

SECTION 32 16 00
SIDEWALKS, CURBS, AND GUTTERS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Association of State Highway and Transportation Officials (AASHTO): T 99, Standard Specification for the Moisture-Density Relations of Soils Using a 2.5 kg (5.5 pound) Rammer and a 305 mm (12 in.) Drop.
2. American Concrete Institute (ACI): 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
3. ASTM International (ASTM):
 - a. C94, Standard Specification for Ready-Mixed Concrete.
 - b. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - c. D994, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

1.02 SUBMITTALS

A. Action Submittals:

1. Form Material: Information on metal forms, if used, including type, condition, surface finish, and intended function.
2. Complete data on concrete mix, including aggregate gradations and admixtures in accordance with requirements of ASTM C94.

B. Informational Submittals:

1. Curing Compound: Manufacturer's Certificate of Compliance, in accordance with Section 01 67 00, Product Requirements, and application instructions.
2. Ready-mix delivery ticket for each truck in accordance with ASTM C94.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Conform to the State of Arizona Standard Specifications for Highway Construction.

PART 2 PRODUCTS

2.01 EXPANSION JOINT FILLER

A. Physical Characteristics:

1. Preformed asphalt-impregnated.
2. 1/2-inch thick.

B. Functional Characteristics: None.

C. Performance Characteristics: Expansion joint material meeting ASTM D994.

2.02 CONCRETE

A. Physical Characteristics:

1. Compressive strength as specified in Section 03 30 00, Cast-in-Place Concrete for Class F concrete mix.
2. Maximum Aggregate Size: 1-1/2 inches.

B. Functional Characteristics: None.

C. Performance Characteristics:

1. Ready-mixed meeting ASTM C94, Option A.
2. Slump: 2 inches to 4 inches.

2.03 CURING COMPOUND

A. Physical Characteristics: Clear or translucent.

B. Functional Characteristics:

1. Liquid membrane forming.
2. Suitable for spray application.

C. Performance Characteristics: ASTM C309, Type 1.

PART 3 EXECUTION

3.01 FORMWORK

A. Lumber Materials:

1. 2-inch dressed dimension lumber, or metal of equal strength, straight, free from defects that would impair appearance or structural quality of completed curb.

2. 1-inch dressed lumber or plywood may be used where short-radius forms are required.
- B. Metals: Steel in new undamaged condition.
- C. Setting Forms:
 1. Construct forms to shape, lines, grades, and dimensions.
 2. Stake securely in place.
- D. Bracing:
 1. Brace forms to prevent change of shape or movement resulting from placement.
 2. Construct short-radius curved forms to exact radius.
- E. Tolerances:
 1. Do not vary tops of forms from gradeline more than 1/8 inch when checked with 10-foot straightedge.
 2. Do not vary alignment of straight sections more than 1/8 inch in 10 feet.

3.02 PLACING CONCRETE

- A. Prior to placing concrete, remove water from excavation and debris and foreign material from forms.
- B. Place concrete as soon as possible, and within 1-1/2 hours after adding cement to mix without segregation or loss of ingredients, and without splashing.
- C. Place, process, finish, and cure concrete in accordance with applicable requirements of ACI 304, and this section. Wherever requirements differ, the more stringent shall govern.
- D. To compact, vibrate until concrete becomes uniformly plastic.

3.03 CURB CONSTRUCTION

- A. Construct ramps at pedestrian crossings.
- B. Expansion Joints: Place at maximum 45-foot intervals and at the beginning and end of curved portions of curb, and at connections to existing curbs. Install expansion joint filler at each joint.
- C. Curb Facing: Do not allow horizontal joints within 7 inches from top of curb.

D. Contraction Joints:

1. Maximum 15-foot intervals in curb.
2. Provide open joint type by inserting thin, oiled steel sheet vertically in fresh concrete to force coarse aggregate away from joint.
3. Insert steel sheet to full depth of curb.
4. Remove steel sheet with sawing motion after initial set has occurred in concrete and prior to removing front curb form.
5. Finish top of curb with steel trowel and finish edges with steel edging tool.

E. Front Face:

1. Remove front form and finish exposed surfaces when concrete has set sufficiently to support its own weight.
2. Finish formed face by rubbing with burlap sack or similar device to produce uniformly textured surface, free of form marks, honeycomb, and other defects.
3. Remove and replace defective concrete.
4. Apply curing compound to exposed surfaces of curb upon completion of finishing.
5. Continue curing for minimum of 5 days.

F. Backfill curb with earth upon completion of curing period, but not before 7 days has elapsed since placing concrete.

1. Backfill shall be free from rocks 2 inches and larger and other foreign material.
2. Compact backfill firmly.

3.04 SIDEWALK CONSTRUCTION

A. Thickness:

1. 4 inches in walk areas.
2. 6 inches in driveway areas.

B. Connection to Existing Sidewalk:

1. Remove old concrete back to an existing contraction joint.
2. Clean the surface.
3. Apply a neat cement paste immediately prior to placing new sidewalk.

C. Expansion Joints: Place in adjacent curb, where sidewalk ends at curb, and around posts, poles, or other objects penetrating sidewalk. Install expansion joint filler at each joint.

D. Contraction Joints:

1. Provide transversely to walks at locations opposite contraction joints in curb.
2. Dimensions: 3/16-inch by 1-inch weakened plane joints.
3. Construct straight and at right angles to surface of walk.

E. Finish:

1. Broom surface with fine-hair broom at right angles to length of walk and tool at edges, joints, and markings.
2. Mark walks transversely at 5-foot intervals , or in pattern shown on the Drawings, with jointing tool; finish edges with rounded steel edging tool.
3. Apply curing compound to exposed surfaces upon completion of finishing.
4. Protect sidewalk from damage and allow to cure for at least 7 days.

END OF SECTION

