If constructing steps, and landings is included in the contract, build them at the locations and as specified in the design, dimensions, and details the plans show. This work includes reinforcement and necessary excavating, backfilling, and disposing of excess excavation material.

(2) Provide a rubbed surface finish on formed surfaces of landings, risers, and sides of steps as specified for concrete bridges in 502.3.7.3.

(3) Furnish and use materials and construction methods conforming to 602.3.1, except as specified otherwise.

### 602.3.5 Safety Islands

(1) Under the Concrete Safety Islands bid item, construct concrete safety islands conforming to the requirements above and the details and dimensions the plans show. This work includes furnishing, by the contractor, or by others, and installing fixtures, conduits, and other materials, the detailed plans show.

(2) Place concrete between suitable forms accurately set to conform to the design of the island, and anchor securely to preclude movement during placement and finishing operations. Unless directed otherwise, use construction methods conforming to 602.3.1.

(3) Provide or construct openings in the island and in the base as the plans show for installing fixtures, posts, or cables. Install fixtures and materials at the time and in the manner designated on the plans or as the engineer directs.

## 602.4 Measurement

(1) The department will measure the Concrete Sidewalk bid items by the square foot acceptably completed. Measurement includes the area of the curb ramp and warning field. The department will not measure the area of sidewalk intersecting a driveway if measured as driveway under 416.4.

(2) The department will measure Concrete Loading Zones; Concrete Safety Islands; and the Curb Ramp Detectable Warning Field bid items by the square foot acceptably completed.

(3) The department will measure Concrete Steps by the square foot acceptably completed. The measured area of steps, including landings equals the sum of the areas of the treads and landings, computed by multiplying the tread and landing width by the tread and landing length, out to out of integrally placed wall.

## 602.5 Payment

### 602.5.1 General

(1) The department will pay for measured quantities at the contract unit price under the following bid items:

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 602.0400 - 0499 | Concrete Sidewalk (inch) | SF |
| 602.0500 - 0549 | Curb Ramp Detectable Warning Field (color) | SF |
| 602.0600 - 0649 | Curb Ramp Detectable Warning Field Radial (color) | SF |
| 602.1000 | Concrete Loading Zone | SF |
| 602.1500 | Concrete Steps | SF |
| 602.2400 | Concrete Safety Islands | SF |

(2) The department will adjust pay for crack repairs on concrete built under 602 as specified in 416.5.2 for ancillary concrete.

### 602.5.2 Concrete Sidewalk, Loading Zone, and Steps

(1) Payment for the Concrete Sidewalk bid items, including the area of curb ramp and warning field; Concrete Loading Zone; or Concrete Steps, including landings; is full compensation for providing materials, including concrete, reinforcement, and expansion joints; for excavating and preparing the foundation; backfilling; for placing, finishing, protecting, and curing; and for restoring the site. However, if the contract provides a bid item for excavation, then the department will pay for work required and performed in constructing concrete sidewalks as specified in the contract. Payment also includes providing tie bars and dowel bars in unhardened concrete. For tie bars and dowel bars provided in

concrete not placed under the contract, the department will pay separately under the Drilled Tie Bars and Drilled Dowel Bars bid items as specified in 416.5.

(2) When preparing the foundation the contractor may use granular subbase, or aggregate base, in this case, the department will not make additional compensation for this item.

### 602.5.3 Concrete Safety Islands

(1) Payment for Concrete Safety Islands is full compensation for providing, placing, finishing and curing concrete; for providing and placing materials, except those that the plans show as furnished by others; for handling and installing fixtures and materials that the plans show as furnished by others; and for required excavating or openings in the base.

### 602.5.4 Curb Ramp Detectable Warning Fields

(1) Payment for the Curb Ramp Detectable Warning Field bid items is full compensation for providing the warning field arrays of the specified configuration and color.