

**SECTION 02525**

**CURB AND SIDEWALKS**

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**SECTION 02525**  
**CURB AND SIDEWALKS**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Bituminous Curb
- B. Granite Curb
- C. Bituminous Sidewalk
- D. Brick Sidewalk

**1.02 RELATED SECTIONS**

- A. Section 02100 - Site Preparation
- B. Section 02227 - Aggregate Materials
- C. Section 02505 - Paving Base and Subbase Course
- D. Section 02511 – Asphaltic Concrete Paving
- E. State Highway Department Standard Specifications
- F. Construction Documents.

**1.03 PERFORMANCE REQUIREMENTS**

- A. Contractor shall maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

**1.04 SUBMITTALS**

- A. Submittals for New Bricks:
  - 1. Samples:
    - a. Furnish five individual samples of brick showing extreme variations in color and texture.
    - b. Furnish five individual samples of brick showing “nominal” color and texture.
  - 2. Certificates:
    - a. Prior to delivery, submit to the City certificates attesting compliance with the applicable specifications for grades, types or classes included in these specifications.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

#### **A. Granite Curb**

1. Stone for curbing and edging shall be approved granite from acceptable sources. The stone shall be hard and durable, predominantly gray in color, free from seams which impair its structural integrity and of smooth splitting character. Natural grain size and color variations characteristic of the source deposit will be permitted. Such natural variations may include bands of clusters of mineral or both of mineral crystallization that do not impair the structural integrity of the curb stone. The dimensions, shape and other details shall be as shown on the plans.

The exposed face of stone curb shall be free from indications of drill holes. Half drill holes not larger than 20 mm [ $\frac{3}{4}$ inch] diameter will be permitted in the arris line in the plane of the back.

2. Vertical curb shall have a top surface sawed or dressed to an approximate true plane with no depression or projection on that surface of over 3 mm [ $\frac{1}{8}$  inch]. The top front arris line shall be pitched straight and true with no variations from a straight line greater than 6 mm [ $\frac{1}{4}$ inch]. The top back arris line shall meet the same requirement except that indentations of a maximum of 9 mm [ $\frac{3}{8}$  inch] will be allowed. There shall be no projection or depression on the back face which would exceed a batter of 1 horizontal on 3 vertical for a distance from the top of 75mm [3 inches].

The front face shall be at right angles to the top and shall be smooth split and have no projections greater than 25 mm [1 inch] or depressions greater than 13 mm [ $\frac{1}{2}$  inch], measured from the vertical plane of the face through the top arris line for a distance down from the top of 200 mm [8 inches]. The remainder of the face shall have no projections or depressions greater than 25 mm [1 inch] from the plane of the face.

The ends of the curb shall be approximately square with the planes of the top, back and face and so finished that when the sections are placed end to end with the required minimum spacing of 6 mm [ $\frac{1}{4}$  inch] no more than 16 mm [ $\frac{5}{8}$  inch] space shall show in the joint for the full width of the top surface and for the entire exposed front face. The remainder of the end may extend back no more than 200 mm [8 inches] from the plane of the joint.

Drill holes through the curb will be allowed providing they are at least 225 mm [9 inches] below the top and are mortared full with Portland Cement Mortar before placing the stone.

3. Miscellaneous Stone Curb: When a depressed or modified section of curb is called for on the plans or ordered by the Engineer, for driveways, crossings, closures, transitions or for other reasons, the Contractor shall furnish curbing with the required modifications.
4. Curb Inlets: Inlets used at catch basins shall conform to the applicable requirements of Vertical Curb, Type 1 and to the shape, dimensions and details as shown on the Standard Detail plans.
5. Dimensions: The stone curb units shall be of the dimensions indicated on the plans and shall be cut in lengths of not less than 1.2 m [four feet] nor greater than 3 m ten feet. Random lengths of curb less than 1.2 m (four feet) in length may be obtained if the Engineer determines it necessary to meet field conditions. All curb to set on a radius of 20 m (60 feet) or less shall be cut to fit the curve as required.

6. Curb Type 5: The exposed face shall be smooth split to an approximate true plane having no projections or depressions which will allow over 25 mm [1 inch] to show between a 600 mm [2 foot] straightedge and the face when the straightedge is placed as closely as possible on any part of the face. Half drill holes not more than 75 mm [3 inches] in length and 20 mm [3/4 inch] in diameter will be permitted along the bottom. The arris line, top front shall be straight and true with no variation from a straight line greater than 3 mm [1/8 inch]. The arris lines at the bottom of the face shall be straight and true so that not over 25 mm [1 inch] shall show between the stone and a straightedge for the full length of the stone. The ends shall be square to the length at the face and so finished that when the stones are placed end to end, no space more than 40mm [1 1/4 inches] will show in the joint for the width of the face.

When Curbing Type 5 is required on a curve, the pieces shall be shaped.

#### B. Bricks

New bricks shall conform to requirements of A.S.T.M. Standard Specifications for Building Brick (made of clay or shale) Designation C62-66 for Grade SW with the following modifications.

1. The absorption limits shall be from 8 to 12 percent for the average of five bricks.
2. The compressive strength shall not be less than 8,000 pounds per square inch (psi).
3. The modulus of rupture shall not be less than 1,000 pounds per square inch (psi).
4. The bricks shall be No. 1, wire cut type for paving.

Bricks shall be of standard size (2-1/4" x 3-3/4"x8") with permissible variations not to exceed 1/16" in depth, 1/8" in width or 1/4" in length.

#### C. Bituminous Curb

1. The asphalt cement for bituminous curb shall be of the grade required for the wearing course, or shall be Viscosity Grade AC-20 meeting the current requirements of Asphalt Cement. The aggregate shall conform to the requirements of Section 02511 – Asphaltic Concrete Paving. The course aggregate portion retained on the 2.36 mm [No. 8] sieve may be either crushed rock or crushed gravel.

The mineral constituents of the bituminous mixture shall be sized and graded and combined in a composite blend that will produce a stable durable curbing with an acceptable texture.

Bituminous material for curb shall be the requirements of Section 02511 – Asphaltic Concrete Paving and Impregnated with Fibers.

### **PART 3 - EXECUTION**

#### **3.01 EXECUTION**

##### A. Granite Curb

1. Installation: The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least 6 mm [1/4 inch] and no greater than 15 mm [5/8 inch].
2. Backfilling: All remaining spaces under the curb shall be filled with approved material and thoroughly had tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be

filled to the required grade with approved materials. This material shall be placed in layers not exceeding 200 mm [8 inches] in depth, loose measure and thoroughly tamped.

3. Protection: The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.
4. Curb Inlets: Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown on the Standard Detail sheets.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

#### B. Bituminous Curb

1. Preparation of Base: Prior to placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guide lines. The foundation shall be uniformly painted with tack coat.
2. Placing: The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Engineer may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.
3. Sealing: The curb shall be sealed with bituminous sealing compound, when directed. The emulsified bituminous sealing compound shall be an approved commercially prepared product manufactured for specific protective coating, colored as required. It shall contain fillers, pigments and sand or fibrous materials suspended in a suitable emulsified asphalt or tar. It shall be of such consistency that it can be applied at atmospheric temperatures and capable of being easily diluted with the addition of water and mixed by hand stirring at the site of application. Before sealing, the curb shall be clean, dry and shall have reached the ambient temperature.
4. Acceptance: Curb may be accepted or rejected on the basis of appearance in regard to texture, alignment or both. All damaged curb shall be removed and replaced at the Contractor's expense.
5. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	6.35 mm $\pm$ 0.127 [0.25 inch $\pm$ 0.005]
Average Diameter	20 $\mu$ m $\pm$ 2.5 [0.0008 inch $\pm$ 0.0001]
Specific Gravity	1.32-1.40
Melting Temperature	250 ° C [480 ° F] Minimum
Color	Natural (White)

#### C. Brick Sidewalk

1. Preparation: Provide and compact base gravel where required as surface to place stone dust.

2. Stone Dust: A layer of stone dust material one (1") inch thick shall be spread upon the properly base course. This course shall be firm but not compacted.
3. Brick Placement: Perform all masonry work with skilled workmen under adequate supervision. A journeyman brick mason shall supervise all brick placement. Lay all masonry true to lines and grade with all surfaces true, and corners straight and plumb. Lay exposed-to-view bricks smooth side up, with an individual unit-to-unit level tolerance not to exceed 1/8-inch and an overall tolerance from the grade not to exceed 1/4 inch in 10 feet in any direction. Lay no unit having chipped edges of face, in exposed-to-view locations. Remove any such unit, if installed and replace with a new undamaged unit.

a. Brick Laying:

The brick shall be laid in patterns shown on the drawings. The joints shall be hand tight, leaving only as much space between bricks as occurs naturally from rough surface or slight irregularities. A piece of paper shall not be able to slide between the bricks. When necessary, the brick will be struck and broken. The City will require replacement of improperly broken bricks. No spaces shall be larger than 1/8-inch left at broken brick areas. No struck brick shall be less than two (2') inches in length.

4. Compaction: After the bricks are carefully laid upon the properly prepared stone dust base, a 2" x 4" board shall be placed upon the bricks and shall be tapped with a hammer until the bricks reach a firm, unyielding bed and present a surface of the proper grade and slope. Any divergence from line and grade is to be corrected by taking up and relaying the bricks. After setting the bricks, a sufficient amount of stone dust shall be spread over the surface and thoroughly swept or raked so as to fill the joints. All surplus stone dust remaining on the brick paved areas after the joints have been properly filled shall be removed by sweeping. Avoid raking out the joints during the removal of excess stone dust.

D. Bituminous Sidewalk

1. See Section 02511 – Asphaltic Concrete Paving.

E. Portland Cement Concrete Sidewalk

1. See Section 02520 – Portland Cement Concrete Paving.

**---END OF SECTION 02525---**