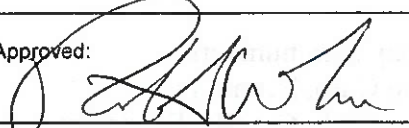


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| <p><b>SUPERSEDED BY</b><br/> <b>EB 15-031</b><br/> <b>EFFECTIVE 9/28/15</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | <p><i>New York State<br/> Department of<br/> Transportation</i><br/> <b>ENGINEERING<br/> INSTRUCTION</b></p> | <p><b>EI</b><br/> <b>13-007</b></p>                |                                                      |                                                      |                                                   |                                                      |  |                                    |                                                                                                                                                                                                                             |  |
| <p><b>Title: REVISIONS TO STANDARD SPECIFICATION SECTIONS 609 CURB AND CURB &amp; GUTTER, 624 PAVED GUTTER, §714-01 STONE CURB, AND §714-06 HOT MIX ASPHALT CURB</b></p>                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                              |                                                    |                                                      |                                                      |                                                   |                                                      |  |                                    |                                                                                                                                                                                                                             |  |
| <p>Target Audience:</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Manufacturers (18)</td> <td><input checked="" type="checkbox"/> Surveyors (33)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Local Govt. (31)</td> <td><input checked="" type="checkbox"/> Consultants (34)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Agencies (32)</td> <td><input checked="" type="checkbox"/> Contractors (39)</td> </tr> <tr> <td></td> <td><input type="checkbox"/> _____ ( )</td> </tr> </table> |                                                                                   | <input checked="" type="checkbox"/> Manufacturers (18)                                                       | <input checked="" type="checkbox"/> Surveyors (33) | <input checked="" type="checkbox"/> Local Govt. (31) | <input checked="" type="checkbox"/> Consultants (34) | <input checked="" type="checkbox"/> Agencies (32) | <input checked="" type="checkbox"/> Contractors (39) |  | <input type="checkbox"/> _____ ( ) | <p>Approved: <br/> Richard W. Lee, P.E.<br/> Acting Deputy Chief Engineer, Design</p> <p style="text-align: right;">6/14/13<br/> Date</p> |  |
| <input checked="" type="checkbox"/> Manufacturers (18)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/> Surveyors (33)                                |                                                                                                              |                                                    |                                                      |                                                      |                                                   |                                                      |  |                                    |                                                                                                                                                                                                                             |  |
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**ADMINISTRATIVE INFORMATION:**

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of January 9, 2014.
- This EI supersedes EI 00-032 and EI 93-008.
- The revisions issued with this EI will be incorporated into the next update of the Standard Specifications.

**PURPOSE:** The purpose of this EI is to issue revised Standard Specification Section 609 Curb and Curb & Gutter, Section 624 Paved Gutter, §714-01 Stone Curb, and §714-06 Hot Mix Asphalt Curb.

**TECHNICAL INFORMATION:**

- Stone and Granite Economy Curb has been renamed Landscape Curb without any other modification.
- A new stone and granite economy curb named Light Duty Curb has been introduced which is 4 inches wide with a finished top. The new 4" economy granite curb is intended to be light duty, to be used on light traffic areas, urban/suburban side streets and parking areas.
- A new Stone and Granite Traversable Sloped Curb, Type TS, has been introduced and detailed in Standard Sheets issued concurrently with EB 13-007.
- Section 609-3.04B. Machine Formed Concrete Curb and Curb & Gutter has been modified to clarify the width of curb being paid for when the machine forming option is chosen by the Contractor. **DESIGNERS SHOULD NOTE THAT WHEN CAST-IN-PLACE CURB IS SPECIFIED, THE WIDTH OF CURB MUST BE INDICATED ON THE PLANS.**
- Section 609-3.05 Granite Traversable Sloped Curb has been added. The pay item used for this curb will be added to the standard pay item catalog under 609.02XX Granite Curb\* (Various Types as indicated).
- Section 624-3.02 Conventionally Formed or Machine Formed Concrete Gutters has been modified to allow 1/4 inch joints and an additional asphalt sealer material, §705-02 Highway Joint Sealants, Type IV was recommended by Materials and added to the specification.
- §714-01 Stone Curb was changed to reflect the changes in names of the granite curbs. Economy Curb has been renamed Landscape Curb. Light Duty Curb has been added. The existing Sloped Curb has been modified to describe the new Sloped Curb.
- §714-06 Hot Mix Asphalt Curb was added to this EI and modified per Materials comments received on their review of this EI and EB. The term asphalt cement was replaced by Hot Mix Asphalt, HMA.
- Standard Sheets 609-01, 609-02, 609-04, M609-3R2, M609-4R2 and M609-5 issued concurrently under EB 13-007 are to be used with the changes issued under this EI.

## EI 13-007 Page 2 of 2

- Miscellaneous Curb Details, sheets 609-02 and M609-4R2: Note 1 has been revised to clarify the use of curb reveal.

### IMPLEMENTATION:

- Main Office Design Quality Assurance Bureau will insert the revisions to the Standard Specifications transmitted with this EI into contract proposals beginning with projects submitted for the letting of January 9, 2014.
- Disapproved pay item numbers:
  - 609.0108 Stone Curb, Economy
  - 609.0208 Stone Curb, Granite, Economy
- Approved pay item numbers
  - 609.0109 Stone Curb, Landscape
  - 609.0209 Stone Curb, Granite, Landscape
  - 609.0110 Stone Curb, Light Duty
  - 609.0210 Stone Curb, Granite, Light Duty
  - 609.0111 Stone Curb, Traversable Sloped
  - 609.0211 Stone Curb, Granite, Traversable Sloped

**TRANSMITTED MATERIALS:** This EI transmits standard specification revision *Section 609 Curb and Curb & Gutter, Section 624 Paved Gutter, §714-01 Stone Curb, and §714-06 Hot Mix Asphalt Curb*. Both Metric and U.S. Customary revisions are attached.

**BACKGROUND:** Current quarry/manufacturing practices and costs were brought to our attention by The American Granite Curb Producers Association which prompted the change of Economy Curb to Landscape Curb, the introduction of a new Light Duty Curb and a new Traversable Sloped Curb. The new Traversable Sloped Curb was added as a substantially lower cost alternative to the granite T-100 shape and a cost competitor to the concrete T-100 shape. A Mountable Sloped Curb was developed and subsequently discarded because the cost to produce it was equivalent to the existing mountable curb and was determined not to add any benefit to the Department and the traveling Public.

In examining the specifications, an ambiguity with the minimum width of cast-in-place concrete curb was identified and that section was revised to remove the ambiguity.

A report from regional construction personnel, identified a possible problem with the width of joints and asphalt sealer used in cast-in-place concrete gutter. The joints were widened and an additional material identified by the Materials Bureau was added to the specification.

Designers are reminded that although granite curb is initially higher in cost than concrete curb, its life cycle cost is conservatively equivalent, see Client Report 81, "Granite and Concrete Curbing: A Comparison of Performance and Costs", completed by NYSDOT Research and Development, September, 1998. The mentioned study also puts the life of granite curb, conservatively, at three times the life of concrete curb. Municipal Engineering Practices also encourages design for longevity and for little to no maintenance as the most cost effective design.

**CONTACT:** Direct questions regarding this issuance to Charles Torre of the Design Quality Assurance Bureau at (518) 485-5632 or via e-mail at [charles.torre@dot.ny.gov](mailto:charles.torre@dot.ny.gov).

## 609 CURB AND CURB & GUTTER

Make the following changes to the Standard Specifications dated May 1, 2008:

Page 536-541, Delete SECTION 609 Curb and Curb & Gutter entirely and Replace it with the following:

### "SECTION 609 - CURB AND CURB & GUTTER

**609-1 DESCRIPTION.** Construct and place curb, and curb & gutter, and/or reset curb as indicated in the Contract Documents or established by the Engineer.

**609-2 MATERIALS.** The materials shall meet the requirements of the following subsections of Section 700 - Materials and Manufacturing.

|                                                |        |
|------------------------------------------------|--------|
| Portland Cement, Type II                       | 701-01 |
| Concrete Repair Material                       | 701-04 |
| Concrete Grouting Material                     | 701-05 |
| Anchoring Material - Chemically Curing         | 701-07 |
| Concrete Repair Material - High Early Strength | 701-12 |
| Coarse Aggregate                               | 703-02 |
| Concrete Sand                                  | 703-07 |
| Premoulded Resilient Joint Filler              | 705-07 |
| Masonry Mortar                                 | 705-21 |
| Stone Curb Anchor Bars                         | 709-07 |
| Quilted Covers (for Curing)                    | 711-02 |
| Plastic Coated Fiber Blankets (for Curing)     | 711-03 |
| Polyethylene Curing Covers (White Opaque)      | 711-04 |
| Membrane Curing Compound                       | 711-05 |
| Stone Curb                                     | 714-01 |
| Precast Concrete Curb                          | 714-04 |
| Hot Mix Asphalt Curb                           | 714-06 |

White and Yellow Pavement Marking Paints shall meet the requirements of Section 640 - ReflectORIZED Pavement Marking Paints.

#### 609-2.01 (Vacant)

#### 609-2.02 Concrete for Cast-in-Place Concrete Curb and Curb & Gutter.

**A. Conventionally Formed Curb and Curb & Gutter.** The material requirements, mix preparation and manufacturing of the concrete shall conform to the requirements for Class A Concrete as specified in Section 501, Portland Cement Concrete - General.

**B. Machine Formed Concrete Curb and Curb & Gutter.** Use Class J Concrete as specified in Section 501, Portland Cement Concrete - General.

**609-2.03 Stone Curb and Granite Curb.** Stone curb shall conform to §714-01 and shall be either sandstone or bluestone. Granite curb shall conform to the requirements for granite under Stone Curb §714-01.

## 609 CURB AND CURB & GUTTER

**609-2.04 Curb Anchors.** Curb anchors for cast-in-place concrete curb, and curb & gutter shall be fabricated from material conforming to the requirements for Longitudinal Joint Ties §705-14 and to the details shown on the Standard Sheet for concrete curb or as indicated in the Contract Documents.

**609-2.05 Concrete for Backing and Bedding Precast Concrete Curb, Stone Curb, and Granite Curb.** The Contractor shall use any Class Concrete or a concrete mix proportioned as follows:

| TABLE 609-1 POUNDS OF AGGREGATE PER BAG OF CEMENT |      |      |      |      |
|---------------------------------------------------|------|------|------|------|
| Specific Gravity of Aggregate                     | 2.60 | 2.70 | 2.80 | 2.90 |
| Concrete Sand                                     | 326  | 337  | 350  | 364  |
| Coarse Aggregate, CA 2 Gradation                  | 536  | 556  | 558  | 597  |

### 609-3 CONSTRUCTION DETAILS

**609-3.01 General.** Curb, or curb & gutter found to be dirty, damaged or out of alignment shall be cleaned, repaired, or replaced as necessary by the Contractor to the satisfaction of the Engineer prior to final acceptance of the work. When the Contract Documents have no reference to placing curb across driveway entrances, no curb shall be placed across driveway entrances.

**609-3.02 Precast Concrete Curb, Stone Curb, and Granite Curb.** All precast concrete curb, stone curb, and granite curb, excluding granite traversable sloped curb, shall be set on a 3 inch thick continuous bed of dry concrete mix, or on a 3 inch thick dry concrete mix bed at the joints as shown on the Standard Sheets and wet concrete mix between the joints, or on a 3 inch minimum thick continuous bed of compacted granular material, at the Contractor's option.

Precast concrete curb, stone curb, and granite curb, excluding granite traversable sloped curb, shall be backed up with concrete using one of the following methods depending on the type of pavement:

**A. Portland Cement Concrete (Rigid) Pavement.** The Contractor shall place concrete backing behind the curb at each joint. The backing shall extend a minimum of 12 inch on both sides of the joint. The minimum height of the concrete backing shall be one half of the concrete pavement thickness and shall be measured from the bottom of the curb.

**B. Hot Mix Asphalt (Flexible) Pavement.** The Contractor shall place a continuous concrete backing behind the curb. The minimum height of the concrete backing shall be 10 inches or to the top of the hot mix asphalt pavement, whichever is greater, measured from the bottom of the curb.

Precast curb, stone curb, and granite curb, excluding granite traversable sloped curb, with and without sawed ends, not on structure, shall be butted together with no mortar between the joints.

When the curb is set next to a concrete (rigid) pavement, grout conforming to §701-04 Concrete Repair Material, §701-12 Concrete Repair Material - High Early Strength, or §705-21 Masonry Mortar shall be placed in the joint formed between the curb and the pavement. The grout shall extend from the bottom to the top of the pavement slab.

Before proceeding with any further work adjacent to the curb, the curb shall be backfilled with material approved by the Engineer and the backfill material shall be thoroughly tamped.

**609-3.03 Stone Curb and Granite Curb - Bridge Type.** The requirements of §609-3.02 shall apply with the following modifications:

## 609 CURB AND CURB & GUTTER

mix backing shall be continuous. The minimum height of the concrete backing shall be 2 inches below top of curb, top front arris line, to allow topsoil and seeding or as shown on the plans. There shall be no wet concrete mix base.

**2. New Pavement.** The Contractor shall place the granite traversable sloped curb after paving. The granite traversable sloped curb shall be placed on a wedge bed of dry concrete mix, as above, on the edge of the new pavement. The wet concrete mix backing shall be continuous. The minimum height of the concrete backing shall be 2 inches below top of curb, top front arris line, to allow topsoil and seeding or as shown on the plans. There shall be no wet concrete mix base.

### **B. Hot Mix Asphalt (Flexible) Pavement.**

**1. Existing Pavement.** The Contractor shall sawcut 12 inches of the pavement and place the granite traversable sloped curb as above. The wet concrete mix backing shall be continuous. The minimum height of the concrete backing shall be 2 inches below top of curb, top front arris line, to allow topsoil and seeding or as shown on the plans. The wet concrete mix base shall be placed on the subbase course and finished flush with the top of the binder allowing the top course to be place over the concrete base. The wet concrete mix base shall be cured before placing of top course.

**2. New Pavement.** The Contractor shall place the granite traversable sloped curb after paving, decreasing the paving width, excluding the top course, by one foot where the granite traversable sloped curb is to be placed. The wet concrete mix backing shall be continuous. The minimum height of the concrete backing shall be 2 inches below top of curb, top front arris line, to allow topsoil and seeding or as shown on the plans. The wet concrete mix base shall be placed on the subbase course and finished flush with the top of the binder course allowing the top course to be place over the concrete base. The wet concrete mix base shall be cured before placing of top course.

Granite traversable sloped curb, with and without sawed ends, not on structure, shall be placed with joints of 1/4 inch to 3/4 inch but with a consistent joint width throughout. Grout conforming to §701-04 Concrete Repair Material or §705-21 Type M Masonry Mortar shall be placed in the joint formed between the curb lengths. The grout shall extend from the bottom to the top of the curb section completely filling the joint and struck flush with curb surface. Curb surfaces shall be cleaned of excess mortar to the satisfaction of the Engineer.

Before proceeding with any further work adjacent to the curb, the curb shall be backfilled with material approved by the Engineer and the backfill material shall be thoroughly tamped.

**609-3.06 Optional Curb.** Under optional curb, the Contractor shall have the option of placing precast concrete curb, or cast-in-place concrete curb, or granite curb. Precast concrete curb or granite curb shall be placed in accordance with the requirements of §609-3.02. Cast-in-place curb shall be placed in accordance with the requirements of §609-3.04. No intermixing of curb will be allowed without the Engineer's written permission.

**609-3.07 Hot Mix Asphalt Curb.** Hot mix asphalt curb shall conform to the construction requirements of §402-3, except as follows:

**A. Preparation of Mixture.** The hot mix asphalt for curb, in accordance to 714-06 Hot Mix Asphalt Curb, shall be mixed in a batch type bituminous concrete mixing plant. The dry mixing time shall be a minimum of 15 seconds after the complete introduction of aggregates into the pugmill. The wet mix time shall be a minimum of 45 seconds.

## 609 CURB AND CURB & GUTTER

**B. Preparation of Surface.** When hot mix asphalt curb is constructed on a freshly laid hot mix asphalt surface, the surface shall be clean. When curb is to be laid on a cured or aged concrete base, hot mix asphalt pavement, or performance graded binder treated base, the surface shall be thoroughly swept and cleaned by compressed air.

The surface shall be thoroughly dried and, immediately prior to placing of the hot mix asphalt mixture, shall receive a tack coat meeting the requirements of Table 702-8. The tack coat shall be applied at a rate of 0.05 to 0.15 gallons per square yard. The tack coat shall be prevented from spreading to areas outside of the area to be occupied by the curb.

**C. Placing.** Hot mix asphalt curb shall be constructed by machine to the size and shape shown on the Standard Sheets.

The machine shall be capable of placing the hot mix asphalt in accordance with these specifications to the satisfaction of the Engineer. Prior to placement, the Contractor shall demonstrate to the satisfaction of the Engineer the machine meets the following requirements:

1. The machine shall be self propelled and capable of forming curb which is uniform in texture, shape, and density.
2. The weight and the material extrusion rate of the machine shall be such that the required compaction is obtained without the machine riding above the bed on which curbing is constructed.

When short sections of hot mix asphalt curb or sections with short radii are required, the Engineer may permit construction by other means, as long as the resulting curb conforms to the curb produced by machine.

**D. Painted Hot Mix Asphalt Curb.** When painted hot mix asphalt curb is specified, it shall be painted yellow or white in accordance with the MUTCD. The paint shall be placed in accordance with the following:

1. After a curing period of not less than 72 hours, exposed surfaces of the curbing shall be sprayed or hand brushed with two coats of pavement marking paint, yellow or white as required. Each coat of paint shall be applied at the rate of 1 gallon per 200 linear feet of curb.
2. The curb shall be clean and free of all foreign matter before painting. Paint shall be applied only when the air temperature is above 50°F and rising. Paint shall not be applied when there is reasonable expectation of rain. In the event the first or final coat of paint is rain damaged, as determined by the Engineer, the Contractor shall clean and repaint the curb at no additional cost to the State.

**609-3.08 Resetting Curb.** Care shall be taken in removing the curb to be reset so that there will be no unnecessary breakage. All curb damaged in removing, hauling, storing, or resetting shall be replaced by the Contractor.

The curb shall be reset, in accordance with the requirements of §609-3.02 or §609-3.03 for resetting bridge type curbs, to the lines and grades specified in the Contract Documents.

**609-4 METHOD OF MEASUREMENT.** All curb and curb & gutter placed and curb reset under these specifications will be measured by the number of linear feet, rounded to the nearest foot. The measurement will be taken along the top front arris line of full height, transition and terminal sections. The measurement will be taken along the top front arris line of curb reveals across driveway entrances only when placed and not removed.

### 609-5 BASIS OF PAYMENT

## 609 CURB AND CURB & GUTTER

**609-5.01 Concrete Curb, Curb & Gutter, Stone Curb, Granite Curb, Optional Curb.** The unit price bid per foot shall include the cost of all labor, materials, curb anchors, equipment, sawcutting and excavation to, in accordance with these specifications, place, backfill, concrete, grout and caulk the curb, curb & gutter. When select backfill is specified, the select backfill shall be paid under its respective items. No additional payment will be made to the Contractor when more than the minimum width of curb is placed. No additional payment will be made to the Contractor when curb is placed across driveway entrance, to facilitate concrete machine forming operations, and removed.

**609-5.02 Stone Curb and Granite Curb - Bridge Type.** The unit price bid per foot shall include the cost of furnishing all labor, equipment, and materials including concrete bedding, mortar for stone and granite curbs, chemically curing anchoring materials, and stone and granite curb anchors required to bed and place stone and granite bridge curb, in accordance with these specifications.

**609-5.03 Hot Mix Asphalt Curb.** The unit price bid per foot shall include the cost of furnishing all labor, materials, and equipment to prepare the surface for curb placement, and place the curb. If painted hot mix asphalt curb is specified, the Contractor shall also include the cost of preparing the curb for painting, furnishing the paint, and applying the paint.

Progress payments will be made after the curb has been constructed to the shape and size shown on the Standard Sheet and/or plans. Payment will be made, at the unit price bid, for 90% of the quantity properly constructed exclusive of painting. The balance of the quantity will be paid for upon completion of the work.

### 609-5.04 (Vacant)

**609-5.05 Resetting Curb.** The unit price bid per foot shall include the cost of furnishing all labor, equipment, and materials to remove, haul, store and reset curb, in accordance with these specifications. In addition, the unit price shall also include any re-dressing of tops and joints of bridge type curb, as directed by the Engineer, and replacement of curb damaged by the Contractor's operations.

### *Payment will be made under:*

| Item No. | Item                                                                                                    | Pay Unit |
|----------|---------------------------------------------------------------------------------------------------------|----------|
| 609.01   | Stone Curb (As Detailed)                                                                                | Foot     |
| 609.01XX | Stone Curb* (Various Types as indicated)                                                                | Foot     |
| 609.02XX | Granite Curb* (Various Types as indicated)                                                              | Foot     |
| 609.03   | Granite Bridge Curb (As Detailed)                                                                       | Foot     |
| 609.03XX | Granite Bridge Curb* (Various Types as indicated)                                                       | Foot     |
| 609.035X | Stone Bridge Curb* (Various Types as indicated)                                                         | Foot     |
| 609.04   | Cast-in-Place Concrete Curb (As Detailed)                                                               | Foot     |
| 609.04XX | Cast-in-Place Concrete Curb* (Various Types as indicated)                                               | Foot     |
| 609.05   | Cast-in-Place Concrete Curb & Gutter (As Detailed)                                                      | Foot     |
| 609.05XX | Cast-in-Place Concrete Curb & Gutter* (Various Types as indicated)                                      | Foot     |
| 609.08XX | Precast Concrete Curb* (Various Types as indicated)                                                     | Foot     |
| 609.0901 | Optional Curb (Precast Concrete Type PVF150<br>or Cast-In-Place Concrete Type VF150 or Granite Type C)  | Foot     |
| 609.0902 | Optional Curb (Precast Concrete Type PM100<br>or Cast-In-Place Concrete Type M100 or Granite Type E100) | Foot     |
| 609.0903 | Optional Curb (Precast Concrete Type PT100<br>or Cast-In-Place Concrete Type T100)                      | Foot     |
| 609.15   | Resetting Existing Curb                                                                                 | Foot     |
| 609.21   | Painted Hot Mix Asphalt Curb (As Detailed)                                                              | Foot     |

## 609 CURB AND CURB & GUTTER

|          |                                                              |       |
|----------|--------------------------------------------------------------|-------|
| 609.21XX | Painted Hot Mix Asphalt Curb* (Various Types as indicated)   | Foot  |
| 609.22   | Unpainted Hot Mix Asphalt Curb (As Detailed)                 | Foot  |
| 609.22XX | Unpainted Hot Mix Asphalt Curb* (Various Types as indicated) | Foot" |

\* Refer to Standard Pay Item Catalog for full Item Number and Description.

## 624- PAVED GUTTERS

Make the following changes to the Standard Specifications dated May 1, 2008:

Page 606-609, Delete SECTION 624 Paved Gutters entirely and Replace it with the following:

### "SECTION 624 - PAVED GUTTERS

**624-1 DESCRIPTION.** This work shall consist of the construction of Hot Mix Asphalt, precast, conventionally formed or machine formed Portland Cement concrete, or cobblestone gutters in accordance with these specifications and in reasonably close conformity with the lines and grades indicated in the Contract Documents and/or as directed by the Engineer.

### 624-2 MATERIALS

**624-2.01 Hot Mix Asphalt Gutters.** The materials for hot mix asphalt gutters shall meet the requirements specified for a 9.5 mixture designed for <0.3 million Equivalent Single Axle Loads, ESALs using coarse aggregate Type F9.

**624-2.02 Conventionally Formed Concrete Gutters.** The materials and manufacture of concrete for this work shall meet the requirements for Class A concrete specified in Section 501 Portland Cement Concrete - General.

**624-2.03 Precast Concrete Gutters.** Precast concrete gutters shall comply with the requirements of §714-07, Precast Concrete Gutters.

**624-2.04 Cobble Gutters.** Cobble gutters shall be made of rounded "Hardheads," 6 inch to 10 inch in diameter.

**624-2.05 Machine Formed Concrete Gutter.** The material requirements, mix preparation and manufacturing of concrete shall comply with the requirements for Class I concrete, as specified in Section 501 Portland Cement Concrete-General.

### 624-3 CONSTRUCTION DETAILS

**624-3.01 Hot Mix Asphalt Gutters.** Except as provided below, the construction requirements shall meet those of §402-3, Construction Details for Hot Mix Asphalt (HMA) Pavements.

**A. Preparation of Bed.** The location of the gutter shall be properly excavated and graded to conform with the gutter cross-section and line and grade. The excavated area shall be firm and dry before laying the gutter.

**B. Placing.** The Hot Mix Asphalt may be placed by handwork or by a paving machine approved by the Engineer. The gutter shall be uniform in texture, shape and density. The asphalt may be placed in a single layer providing that the section, line and grade after compaction are determined satisfactory by the Engineer.

**C. Sealing.** After compaction, the finished surface of the gutter shall be sealed by an application of bituminous material, Material Designation 702-3001, in the quantity and manner directed by the Engineer.

## 624- PAVED GUTTERS

**624-3.02 Conventionally Formed or Machine Formed Concrete Gutters.** Concrete gutters shall be either conventionally formed or machine formed to the size and shape shown on the Standard Sheets.

### **A. Conventionally Formed Gutters.**

**1. General.** Unless otherwise indicated, concrete gutters shall be constructed in 8 foot sections of the shapes and types shown on the plans and/or Standard Sheet with 1/4 inch joints between sections. The gutter may be constructed in alternate sections, 24 hours to elapse before the construction of the intermediate sections. Excess concrete shall be screeded off perpendicular to the line of the gutter.

All construction joints shall be poured full with material meeting the requirements of Material Designation 702-0700, Miscellaneous Asphalt Cement or §705-02 Highway Joint Sealants, Type IV.

**2. Curing.** Curing of the gutters shall comply with the requirements of §502-3.11, Curing. Minimum curing periods for the various types of curing materials shall comply with the requirements of Table 502-3. A clear membrane curing compound may be used in lieu of a white-pigmented membrane curing compound.

**B. Machine Formed Gutter.** The machine forming requirements of concrete curb as specified under §609-3.04 shall apply except that crack control joints, 1/4 inch wide, shall be formed or scored every 8 feet to depths sufficient to produce weakened planes in the concrete. All crack control joints shall be filled flush with material meeting the requirements of Material Designation 702-0700, Miscellaneous Asphalt Cement or §705-02 Highway Joint Sealants, Type IV.

**624-3.03 Precast Concrete Gutters.** The location of the gutter shall be excavated and graded to conform with the gutter cross-section and line and grade. Gutter sections shall be placed to line and grade on a firm and dry subgrade.

All joints shall be poured full with material meeting the requirements of Material Designation 702-0700, Miscellaneous Asphalt Cement or §705-02 Highway Joint Sealants, Type IV.

**624-3.04 Cobble Gutters.** The largest stones shall be selected and set along the inner edge and the center of the gutter. All stones shall be embedded in mortar composed of one part Type 1 or 2 cement, §701-01, and two parts of §703-07, Concrete Sand. All stone shall be laid to line and grade, with close joints, by skilled workmen using regular paving tools. The stones shall then be thoroughly rammed in place and brought to a uniform surface.

The joints shall be made of the same mortar as described above. The mortar shall completely fill the joints after being tamped.

## **624-4 METHOD OF MEASUREMENT**

**624-4.01 Hot Mix Asphalt Gutters.** The quantity of asphalt gutters to be paid for will be measured by the number of tons of Hot Mix Asphalt furnished and placed in accordance with the Contract Documents and/or as directed by the Engineer. Quality payment adjustments will be measured as outlined in §402-4, Method of Measurement.

**624-4.02 Conventionally Formed or Machine Formed Concrete Gutters.** The quantity to be paid for under this work will be the number of square feet of exposed surface of concrete gutters placed in accordance with the Contract Documents and/or as directed by the Engineer. No reduction in the number

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of square feet will be made to account for drainage structure frames and grates, or any other obstruction placed within the gutter section.

**624-4.03 Precast Concrete Gutters.** The quantity to be paid for under this item will be the number of feet of gutter (laying length) placed in the work in accordance with the Contract Documents and/or as directed by the Engineer.

**624-4.04 Cobble Gutters.** The quantity of cobble gutters to be paid for under this work will be the number of square feet of exposed surface laid in accordance with the Contract Documents and/or as directed by the Engineer.

### 624-5 BASIS OF PAYMENT

**624-5.01 Hot Mix Asphalt Gutters.** The unit price bid per ton of Hot Mix Asphalt shall include the cost of furnishing all materials including the asphalt cement, the mixing, transporting, grading, placing, rolling and all equipment and labor necessary to complete the work including all necessary excavation below the finished surface, exclusive of any undercutting or excavation for special bedding materials. Payment of Quality Units will be made based on the Index Price listed in the Contract Documents. The index price shown in the itemized proposal for each Quality Unit shall be considered the price bid. The unit (index) price is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded and the original price will be used to determine the total amount bid for the Contract.

**624-5.02 Conventionally Formed or Machine Formed Concrete Gutters.** The unit price bid shall include the cost of furnishing all labor, materials and equipment necessary to complete the work including all necessary excavation below the finished surface exclusive of any undercutting or excavation for special bedding materials.

**624-5.03 Precast Concrete Gutters.** The provisions of §624-5.02 shall apply.

**624-5.04 Cobble Gutters.** The provisions of §624-5.02 shall apply.

#### *Payment will be made under:*

| Item No.   | Item                                                     | Pay Unit     |
|------------|----------------------------------------------------------|--------------|
| 624.01XX   | Conventionally Formed or Machine Formed Concrete Gutters | Square Foot  |
| 624.020101 | Hot Mix Asphalt Gutter                                   | Ton          |
| 624.020110 | Plant Production Quality Adjustment to 624.020101        | Quality Unit |
| 624.020601 | Hot Mix Asphalt Gutters, as Detailed                     | Ton          |
| 624.020610 | Plant Production Quality Adjustment to 624.020601        | Quality Unit |
| 624.03XX   | Precast Concrete Gutters                                 | Foot         |
| 624.0401   | Cobble Gutters                                           | Square Foot" |

Refer to the Standard Contract Pay Item Catalog for full Item Number and full Description.

## 714-01 STONE CURB

Make the following changes to the Standard Specifications dated May 1, 2008:

Page 906-908, Delete SECTION 714-01 Stone Curb entirely and Replace it with the following:

### "714-01 STONE CURB

**SCOPE.** This specification covers the material and fabrication requirements for stone curb used in highway and bridge construction.

**MATERIAL REQUIREMENTS.** Stone curb shall be either a bluestone, sandstone or granite. The stone shall be sound and durable, free from seams which impair its structural integrity and of a smooth splitting and machining character. Natural color variations that are characteristic of the deposit will be permitted. Any curb containing discoloration other than cleanable surface stains shall be sampled and submitted to the Materials Bureau for evaluation.

### Dimensions

**A. General.** Curb shall be cut to conform to the shape and size shown on the Standard Sheets and contract plans.

**B. Curbs on Straight Sections.** Minimum lengths of straight segments of Economy, Aesthetic and Sloped curbs shall be 2 feet. All other straight curb types shall have 3 foot minimum lengths.

**C. Curbs on Curved Sections.** No minimum length requirements are specified for curb segments on curves with radii of 200 feet or less. When directed by the Engineer, curb segments on curves with radii 100 to 200 feet shall be cut in 3 to 4 feet straight lengths. With exception of Economy, Aesthetic and Sloped curbs, segments on curves with radii of 100 feet or less shall be shaped to the required curvature and the ends cut on radial lines. Economy, Aesthetic and Sloped curbs on curves with radii of 100 feet or less shall be furnished only in straight segments of lengths equal to 1/10 the radius and on curves with radii less than 10 feet shall be furnished only in straight segments of minimum lengths of one foot, their ends shall be cut on radial lines.

**D. Transition Curb for Bridge to Roadway Curbs.** A transition curb for bridge curb to roadway curb shall be furnished, if required. Where an 8 inch exposed face is desired for a roadway curb, the appropriate curb sections with a 6 inch exposed face shown on the appropriate section of the Standard Sheet shall be increased 2 inches in depth.

**E. Curb Widths.** The bottom width of the various types of curbing shall be as follows:

| Type                         | Width                            |
|------------------------------|----------------------------------|
| Light Duty                   | 3 inch minimum for 2/3 of length |
| A,B,C,D,E,T2 and Landscaping | 4 inch minimum for 2/3 of length |
| F1,G1,M and T1               | 4 inch minimum for entire length |
| R1 and R2                    | 8 inch minimum for entire length |
| S                            | 5 inch minimum for entire length |

### Finish

**A. General.** Curb surfaces shall be finished as indicated on the plans or Standard Sheets.

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**B. Top Surfaces.** Top surfaces shall be finished to approximately true planes. When sawed, hammered or thermal finishes are applied, no projection or depression shall be greater than  $3/16$  inch. Saw marks normal to the sawing process will be permitted if within the  $3/16$  inch tolerance.

**C. Arris Lines.** Top front arris lines shall be straight and true with no variations greater than  $1/8$  inch measured from a 2 foot straightedge placed along the arris line.

Back arris lines on curb types E, F1, M, T1, and T2 curb and the lower front arris lines on types E, F1, M, R1, R2, S, T1 and T2 curbs shall be straight and true with no variations from a straight line greater than  $1/4$  inch measured in the same manner. Back arris lines are not required for types R1, R2 and S curbs.

Exposed arris lines at the joints shall not project beyond the plane of a split face and shall not fall under the plane of a split face more than  $1/4$  inch.

**D. Back Surfaces.** Back surfaces shall have no projection or depression which exceeds a batter of 1 inch in 3 inches for a distance of 3 inches from the top.

**E. Front Exposed Faces.** Front exposed faces of straight Types A, F1, and G1 curbs, when split, shall have no projection greater than 1 inch or depression greater than  $1/2$  inch measured from a vertical plane passing through the arris line at the top of the split face. For radius units the front exposed faces when split, shall have no projection greater than  $1\ 1/4$  inch. The entire face of Type G1 curb shall be considered as exposed face. Front exposed faces of types M, R1, R2, S, T1 and T2 curbs, when split, shall have no projection or depression greater than  $1/2$  inch measured from a vertical plane passing through the arris line at the top of the split face. Front faces below grade shall have no projection or depression greater than 1 inch measured in the same manner.

No projection on the exposed face of Type C curb shall extend over  $1/4$  inch beyond a vertical plane extending from the intersection of the pavement grade line and the curb face. The exposed face of Type C curb shall have no depression greater than  $1/2$  inch measured from the plane of the face through the top arris line.

**F. Ends.** Ends of curbs shall be approximately square with the planes of the exposed curb surfaces and shall be finished so that when curbs are set, no space greater than  $3/4$  inch shall show in the joints for the full length of the exposed joint. The curb ends below the pavement surface or shoulder shall break not over 8 inches from the joint plane on curb types A, B, C, D, E and T2 curbs and not more than 2 inches on types G1, R2, and T1.

Ends of types F1, G1, M, R1, R2, S and T1 curbs shall be sawed at locations called for on the contract plans.

**G. Drill Holes.** Drill holes will not be permitted in exposed curb surfaces.

### Exceptions to Finish Requirements

**A. Landscaping Type Curbs.** Top surfaces shall be split so that no projections or depressions are greater than  $1/2$  inch. Front arris lines shall not vary from a straight line more than  $1/2$  inch. Exposed joint openings shall not exceed  $1\ 1/2$  inch. Drill holes will be permitted in top and face surfaces.

**B. Sloped Type Curb.** Exposed faces shall be relatively smooth and quarry split to an approximately true plane having no projection or depression greater than 1 inch from a 2 foot straightedge placed as closely as possible to the plane of the curb face.

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Arris lines at joints shall not project beyond the plane of the split face and shall not fall more than 1/2 inch under the plane of the split face.

Curb ends shall be approximately square with the plane of the exposed curb surfaces and finished so that when curbs are set, no space greater than 3/4 inch shall show in the joints for the full width of the face.

**C. Light Duty Type Curbs.** Front arris lines shall not vary from a straight line more than 1/2 inch. Exposed joint openings shall not exceed 1 1/2 inch.

**BASIS OF ACCEPTANCE.** Stone curb shall be from a source appearing on the Department's Approved List and will be accepted in accordance with procedural directives of the Materials Bureau. In addition, the stone curbing will be inspected for dimensional compliance at the project site by the Engineer. Curbing not in compliance with the dimensions on the Standard Sheets or contract plans will be rejected by the Engineer."

## 714-06 ASPHALT CONCRETE CURB

Make the following changes to the Standard Specifications dated May 1, 2008:

Page 909, **Delete** SECTION 714-06 Asphalt Concrete Curb entirely and **Replace** it with the following:

### "714-06 HOT MIX ASPHALT CURB

**SCOPE.** This specification covers the material requirements for Hot Mix Asphalt curb.

**MATERIAL REQUIREMENTS.** The Contractor shall have the option of supplying the mix specified herein or he may elect to furnish an alternate mixture subject to prior approval by the Director, Materials Bureau. The requirements of Section 401 - Hot Mix Asphalt Production shall apply with the following modifications:

- A. Automatic batching and recording equipment will not be required.
- B. The HMA shall include recycled tire rubber which is moisture free and does not contain any fabric or metal material. The gradation shall conform to the following sieve analysis; percent passing of total weight:

| Sieve Size | No. 4 | No. 8  | No. 12 | No. 20 | No. 30 |
|------------|-------|--------|--------|--------|--------|
| % Passing  | 100   | 85-100 | 65-100 | 35-80  | 15-40  |

- C. The asphalt cement used in the mix shall comply with either material specification §702-0400, §702-0500, or §702-0600.

- D. The aggregate gradation shall be as follows:

| Sieve Size                    | % Passing <sup>(1)</sup> | Job Mix Tolerances (%) |
|-------------------------------|--------------------------|------------------------|
| 1/2 inch                      | 100                      | --                     |
| 1/4 inch                      | 90-100                   | ± 5                    |
| 1/8 inch                      | 80-100                   | ± 6                    |
| No. 20                        | 30-70                    | ± 7                    |
| No. 40                        | 15-45                    | ± 6                    |
| No. 80                        | 5-23                     | ± 3                    |
| No. 200                       | 2-10                     | ± 2                    |
| Asphalt Cement <sup>(2)</sup> | 6-9                      | ± 0.4                  |
| Tire Rubber <sup>(2)</sup>    | 1/2 - 2                  | ± 0.1                  |

(1) Based on total aggregate weight.

(2) Based on total weight of mix.

**BASIS OF ACCEPTANCE.** The acceptance of the Hot Mix Asphalt used in asphalt curb shall be in accordance with the Department written instructions."

## 609 – CURB AND CURB & GUTTER

Make the following changes to the Standard Specifications dated May 4, 2006:

Page 529-534, Delete SECTION 609 Curb and Curb & Gutter entirely and Replace it with the following:

### “SECTION 609 - CURB AND CURB & GUTTER

**609-1 DESCRIPTION.** Construct and place curb, and curb & gutter, and/or reset curb as indicated in the Contract Documents or established by the Engineer.

**609-2 MATERIALS.** The materials shall meet the requirements of the following subsections of Section 700 -Materials Details.

|                                                |        |
|------------------------------------------------|--------|
| Portland Cement, Type II                       | 701-01 |
| Concrete Repair Material                       | 701-04 |
| Concrete Grouting Material                     | 701-05 |
| Anchoring Material - Chemically Curing         | 701-07 |
| Concrete Repair Material - High Early Strength | 701-12 |
| Coarse Aggregate                               | 703-02 |
| Concrete Sand                                  | 703-07 |
| Premoulded Resilient Joint Filler              | 705-07 |
| Masonry Mortar                                 | 705-21 |
| Stone Curb Anchor Bars                         | 709-07 |
| Quilted Covers (for Curing)                    | 711-02 |
| Plastic Coated Fiber Blankets (for Curing)     | 711-03 |
| Polyethylene Curing Covers (White Opaque)      | 711-04 |
| Membrane Curing Compound                       | 711-05 |
| Stone Curb                                     | 714-01 |
| Precast Concrete Curb                          | 714-04 |
| Hot Mix Asphalt Curb                           | 714-06 |

White and Yellow Pavement Marking Paints shall meet the requirements of Section 640 - ReflectORIZED Pavement Marking Paints.

#### 609-2.01 (Vacant)

#### 609-2.02 Concrete for Cast-in-Place Concrete Curb and Curb & Gutter.

**A. Conventionally Formed Curb and Curb & Gutter.** The material requirements, mix preparation and manufacturing of the concrete shall conform to the requirements for Class A Concrete as specified in Section 501, Portland Cement Concrete - General.

**B. Machine Formed Concrete Curb and Curb & Gutter.** Use Class J Concrete as specified in Section 501, Portland Cement Concrete - General.

**609-2.03 Stone Curb and Granite Curb.** Stone curb shall conform to §714-01 and shall be either sandstone or bluestone. Granite curb shall conform to the requirements for granite under Stone Curb §714-01.