

SECTION 02670**CURB, COMBINATION CURB AND GUTTER, AND MONOLITHIC MEDIAN****02670.01 GENERAL****A. Description**

This work shall include, but not necessarily be limited to, the construction of concrete curb, concrete combination curb and gutter, concrete monolithic median, and bituminous concrete curb to the lines and grades and at the locations shown in accordance with the Contract Documents.

B. Related Work Included Elsewhere

1. Bituminous concrete pavement; Section 02641.
2. Portland cement concrete; Section 03310.

C. Quality Assurance

1. Quality assurance requirements for Portland cement concrete shall be as specified in Section 02651.01.
2. Quality assurance requirements for bituminous concrete shall be as specified in Section 02641.01.

D. Submittals

1. Submittals for Portland cement concrete curb, combination curb and gutter, and monolithic median shall be as specified in Section 02651.01.
2. Submittals for bituminous concrete curb shall be as specified in Section 02641.01.

02670.02 MATERIALS**A. Materials Furnished by the County**

1. The County will not furnish any materials for curb, combination curb and gutter, or monolithic median.
2. The Contractor may obtain water from the County's potable water system in accordance with current County policies and procedures. The Contractor shall contact the Bureau of Utilities, Meter Section, for requirements.

B. Contractor's Options

The Contractor may furnish either SN or ST gradation for bituminous concrete curb.

C. Detailed Material Requirements

1. Portland Cement Concrete

Portland cement concrete shall be Mix No. 2 as specified in Section 03310.

2. Reinforcing Steel

Reinforcing steel shall be bar reinforcement or welded steel wire fabric as noted in the Contract Documents. Bar reinforcement and welded steel wire fabric shall be as specified in Section 02660.02.

3. Joint Filler

Joint filler shall be as specified in Section 02651.02.

4. Form Release Compound

Form release compound shall be as specified in Section 02660.02.

5. Curing Materials

Curing materials shall be as specified in Section 02651.02.

6. Bituminous Concrete

a. Bituminous concrete for curbs shall be manufactured in accordance with Section 02641.01.

b. Bituminous concrete shall be SC aggregate gradation meeting the requirements specified in Section 02641.02.

02670.03 EXECUTION

A. Excavation

Excavation shall be made to the required depth and the subgrade shaped and adequately compacted at the required elevation. All soft and unsuitable material shall be removed and replaced with suitable material.

B. Concrete Curb, Combination Curb and Gutter, and Monolithic Median

Concrete curb, combination curb and gutter, and monolithic median may be constructed by either the slip-form or conventional fixed form method.

1. Fixed Form Method

The conventional fixed form method shall use forms made of steel of an approved design, securely fastened and braced to prevent any movement during the placing of concrete. Forms shall extend to the full depth of the concrete. They shall be not less than 10 feet long. When installation is made along curves where the radius of the curb face is less than 200 feet, form sections shall be not more than 6 feet long; or flexible or curved steel or wooden forms shall be used. Both wooden and steel forms shall be properly designed, approved by the Engineer, and installed so as to resist all working stresses without buckling or warping. The condition and the stability of the forms shall be such as will produce a concrete curb, combination curb and gutter, or monolithic median that meets the required tolerance of deviations not exceeding 1/4 inch in 10 feet in either grade or alignment. Before concrete is placed against the forms, they shall be thoroughly cleaned and coated with form release compound each time they are used.

a. Concreting

Volumetric batching and continuous mixing will be permitted on this work. When the subgrade is dry, it shall be moistened with as much water as it can absorb. Consolidation of concrete placed in the forms shall be by vibrating or other methods approved by the Engineer. Except for curb face forms, the forms shall remain in place for a minimum of 12 hours; and every precaution shall be taken to avoid damaging the concrete. Curb face forms may be stripped as soon as the concrete will retain its shape.

b. Drainage Openings

Where indicated in the Contract Documents or directed by the Engineer, drainage openings shall be provided through the curbing by means of inserts approved by the Engineer of the size required. At entrances and elsewhere as directed by the Engineer, curbs shall be depressed as indicated on the Plans or directed by the Engineer.

c. Joints

Joints shall be constructed in 10 foot sections except where shorter sections are necessary for closures and conformity to expansion and contraction joints in contiguous concrete pavements. No section shall be shorter than 4 feet. The joints shall be formed by using plate steel templates which are 1/8 inch to 3/16 inch in thickness and shall have a width and depth equal to the unit cross

section. The templates shall be set perpendicular to the grade and line of the unit specified. No intermediate templates or sections of templates will be permitted within the 10 foot section. Where stationary structures such as bridges, inlets, etc. are encountered, an expansion joint shall be constructed for the full depth using 1/2 inch preformed expansion joint material. Expansion joints shall be constructed to coincide with those in an adjoining concrete pavement. Expansion joints are not required when adjacent to a flexible pavement or away from any pavement. A joint shall be constructed where tangent and curved sections meet. Only the gutter portion of joints in combination curb and gutter shall be sealed.

d. **Finishing**

Concrete shall be struck off to the cross section specified after which it shall be finished smooth and even by means of a wooden float. For the purpose of matching adjacent concrete finishes or for other reasons, the Engineer may permit other methods of finishing. Plastering will not be permitted. All exposed edges shall be edged with a 1/4-inch edging tool. When finished, the top surface of curbs and medians as well as the faces shall show no deviation from grade and alignment in excess of 1/4 inch in 10 feet. All honeycomb and damaged areas shall be repaired to the satisfaction of the Engineer immediately after the removal of the forms.

2. **Slip-Form Method**

Slip-form construction shall meet the requirements for the slip-form method specified in Section 02721.03 except that joint spacing shall be in accordance with Item C of the previous paragraph.

3. **Curing**

Concrete shall be cured in accordance with Section 03310. It shall be protected from cold weather in accordance with Section 02651.03.

C. Backfill

After the forms have been stripped and any necessary repairs are satisfactorily completed, the spaces in front and back of the curb, combination curb and gutter, and median shall be backfilled to the required elevations using suitable material. It shall be consolidated to the satisfaction of the Engineer. Backfilling shall be satisfactorily completed prior to any adjacent roadway rolling.

D. Bituminous Concrete Curb

Bituminous concrete curb shall be placed by a self-propelled automatic curb machine meeting the following requirements:

1. The weight of the machine shall be such that required compaction is obtained without the machine riding above the base on which the curbing is constructed.
2. The machine shall form curbing that is uniform in texture, shape, density, and to a template as indicated in the Contract Documents.

The Engineer may permit the construction of curbing by means other than the automatic curb machine when short sections or sections of short radii are required. The resulting curbing shall conform in all aspects to the curbing produced by the use of the machine.

The base upon which the curb is to be placed shall be clean, dry, and stable. It shall be tack coated with bituminous material of the type and amount as directed by the Engineer.

When required, the curb shall be backfilled after it has sufficiently hardened to prevent damage. The backfill shall be consolidated by tamping or rolling.

02670.04 METHOD OF MEASUREMENT

A. General

Measurement for Portland cement concrete curb, combination curb and gutter, and median, and for bituminous concrete curb will be made of the length of the various items constructed. Measurement will be made along the item, from end to end of each continuous section as follows.

1. Portland Cement Concrete Curb and Combination Curb and Gutter

Measurement will be made along and parallel to the finished top of curb at its front or roadside edge.

2. Portland Cement Concrete Monolithic Median

Measurement will be made along the centerline of the finished top of median.

3. Bituminous Concrete Curb

Measurement will be made along the front face of the curb at the gutter line.

02670.05 BASIS OF PAYMENT

A. General

1. Payment will be made at the unit prices bid. The prices bid shall include all excavation, backfill, and disposal of surplus materials, and furnishing all labor, tools,

equipment, and materials necessary to satisfactorily complete the work as shown and specified in strict accordance with the Contract Documents, and accepted by the Engineer.

2. No separate payment will be made for curb depressions but this work will be considered incidental to the various items of construction.
3. Payment will be made for contingent items when ordered by the Engineer. Payment will be made as specified in Sections 02951, 02952, 02953, 02954, 02955, 02956 and 02957.

B. Portland Cement Concrete Curb and Combination Curb and Gutter

1. Payment for Portland cement concrete curb and combination curb and gutter will be made per linear foot.
2. The cost of furnishing and placing gutters contiguous to openings of curb opening inlets will be paid for at the unit price bid for combination curb and gutter. The cost of reinforcing steel for inlet gutters will not be paid for directly, but shall be included in prices bid for other related items.

C. Portland Cement Concrete Monolithic Median

Payment for Portland cement concrete monolithic median will be made per linear foot for the various widths indicated on the Plans.

D. Bituminous Concrete Curb

Payment for bituminous concrete curb will be made per linear foot.