

SECTION 720

CONCRETE CURB CONCRETE GUTTER CONCRETE CURB AND GUTTER CONCRETE SIDEWALK CONCRETE DRIVEWAY AND CONCRETE MEDIAN

720.01 Description. This work shall consist of the construction of portland cement concrete curb, portland cement concrete gutter, portland cement concrete curb and gutter, portland cement concrete sidewalk, portland cement concrete driveway, and portland cement concrete median in one course on a prepared subgrade in accordance with these specifications, and conforming to the dimensions, typical cross-section and notes shown on the plans, and to the lines and grades furnished by the Engineer.

This work shall include the placing of reinforcing steel in the concrete when so indicated on the plans.

MATERIALS

720.02 Portland Cement Concrete. All concrete shall be Class 2500 portland cement concrete and conform to the requirements of Section **701**.

720.03 Expansion Joint Material. Expansion joint materials shall meet the requirements of Subsection **702.03A**.

720.04 Reinforcing Steel. Reinforcing steel shall conform to the requirements of AASHTO M 31, Grade 60.

CONSTRUCTION REQUIREMENTS

720.05 Subgrade. The subgrade shall be thoroughly com-

pacted and finished to a smooth, firm surface, and shall be moist at the time the concrete is placed. In areas where it is impractical to use standard type rollers, compaction shall be accomplished by vibratory hand compactors. Any concrete that settles after placement shall be removed and replaced as directed by the Engineer without additional compensation to the Contractor.

720.06 Forms. Forms shall be of wood or metal and of a depth equal to the thickness of the concrete course. They shall be free from warp and shall be of sufficient strength when staked, to hold the alignment during the concrete placing and finishing operations. Before concrete is placed against them, forms shall be cleaned and oiled. Flexible or curved forms shall be used on curves as necessary in order to prevent a chord effect in the alignment of the finished work.

720.07 Existing Sidewalks and Driveways. Where a portion of an existing sidewalk or driveway is to be reconstructed, the existing section shall be cut to a minimum depth of two inches with a suitable saw at the location designated by the Engineer, and the entire section to be reconstructed shall be removed. The new sidewalk or driveway shall join the old work at this line.

720.08 Mixing and Placing Concrete. The concrete shall be batched and mixed in accordance with the provisions of Section 701.

Unless otherwise indicated on the plans, concrete curbs, concrete gutters, and concrete curb and gutters shall be constructed in uniform 10 foot sections, except where shorter sections are necessary for closures; but no section shall be less than 4 feet in length. The sections shall be separated by sheet steel templates or dividing plates set normal to the face and top of the curb. The plates shall be carefully set during

the placing of the concrete and allowed to remain in place until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place.

Concrete shall be deposited in the forms in such manner that the forms will not be displaced out of grade or alignment. During the placing operations, the concrete shall be spaded or vibrated throughout the entire mass and especially against the forms and joints. The surface of the concrete shall be tamped, floated, troweled, broomed, corners edged and finished to the typical section, lines and grades as soon as practicable after the placing of the concrete. The forms shall be left in place until the concrete has set sufficiently that their removal will not injure the concrete.

720.09 Extruded or Slip-Formed Curb or Curb and Gutter Construction. Unless otherwise specified, concrete curb, except on structures, may be placed by an extrusion machine approved by the Engineer. An approved slip-form machine may be used to construct concrete curb or curb and gutter provided satisfactory results are obtained. When, in the opinion of the Engineer, satisfactory results are not being obtained, the extrusion or slip-form work shall be discontinued and the Contractor shall use the stationary form type of construction with no adjustment in compensation to the Contractor. Any unsatisfactory work shall be removed and replaced also without any additional compensation.

Expansion and weakened joints shall be constructed at the same locations as required when form construction is being used. Weakened joints, spaced at 10 foot intervals, shall be made by cutting the plastic concrete with a trowel or by other acceptable methods. The manner of construction of all joints shall meet the approval of the Engineer and shall present a workmanlike finish after edging.

720.10 Joints.

A. Expansion Joints. Preformed expansion joints shall be 3/4 inch thick and extend the full depth of the concrete. They shall be constructed at the locations indicated on the plans and at other locations as follows:

1. Whenever a sidewalk is constructed between an adjoining substantial structure on one side and curbing on the other side, an expansion joint shall be formed adjacent to the curbing.
2. An expansion joint shall be placed between the sidewalk and the radius curbing at street intersections.
3. When concrete sidewalks or medians are constructed adjacent to existing or new concrete pavement or structures, transverse expansion joints shall be placed in the sidewalk or median opposite such joints in the concrete pavement or structure.
4. Where existing structures such as light standards, poles, fire hydrants, etc., are within the limits of the sidewalk or median area, they shall be surrounded with an expansion joint.
5. Transverse expansion joints shall be placed at intervals of not more than 100 feet in all concrete shapes.

B. Contraction Joints. The concrete slabs in sidewalks between expansion joints shall be divided into blocks 10 feet in length, by scoring transversely after floating operations are completed. Whenever the sidewalk slabs are more than 10 feet in width, they shall be scored longitudinally in the center. Transverse and longitudinal scoring shall extend for a depth of one inch and shall not be less than 1/4 inch nor more than 1/2 inch in width. They shall be edged and finished smooth and true to line.

In concrete medians, transverse contraction joints, formed as described above, shall be located at intervals of not more than 25 feet and shall extend not less than one quarter of the depth of the median.

720.11 Final Finish.

A. Curbs and Curb and Gutters. As soon as the concrete has set sufficiently, the forms for the exposed surfaces shall be removed, and the concrete for the curb face and top shall be floated and troweled as necessary to provide a smooth uniform finish. Joint templates shall be left in place a sufficient length of time to prevent bonding or distortion at the joint.

After the surface of the gutter has been properly shaped and prepared and the water sheen has disappeared, the final finish shall be by brooming. Brooming shall be transverse to the line of traffic. All joints shall be in a vertical plane perpendicular to the curb face. Joints shall be clean and corners well rounded. All corners shall be edged to conform to the typical cross-section. Tool marks shall be eliminated.

B. Sidewalks, Gutters, Medians, and Driveways. The final finish for sidewalks, gutters, medians, and driveways shall be by brooming as outlined in Subsection **720.11A** above, unless otherwise directed. As soon as the forms are removed from concrete median, the sides shall be rubbed down to a smooth and uniform finish. Mortar or aggregate particles that spill onto the pavement shall be removed.

C. Repair of Defects. As soon as the forms are removed from all concrete shapes, honeycombed places and other minor defects shall be filled with a mortar composed of one part portland cement and two parts sand. Plastering will not be allowed. Sections with visible cracks shall be replaced at no expense to the Department.

720.12 Protection and Curing. The concrete shall be protected as specified in Subsection **702.19** and cured with liquid membrane-forming compounds meeting the requirements of Subsection **702.04**. Methods and rates of application of curing compounds shall be in accordance with Subsec-

tion **702.20**.

720.13 Backfilling. After the concrete has set sufficiently and the forms removed, the spaces on both sides shall be backfilled to the required elevation with suitable material, which shall be firmly compacted and neatly graded. Concrete gutter shall be backfilled so that the earth materials are a minimum of one inch above the concrete. An earth roll on each side shall be maintained as necessary to prevent undermining of curb and gutter.

720.14 Method of Measurement. Concrete Curb, Concrete Gutter, and Concrete Curb and Gutter will be measured by the linear foot complete in place and accepted. The Concrete Curb and Gutter will be measured along the roadway face of the curb at the gutter line. The Concrete Curb and the Concrete Gutter will be measured along the roadway at the finished grade elevation. Concrete Sidewalk, Concrete Driveway and Concrete Median will be measured by the square yard of finished surface complete in place and accepted. Deduction for drainage structures such as catch basins, drop inlets, etc., shall be in accordance with the plans.

Excavation will be measured and paid for as provided in Section **203**.

720.15 Basis of Payment. The quantity, measured as provided above, will be paid for at the contract unit price for the respective item, which price and payment shall be full compensation for all materials, labor, equipment and incidentals necessary to furnish and install the items including concrete, reinforcing steel, fine grading, compacting the subgrade, formwork, joint templates, joint materials, curing concrete, backfilling and all incidentals necessary to complete the work except excavation.

Payment for each item will include all direct and indirect costs and expenses necessary to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
7201000	Concrete Curb (9" X 15")	Linear Foot
72020X0	Concrete Gutter (<i>type</i>)	Linear Foot
7203XX0	Concrete Curb and Gutter (<i>size</i>)	Linear Foot
7204100	Concrete Sidewalk (4" Uniform)	Square Yard
7205XX0	Concrete Driveway (<i>thickness</i>)" Uniform)	Square Yard
7206000	Concrete Median	Square Yard

SECTION 721

BITUMINOUS CURB

721.01 Description. This work shall consist of placing a bituminous concrete curb conforming to the configuration shown on the plans on a prepared subgrade or other surface in accordance with these specifications and to the lines and grades furnished by the Engineer.

721.02 Materials. The materials shall conform to the requirements set forth in Section **403**, *Hot Mix Asphalt Concrete Surface Course*. All requirements pertaining to the manufacture and hauling of the bituminous mixture specified in Sections **401** and **403** shall apply.

CONSTRUCTION REQUIREMENTS

721.03 Equipment. Bituminous curb shall be constructed by use of a self-propelled automatic curb machine or a paver with curbing attachments.

The automatic curb machine shall meet the following requirements and shall be approved prior to its use: