

## SECTION 609 - CURB AND/OR GUTTER

**609.01 Description.** This work includes constructing or resetting curb and/or gutter according to the contract. \*|  
\*|

The contract designates the types of curb and/or gutter as follows: \*|

- (1) Type 1 - (Unassigned)
- (2) Type 2 - Cast-in-place concrete curb and/or gutter
- (3) Type 3 - Precast concrete curb and/or gutter
- (4) Type 4 - Dowelled concrete curb
- (5) Type 5 - (Unassigned)
- (6) Type 6 - Bituminous curb
- (7) Type 7 - Bituminous gutter

**609.02 Materials.** Materials shall conform to following: |

Emulsified Asphalt	702.04
Bed Course Material for Sidewalks & Curbing	703.16(A)
Joint Fillers	705.01
Joint Mortar	705.02
Reinforcing Steel	709.01
Precast Concrete Curb and/or Gutter	712.05

Concrete for curb and/or gutter shall conform to Section 601 - Structural Concrete and shall be Class A. |

Bituminous material for curb shall conform to Section 401 - Asphalt Concrete Pavement and shall be Type V. |

Bituminous mixture for Type 7 - Bituminous Gutter shall conform to Section 401 - Asphalt Concrete Pavement and as modified below. Bituminous mixture for Type 7 - Bituminous Gutter shall be Mix No. V. The Contractor shall increase the asphalt content of the mixture by at least half (1/2) percentage point above that normally used for asphalt concrete pavement. \*|  
\*|

Weed killer shall be a nonemergent and nonselective type, EPA approved for highway application, and suitable for use under the designed thickness of pavements. The materials shall be free of solvents or other substances

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deleterious to the pavement. Application rates shall be at the highest recommended dosage stated on the label. The Contractor shall submit a sample \* label containing the pertinent data for acceptance by the Engineer before use. |

Concrete, bituminous mixes and manufactured curb and/or gutter materials will be subject to inspection and tests at the plants for compliance with the quality requirements.

The condition of materials will be subject to inspection for acceptance \* before or during incorporation of materials into the work. \*

609.03 Construction Requirements.

(A) Precast Concrete Curb and/or Gutter.

(1) Excavation. The Contractor shall excavate to the required \* depth and compact the base to a firm, even surface. The Contractor \* shall remove and replace soft and unsuitable material with suitable \* material that the Contractor shall compact thoroughly. \*

(2) Installation. The Contractor shall set the curb so that the \* front top arris line conforms to the line and grade required. The \* Contractor shall fill the spaces under the curb and/or gutter with \* bed course material. The Contractor shall tamp this material \* thoroughly.

(3) Joints. The Contractor shall set the precast blocks \* approximately half (1/2) inch apart. The Contractor shall fill \* these joints with mortar as specified. \*

If the Contractor constructs portland cement concrete pavement \* abutting the curb and/or gutter, the Contractor shall construct the \* joints in the curb and/or gutter directly in line with pavement \* expansion joints. The joint in curb and/or gutter shall be three- \* quarter (3/4) inch in width. The Contractor shall fill the joint in \* curb and/or gutter with an expansion joint filler of the same \* nominal thickness as the pavement joint. The Contractor shall fill \* the voids between the joint filler and the curb and/or gutter with \* mortar.

(4) Backfilling. After the curb and/or gutter has set, the \* Contractor shall fill the remaining excavated areas with accepted \* material. The Contractor shall place and tamp this material \* thoroughly in layers not exceeding six (6) inches in depth. \*

(B) Cast-in-Place Concrete Curb and/or Gutter.

(1) Excavation. Excavation and bedding shall conform to Subsection | 609.03(A)(1) - Excavation.

- (2) **Forms.** Forms shall be: \*|
- (a) of wood or metal, \*|
  - (b) straight, \*|
  - (c) free from warp and \*|
  - (d) of construction that there shall be no interference with \*|  
the inspection of grade or alignment. \*|

Forms shall extend for the entire depth of the curb and/or gutter. The Contractor shall brace and secure the forms \*| sufficiently so that no deflection from alignment or grade shall occur during the placing of the concrete. \*|

- (3) **Placing of Concrete.** The Contractor shall place the concrete \*| according to Section 503 - Concrete Structures. The Contractor \*| shall moisten the subgrade and forms thoroughly ahead of placing \*| concrete. \*|

The Contractor shall work the surfaces of concrete gutters \*| with proper floats and round the exposed edges with an edging tool. \*| Before the concrete has fully set, the Contractor shall remove and \*| finish the face form of the curb with a float and steel trowel to a \*| uniform finish. The Contractor shall broom finish other exposed \*| surfaces longitudinally. The Contractor may require special trowels \*| to shape curbs and/or gutters. \*|

To match adjacent concrete finishes, the Engineer may permit \*| other methods of finishing. The Engineer will not permit \*| plastering. \*|

- (4) **Sections.** The Contractor shall construct curb and/or gutter \*| in sections having a uniform length of fifteen (15) feet. The \*| Contractor shall separate the sections by weakened plane joints \*| approximately one-eighth (1/8) inch wide and cut to a depth of quarter (1/4) the gutter thickness. When curb and/or gutter abut \*| portland cement concrete pavement, the Contractor shall install \*| weakened plane joints in the curb and/or gutter continuously with \*| the weakened plane joints in the abutting pavement. \*|

- (5) **Expansion Joints.** The Contractor shall form the expansion \*| joints at the intervals shown in the contract using a preformed \*| expansion joint filler having a thickness of half (1/2) inch. If \*| the Contractor constructs curb and/or gutter next to or on concrete \*| pavement, the Contractor shall locate the expansion joints opposite \*| to or at expansion joints in the pavement. \*|

The Contractor shall construct expansion joints in curb and/or gutter at structure abutments and at the ends of returns. The Contractor shall not construct expansion joints within twenty (20) feet of a traffic island nose.

The Contractor shall shape expansion joints filler to the cross section of the curb and/or gutter.

**(6) Curing.** Immediately upon completion of the finishing, the Contractor shall:

(a) moisten and keep the curb and/or gutter moist for three (3) days or

(b) cure the curb and/or gutter by using membrane forming material.

The method and details of curing will be subject to acceptance.

**(7) Backfilling.** After the concrete has set sufficiently, the Contractor shall refill the spaces in front and back of the curb and/or gutter to the required elevation with suitable material. The Contractor shall tamp the material thoroughly in layers of not more than six (6) inches.

**(8) Curb Machine.** With the acceptance of the Engineer, the Contractor may construct the curb and/or gutter by using a curb and/or gutter forming machine.

**(9) Construction Joints.** The Contractor shall build construction joints in cast-in-place curbs and/or gutters:

(a) when the delays are greater than forty-five minutes between two (2) consecutive batches in concrete operations,

(b) at the end of each day of pouring, or

(c) when ordered by the Engineer.

The Contractor shall build the construction joints according to the details shown in the contract and shall coincide with the spacing of weakened plane joints. The Contractor shall coat the dowels for the joints uniformly with a thin film of heavy lubricating oil immediately before placement of concrete at the joint. The Contractor shall support the dowels firmly during concrete placement. The forms shall remain in place until the Contractor resumes concrete operations on the other side of the joint.

**(C) Bituminous Curb.**

(1) **Preparation of Bed.** If the Contractor constructs bituminous curb on a fresh laid bituminous surface, the Contractor may lay the curb only after the Contractor has cleaned the surface. \*

If the Contractor constructs the curb on a cured or aged portland cement concrete base, bituminous pavement or bituminous treated base, the Contractor shall sweep and clean the bed thoroughly by compressed air. The Contractor shall dry the surface thoroughly. Immediately before placing the bituminous mixture, the Contractor shall place tack coat of bituminous material of the type and grade accepted. The rate of application of the tack coat material shall be between 0.05 to 0.15 gallon per square yard of surface. In the application of this tack coat, the Contractor shall prevent the spread of the tack coat to areas outside of the area of the curb. \*

(2) **Placing.** The Contractor shall construct bituminous curb by use of self-propelled automatic curber or curb machine or a paver with curbing attachments. \*

The automatic curber or machine shall conform to following and accepted before its use: \*

(a) The weight of the machine shall be such that the Contractor gets the required compaction without the machine riding above the bed. \*

(b) The machine shall form curb that is uniform in texture, shape and density. \*

(c) The Engineer may permit the construction of curb other than the automatic curb machine, when the contract requires short sections or sections with short radii or as warranted. The resulting curb shall conform to the curb produced by using the machine. \*

(3) **Painting and Sealing.** If the contract requires painting or sealing, the Contractor shall paint or seal only on a curb that is clean and dry and reaches the ambient temperature. \*

**(D) Resetting Curb and/or Gutter.**

(1) **Salvage.** The Contractor shall carefully remove, store and clean curb and/or gutter specified for resetting. The Contractor shall replace the existing curb and/or gutter that the Contractor: \*

(a) will reset and \*

(b) loses, damages or destroys due to its operations or its failure to store and protect the existing curb and/or gutter. \*

(2) **Excavation.** Excavation and bedding shall conform to Subsection 609.03(A)(1) - Excavation.

(3) **Resetting.** The Contractor shall set the curb and/or gutter on a firm bed with the front top arris line conforming to the required line and grade. The Contractor shall set the sections of curb and/or gutter. The maximum opening between adjacent section shall be not more than three-quarters (3/4) inch wide for the entire exposed top and face. The Contractor shall dress the ends of the curb and/or gutter necessary to meet this requirement at no cost to the State.

After the Contractor sets the curb and/or gutter, the Contractor shall fill the joints completely with mortar as specified.

(4) **Backfilling.** The Contractor shall refill the spaces in front and back of the curb and/or gutter to the required elevation with suitable material. The Contractor shall tamp this material thoroughly in layers of not over six (6) inches in depth.

(5) **Cutting and Fitting.** Cutting and fitting may be necessary to install the curb and/or gutter at the locations ordered.

(E) **Bituminous Gutter.**

(1) **Excavation.** The Contractor shall excavate to the required depth and compact to a firm, even surface. The Contractor shall remove and replace soft and unsuitable material with suitable material. The Contractor shall compact the material thoroughly.

(2) **Weed Killer.** After the Contractor completes the grading and compacting operations, the Contractor shall spray the subgrade thoroughly with the non-emergent weed killer. The application shall be according to the manufacturer's recommendations.

(3) **Base Course.** The Contractor shall place and compact the base course material according to Section 304 - Aggregate Base Course.

(4) **Prime Coat.** The Contractor shall apply and protect the prime coat according to Section 408 - Prime Coat.

(5) **Bituminous Material.** The Contractor shall place and compact the bituminous material according to Section 401 - Asphalt Concrete Pavement and below. The equipment, lift thickness and compaction requirements will not apply to material placed on a 2:1 slope. The Contractor shall compact the mixture to a relative density of not less than eighty (80) percent of the laboratory-compacted density using ASTM D 1561. The finished surface of the 2:1 slope shall be uniform in texture, without ruts, corrugations or other irregularities.

**609.04 Method of Measurement.** The Engineer will measure curb and/or gutter, \*|  
both new and reset, by the linear foot. The Engineer will measure along the \*|  
front face of the curb at the finished grade elevation. If the Engineer \*|  
measures gutter separately, the Engineer will measure gutter along the front \*|  
face of the gutter. The Engineer will not make deduction in gutter length \*|  
for drainage appurtenances installed such as catch basins and drop inlets.

The Engineer will not measure curb and/or gutter both new and reset when \*|  
contracted on a lump sum basis.

The Engineer will measure bed course material by the cubic yard \*|  
according to Section 109 - Measurement and Payment.

The Engineer will measure curb and/or gutter transition for payment as \*|  
follows:

From	To	Measurement for Payment
Cast-in-place Curb or Precast Curb	Cast-in-place Curb and Gutter	Cast-in-place Curb and Gutter
Cast-in-place Curb and Gutter	Precast Curb and Cast-in-place Gutter	Cast-in-place Curb and Gutter
Cast-in-place Curb and Gutter Type ____	Cast-in-place Curb and Gutter Type ____	Cast-in-place Curb and Gutter 1/2 of Transition to each type
Cast-in-place Curb Type ____	Cast-in-place Curb Type ____	Cast-in-place Curb 1/2 of Transition to each type
Bridge Abutments	Cast-in-place Curb and/or Gutter or Precast Curb or Lava Rock Curb	Cast-in-place Curb and/or Gutter or Precast Curb or Lava Rock Curb
Bituminous Gutter	Cast-in-place Curb and/or Gutter	Cast-in-place Curb and/or Gutter
Bituminous Gutter Type ____	Bituminous Gutter Type ____	Bituminous Gutter 1/2 of Transition to each type

The Engineer will measure precast concrete drop curb and driveway curb \*|  
or cast-in-place integral driveway curb and gutter under the adjacent normal \*|  
curb and/or gutter.

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609.05 Basis of Payment. The Engineer will pay for the accepted quantities \*| of curb and/or gutter at the contract lump sum price or at the contract unit \*| price per linear foot for each type of curb and/or gutter specified.

The Engineer will pay for the accepted quantities of bed course material \*| at the contract unit price per cubic yard complete in place. \*|

The contract lump sum price shall include the bed course material for the | curb and/or gutter. |

The price shall be full compensation for excavating; backfilling; \*| installing reinforcing steel; placing and compacting bed course material; | installing expansion joint material, weakened plane joint; furnishing labors, \*| materials, equipment, tools, and other incidentals necessary to complete the \*| work. \*|

The Engineer will make payment under: \*|

Pay Item	Pay Unit
Curb, Type ____	Linear Foot
Curb, Type ____ (____ L.F.)	Lump Sum
Gutter, Type ____	Linear Foot
Gutter, Type ____ (____ L.F.)	Lump Sum
Curb and Gutter, Type ____	Linear Foot
Curb and Gutter, Type ____ (____ L.F.)	Lump Sum
Reset Curb, Type ____	Linear Foot
Reset Curb, Type ____ (____ L.F.)	Lump Sum
Bed Course Material for Curb and/or Gutter	Cubic Yard