to Single Slope Concrete Median Barrier  
606.8706 M HPBO Corrugated Median Barrier Transition to Jersey Shape Concrete Median Barrier  
Each  
606.8707 M Transition Between Concrete Half Section Barrier and HPBO Corrugated Beam Guide Railing  
Each  
606.8755 M HPBO Corrugated Median Barrier Transition to Single Slope Concrete Median Barrier (Rustic)  
Each  
606.8756 M HPBO Corrugated Median Barrier Transition to Jersey Shape Concrete Median Barrier (Rustic)  
Each  
606.8757 M Transition Between Concrete Half Section Barrier and HPBO Corrugated Beam Guide Railing (Rustic)  
Each  
606.8801 M Box Beam Guide Rail Transition to Concrete Barrier (One or Two Way Operation)  
Each  
606.8802 M Box Beam Guide Rail Transition to Concrete Barrier (One Way-Trailing End)  
Each  
606.8803 M Transition Between Box Beam Guide Rail and Single Slope Half Section Concrete Barrier (One or Two Way Operation)  
Each  
606.8804 M Transition Between Single Slope Half Section Concrete Barrier and Box Beam Guide Rail (One Way - Trailing End of Barrier)  
Each  
606.8805 M Transition Between Box Beam Median Barrier and Single Slope Concrete Median Barrier  
Each  
606.8853 M Transition Between Box Beam Guide Rail and Single Slope Half Section Concrete Barrier (One or Two Way Operation) (Rustic)  
Each  
606.8854 M Transition Between Single Slope Half Section Concrete Barrier and Box Beam Guide Rail (One Way - Trailing End of Barrier) (Rustic)  
Each  
606.8855 M Transition Between Box Beam Median Barrier and Single Slope Concrete Median Barrier (Rustic)  
Each  
606.89 M Guide Rail Transition Box Beam to Heavy Post Blocked-Out Corrugated Beam  
Each  
606.8950 M Guide Rail Transition Box Beam to Heavy Post Blocked-Out Corrugated Beam (Rustic)  
Each  
606.9001 M Transition between Standard (NJ) Concrete Barrier and Single-Slope Concrete Barrier  
Each  
606.9002 M Transition between Wide and Normal Single Slope Concrete Median Barrier  
Each  
606.9401 M Pier Protection (One Way)  
Meter  
606.9402 M Pier Protection (Two Way)  
Meter

SECTIon 607 - FENCES

607-1 DESCRIPTION. This work shall consist of furnishing and erecting fencing and metal fence gates of the type and size, and at the locations shown on the plans or as directed by the Engineer. Construction of fencing and gates shall be done in accordance with the specifications, the standard sheets, and the plans, and in reasonable close conformity with the lines and grades shown on the plans or established by the Engineer.

607-1.01 Fence Types. The fence shall be designated as follows:

Optional Chain Link Fence Type I
Optional Chain Link Fence Type II
Vinyl Coated Chain Link Fence on Plastic Coated Frame
Right-of-Way Fencing

The options for Type I and Type II chain link fences shall be as follows:
§607-1

**TYPE I**

<table>
<thead>
<tr>
<th>Fabric Options</th>
<th>Frame Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coated Steel Fence Fabric</td>
<td>Mischmetal Alloy Coating</td>
</tr>
<tr>
<td>(95% Zinc 5% Aluminum- Mischmetal Alloy)</td>
<td>(95% Zinc 5% Aluminum)</td>
</tr>
<tr>
<td>Galvanized Steel</td>
<td>Galvanized Steel</td>
</tr>
<tr>
<td>Aluminum</td>
<td>Combined Coating on Steel</td>
</tr>
<tr>
<td>Aluminum Coated Steel</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>Aluminum Coated Steel</td>
</tr>
</tbody>
</table>

**TYPE II**

<table>
<thead>
<tr>
<th>Fabric Options</th>
<th>Frame Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coated Steel Fence Fabric</td>
<td>Mischmetal Alloy Coating</td>
</tr>
<tr>
<td>(95% Zinc 5% Aluminum- Mischmetal Alloy)</td>
<td>(95% Zinc 5% Aluminum)</td>
</tr>
<tr>
<td>Galvanized Steel</td>
<td>Galvanized Steel</td>
</tr>
<tr>
<td>Vinyl Coated Steel</td>
<td>Combined Coating on Steel</td>
</tr>
<tr>
<td>Aluminum</td>
<td>Plastic on Steel</td>
</tr>
<tr>
<td>Aluminum Coated Steel</td>
<td>Aluminum</td>
</tr>
<tr>
<td></td>
<td>Aluminum Coated Steel</td>
</tr>
</tbody>
</table>

Fence gates for Type I and Type II optional fences shall be consistent with the fabric and frame option selected for the contract. Fence frame and fabric selected shall be consistent throughout the contract except where internixing is permitted by the Engineer.

607-2 MATERIALS. Materials shall conform to the requirements specified in the following subsections of Section 700--Materials:

- Zinc Chromate Primer 708-04
- Aluminum Fence Fabric 710-01
- Galvanized Steel Fence Fabric 710-02 25
- Vinyl Coated Steel Fence Fabric 710-03
- Aluminum Coated Steel Fence Fabric 710-04
- Coated Steel Fence Fabric (95% Zinc 5% Aluminum-Mischmetal Alloy) 710-05 30
- Steel and Iron Posts, Rails, Braces and Fittings for Chain-Link Fence 710-10.03
- Aluminum Posts, Rails, Braces and Fittings for Chain-Link Fence 710-11 35
- Plastic Coated Posts, Rails, Braces and Fittings for Chain-Link Fence 710-12
- Right-of-Way Fencing 710-30

607-2.01 Portland Cement Concrete for Bases. Portland Cement concrete used for bases shall be Class A or C conforming to the requirements of Section 501 Portland Cement Concrete--General except that requirements for automated batching shall not apply.

607-2.02 Right-of-Way Fencing. The Contractor has the option of using posts and braces fabricated from either high carbon shapes of steel or pressure treated wood meeting the requirements of §710-30 Right-of-Way Fencing.

607-2.03 Fence Gates. Fence gates for Right-of-Way Fencing shall Conform to the requirements for Right-of-Way Fence Gates of §710-30. Fence gates for Chain-Link Fence shall conform to the following:

A. Gate Frames. Frames shall be constructed of tubular members welded at all corners or
§607-3

assembled with corner fittings. Where corner fittings are used gates shall have 10 mm nominal diameter truss rods to prevent sag or twist. Gate leaves shall have vertical intermediate bracing so that no vertical members are more than 2.4 m apart. Gate leaves over 3 m long shall have a horizontal brace or a 10 mm nominal diameter diagonal truss rod. Gate leaves over 5 m shall have both a horizontal brace and a 10 mm nominal diameter truss rod.

B. Gate Fabric. Gate fabric shall conform to the requirements of the fabric used in the fence construction.

C. Gate Hinges. Hinges shall be weldable steel, cast steel or malleable iron 180° offset industrial type. The hinges shall not twist or turn under the action of the gate. The gates shall be capable of being opened and closed easily by one person. Hinges shall be galvanized in accordance with §719-01 Type I.

D. Gate Latches. Latches, stops and keepers shall be provided for all gates. Latches shall have a plungerbar arranged to engage the center stop, except that single left gate openings with an opening of less than 3 m may use a forked latch. Latches shall be arranged for locking and the Contractor shall provide a lock with triplicate keys for each gate. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger-bar of the latch of double leaf gates. No stop is required for single leaf gates. Keepers shall consist of a mechanical device for securing the free end of the gate when in the full open position.

607-3 CONSTRUCTION DETAILS

607-3.01 General. The Contractor shall perform such clearing and grubbing as may be necessary to construct the fence to the required grade and alignment.

At locations where breaks in a run of fencing are required, or at intersections with existing fences, appropriate adjustment in post spacing shall be made to conform to the requirements for the type of closure indicated.

When the plans require that the posts, braces, or anchors be embedded in concrete, the Contractor shall install temporary guys or braces as may be required to hold the posts in proper position until such time as the concrete has set sufficiently to hold the posts. Unless otherwise permitted, no materials shall be installed on posts or strain placed on guys and bracing set in concrete until seven days have elapsed from the time of placing the concrete.

All posts shall be set vertically and to the required grade and alignment. Cutting of the tops of the posts will be allowed only with the approval of the Engineer and under the Engineer's specified conditions.

Wire or fencing of the size and type required shall be firmly attached to the posts and braces in the manner indicated. All wire shall be stretched taut and be installed to the required elevations.

At each location where an electric transmission, distribution or secondary line crosses any of the types of fences covered by these specifications, the Contractor shall furnish and install a ground conforming to the requirements of Subsection 9 of the National Electric Safety Code.

Fence shall generally follow the contour of the ground, with the bottom of fence fabric no less than 25 mm nor more than 150 mm from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

Line posts shall be spaced equidistant in the fence line at the spacing shown on the plans, standard sheets or as directed by the Engineer. End, corner, and intermediate posts shall be placed at the locations indicated on the plans, standard sheets or as directed by the Engineer, and shall be braced as shown on the plans or standard sheets. When chain link fence is on a long curve intermediate posts shall be evenly spaced so that the strain of the fence will not bend the line posts.

All end, corner, and intermediate posts shall be set plumb in concrete bases of the depth and diameter shown on the plans or standard sheets. The Contractor shall have the option of setting the line posts in concrete bases or using methods of driving and anchoring specified by the fence manufacturer and approved by the Engineer.

The concrete bases shall be rough cast in the ground around the posts. The top surfaces shall be
§607-3

domed to shed water and provide a neat workmanlike appearance when completed. Extensions of up 45 minutes for the allowed time for pouring the concrete will be permitted.

607-3.02 Chain-Link Fencing with Top Rail. Posts shall be set so they are equidistant with a maximum of 3 m centers.

All top rails shall pass through the base of the post caps and shall form a continuous brace from end to end of each stretch of fence. Top rail lengths shall be joined with sleeve couplings with expansion sleeves provided at 30 m intervals. Top rails shall be securely fastened to end posts by means of approved rail end connectors. Horizontal braces shall be provided at all intermediate posts, midway between the top rail and ground as shown on the plans or standard sheets.

Diagonal truss rods shall be installed with the horizontal braces as indicated on the plans or standard sheets.

Fence fabric shall be installed approximately 50 mm above the ground level and securely fastened along the bottom, and to all braces, top rails, line and pull posts, at the intervals indicated on the standard sheets by approved methods. The fabric shall be secured to all end, corner and gate posts with stretcher bars fastened to the posts, with stretcher bands spaced at a maximum of 355 mm and in a manner permitting adjustment of the fabric tension.

If the Contractor elects the option of using one piece roll-formed sections, the fence fabric shall be integrally woven into the fabric loops on the end, corner, pull and gate posts. The fabric shall be attached to the top braces and line posts as shown on the standard sheets.

607-3.03 Chain-Link Fencing with Top Tension Wire. The construction details specified in §607-3.02 Chain Link Fencing with Top Rail shall apply with the following modifications:

A. Top tension wire shall be installed as shown on the plans, standard sheets, or as directed by the Engineer.

B. All posts shall be spaced equidistant in the fence line on a maximum of 2.4 m centers.

C. Additional pull posts shall be placed at locations indicated on the plans or standard sheets. Brace assemblies shall be installed at each intermediate post as indicated on the plans or standard sheets.

607-3.04 Vinyl Coated Chain-Link Fencing on Plastic Coated Frame. The construction details specified in §607-3.02 Chain-Link Fencing with Top Rail or §607-3.03 Chain-Link Fencing with Top Tension Wire shall apply with the following addition:

If any of the resin clad material specified under this item has the protective resin coating damaged so its effectiveness to prevent corrosion of the base material is impaired, the Contractor shall repair such parts by applying one coat of an approved compound of a color to match original material.

607-3.05 Aluminum Posts. Aluminum posts shall be set in accordance with requirements pertaining to fence posts of §607-3.01 General, and §607-3.02 Chain-Link Fencing with Top Rail or §607-3.03 Chain-Link Fencing with Top Tension Wire and with the following additional requirement: The portions of aluminum posts that will be in contact with the concrete bases shall be coated with Zinc Chromate Primer conforming to the requirements of §708-04. The primer shall be thoroughly dry before setting of the post in the concrete.

607-3.06 Right-of-Way. Fencing posts shall be set plumb and firm to the satisfaction of the Engineer in properly prepared post holes, as indicated on the plans or standard sheet. The concrete for post holes where required shall be placed in accordance with the requirements of §607-3.01 General.

All line posts of the type and size shown on the plans or standard sheets shall be placed equidistant in the fence line. Wood line posts shall be placed on a maximum of 4.5 m centers and metal line posts shall be placed on a maximum of 3 m centers.

Intermediate posts and post assemblies, end posts, corner posts, approach spans, and bracing shall be as shown on the plans or standard sheets.

The woven wire fencing shall be fastened to all steel line posts with at least 5 galvanized wire fasteners or clamps and to all steel end, intermediate and corner posts with aluminum wire not less than
4 mm diameter.

The woven wire fencing shall be fastened to all wood posts with either 40 mm galvanized or aluminum staples. The top and bottom wires and every other in-between wires shall be stapled, alternating the stapling of the in-between wires on successive posts.

607-3.07 Fence Gates. The Contractor shall construct metal fence gates of the type and size as indicated on the plans or standard sheets, and in the location shown or ordered by the Engineer.

607-4 METHOD OF MEASUREMENT

607-4.01 General. The quantity to be paid for all fencing exclusive of fence gates and fencing of the types listed in subsequent subsections, will be the number of linear meters of chain-link fencing measured along the top of fencing, center to center of end posts, properly furnished and installed in accordance with the plans, specifications, standard sheets and directions of the Engineer. An allowance of 3 m will be added for each end post, corner post and pull post installed in accordance with the plans, specifications, standard sheets and directions of the Engineer.

607-4.02 Right-of-Way Fencing. Right-of-Way Fencing shall be measured as the number of meters along the top of the fencing from center to center of the end posts, properly furnished and installed in accordance with the plans, specifications, standard sheets and directions of the Engineer. An allowance of 6 m will be added for each end post, corner post, intermediate post, and approach post installed in accordance with the plans, specifications, standard sheets and directions of the Engineer.

607-4.03 Fence Gates. Fence gates shall be measured as the number of complete gates furnished and erected in accordance with the specifications, plans, standard sheets and directions of the Engineer.

607-5 BASIS OF PAYMENT

607-5.01 General. The unit price bid per linear meter of fencing shall include the cost of furnishing all labor, materials, tools and equipment necessary to satisfactorily complete the work.

607-5.02 Fence Gates. The unit price bid for each size gate shall cover the cost of furnishing all labor, materials, tools and equipment necessary to satisfactorily complete the work and shall include all necessary clearing, grubbing, excavation and disposal, fill, concrete, gates, gate posts, lock, bracing and all other necessary materials.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>607.051X M</td>
<td>Vinyl Coated Steel Chain-Link Fencing on Plastic Coated Frame with Top Rail</td>
<td>Meter</td>
</tr>
<tr>
<td>607.052X M</td>
<td>Vinyl Coated Steel Chain-Link Fencing on Plastic Coated Frame with Top Tension Wire</td>
<td>Meter</td>
</tr>
<tr>
<td>607.16xx M</td>
<td>Fence Gate with Vinyl Coated Steel Chain-Link Fencing on Plastic Coated Frame</td>
<td>Each</td>
</tr>
<tr>
<td>607.19 M</td>
<td>Right-of Way Fencing</td>
<td>Meter</td>
</tr>
<tr>
<td>607.20xx M</td>
<td>Right-of-Way Fence Gates</td>
<td>Each</td>
</tr>
<tr>
<td>607.30xx M</td>
<td>Optional Chain-Link Fence, Type I, with Top Rail</td>
<td>Meter</td>
</tr>
<tr>
<td>607.31xx M</td>
<td>Optional Chain-Link Fence, Type I, with Top Tension Wire</td>
<td>Meter</td>
</tr>
<tr>
<td>607.32xx M</td>
<td>Optional Chain-Link Fence, Type II, with Top Rail</td>
<td>Meter</td>
</tr>
<tr>
<td>607.33xx M</td>
<td>Optional Chain-Link Fence, Type II with Top Tension Wire</td>
<td>Meter</td>
</tr>
<tr>
<td>607.40xx M</td>
<td>Optional Fence Gates</td>
<td>Each</td>
</tr>
</tbody>
</table>

Refer to the Standard Contract Pay Item Catalog for full Item Number and full Description.
SECTION 608 - SIDEWALKS, DRIVEWAYS AND BICYCLE PATHS

608-1 DESCRIPTION. This work shall consist of the construction of either a Portland Cement concrete sidewalk, an asphalt concrete sidewalk, an asphalt concrete driveway, bicycle paths, or furnishing and placing precast concrete paving, brick paving or grouted stone block paving. All work shall be in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or established by the Engineer.

608-2 MATERIALS. Materials shall meet the requirements specified in the following subsections of section 700--Materials:

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Cement</td>
<td>701-01</td>
</tr>
<tr>
<td>Bituminous Materials (As specified)</td>
<td>702-00</td>
</tr>
<tr>
<td>Asphalt Cement for Paving</td>
<td>702-02 or 702-03</td>
</tr>
<tr>
<td>Fine Aggregates</td>
<td>703-01</td>
</tr>
<tr>
<td>Coarse Aggregates</td>
<td>703-02</td>
</tr>
<tr>
<td>Mortar Sand</td>
<td>703-03</td>
</tr>
<tr>
<td>Cushion Sand</td>
<td>703-06</td>
</tr>
<tr>
<td>Concrete Sand</td>
<td>703-07</td>
</tr>
<tr>
<td>Mineral Filler</td>
<td>703-08</td>
</tr>
<tr>
<td>Brick Pavers</td>
<td>704-08</td>
</tr>
<tr>
<td>Stone Blocks</td>
<td>704-09</td>
</tr>
<tr>
<td>Precast Concrete Pavers</td>
<td>704-13</td>
</tr>
<tr>
<td>Premoulded Resilient Joint Filler</td>
<td>705-07</td>
</tr>
<tr>
<td>Masonry Mortar</td>
<td>705-21</td>
</tr>
<tr>
<td>Wire Fabric For Concrete Reinforcement</td>
<td>709-02</td>
</tr>
<tr>
<td>Water</td>
<td>712-01</td>
</tr>
</tbody>
</table>

608-2.01 Portland Cement Concrete Sidewalk and Driveways. The material requirements and composition shall comply with the specifications for Class A concrete in §501-2 under “Portland Cement Concrete--General.” Concrete shall be proportioned in accordance with the aggregate weights specified for Class A concrete in Table 501-3, Concrete Proportions.

608-2.02 Asphalt Concrete Sidewalks, Driveways, and Bicycle Paths. The mixture requirements for these items shall either be 9.5 mm or 19.0 mm mixtures. These mixtures shall be designed for <0.3 million ESALs and produced in accordance to Section 401 using coarse aggregate Type F9. The number of courses and course thicknesses shall be as given in Table 608 - 1, Hot Mix Asphalt Composition.

<table>
<thead>
<tr>
<th>Total Paved Thickness</th>
<th>9.5 mm Mix</th>
<th>19.0 mm Mix</th>
<th>Number of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 mm</td>
<td>40 mm</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>50 mm</td>
<td>50 mm</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>80+ mm</td>
<td>40 mm</td>
<td>40+ mm</td>
<td>2+</td>
</tr>
</tbody>
</table>

Notes:
1. For the 19.0 mm mixture, the maximum thickness that can be placed in one pass is 75 mm.
2. A course shall consist of one or more separate lifts of hot mix asphalt, as directed by the Engineer, to attain the indicated thickness.

608-2.03 Brick Paved Sidewalks and Driveways. Brick pavers shall meet the requirements of §704-08 and shall be the size(s), shape(s) and color(s) as specified in the contract documents.
§608-3

A. Neoprene-Modified Asphalt Adhesive. Neoprene-modified asphalt adhesive shall consist of 2% neoprene, grade WM1, oxidized asphalt with a R & B softening point of 68°C minimum and a penetration of 80, and 10% asbestos-free fibers.

B. Mortar for Brick Paving. Mortar for brick paving shall meet the requirements outlined in §705-21 Masonry Mortar.

C. Sand-Cement Setting Bed. Sand-Cement Setting Bed shall consist of 1 part Portland Cement Type 2, §701-01 and 6 parts of Fine Aggregate, §703-01 by volume.

608-2.04 Grouted Stone Block Paved Sidewalks and Driveways. Stone blocks shall meet the requirements of Section §704-09 and shall be the size(s), shape(s) and color(s) as specified in the contract documents.

A. Sand-Cement Setting Bed. Sand-cement setting bed shall consist of 1 part Portland Cement Type 2, §701-01, and 6 parts of Fine Aggregate, §703-01 by volume.

B. Mortar For Stone Block Paving. Mortar for stone block paving shall meet the requirements outlined in §705-21 Masonry Mortar.

608-2.05 Precast Concrete Block Paved Sidewalks and Driveways. Precast concrete pavers shall meet the requirements of §704-13 and shall be the size(s), shape(s) and color(s) as specified in the contract documents. Unless otherwise specified in the contract documents the setting bed material shall consist of hard, durable; uncoated particles of soil or rock, free from lumps of clay and all deleterious substances.

Setting Bed Material shall meet the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.3 mm</td>
<td>100</td>
</tr>
<tr>
<td>2.0 mm</td>
<td>50-85</td>
</tr>
<tr>
<td>425 μm</td>
<td>20-45</td>
</tr>
<tr>
<td>75 μm</td>
<td>3-10</td>
</tr>
</tbody>
</table>

608-3 CONSTRUCTION DETAILS

608-3.01 Concrete Sidewalk and Driveways. The general construction details for manufacturing and transporting concrete shall meet the requirements of Section 501, Portland Cement Concrete-General. Placing and curing of concrete shall meet the requirements of Section 502, Portland Cement Concrete Pavement except that when a membrane curing compound is used it shall be clear with fugitive dye unless otherwise permitted by the Engineer.

The concrete shall be placed in one course to the full depth shown in the contract documents.

Wire fabric for concrete reinforcement, §709-02, shall be embedded at mid-depth in the slab.

The wire fabric shall consist of MW19 or MW20 wire at 150 mm centers transversely and longitudinally.

Transverse construction joints shall extend to the full depth of the slab and shall be spaced 6 m to 8 m apart. The edges of such joints shall be finished with an edging tool having a 6 mm radius.

The concrete shall be finished to produce a smooth surface and then lightly broomed to a uniform texture. The edges of all sidewalk slabs shall be tooled. Unless otherwise specified in the contract documents the concrete surface shall be scored and tooled at intervals of 1.5 m.

A premoulded resilient joint filler, §705-07, shall be installed at all joints between sidewalk and curb, pavement, building, etc.

608-3.02 Asphalt Concrete Sidewalks, Driveways, and Bicycle Paths. The provisions under §402-3 Construction Details for Hot Mix Asphalt (HMA) Pavements, shall apply.

The sidewalks, driveways, and bicycle paths shall be constructed to the depths and dimensions
§608-3

indicated in the contract documents.

<table>
<thead>
<tr>
<th>Total Paved Thickness</th>
<th>Type 7</th>
<th>Type 6</th>
<th>Type 3</th>
<th>Type 1</th>
<th>Number of Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 mm</td>
<td>25 mm or</td>
<td>25 mm</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>30 mm</td>
<td>30 mm or</td>
<td>30 mm</td>
<td></td>
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<td>1</td>
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<tr>
<td>40 mm</td>
<td>40 mm or</td>
<td>40 mm</td>
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<td>1</td>
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<tr>
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<tr>
<td>65 mm</td>
<td>25 mm or</td>
<td>25 mm on</td>
<td>40 mm</td>
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<tr>
<td>75 mm</td>
<td>25 mm or</td>
<td>25 mm on</td>
<td>50 mm</td>
<td></td>
<td>2</td>
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<tr>
<td>90 mm</td>
<td>25 mm or</td>
<td>25 mm on</td>
<td>65 mm</td>
<td></td>
<td>2</td>
</tr>
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<td>40 mm or</td>
<td>40 mm on</td>
<td>60 mm</td>
<td></td>
<td>2</td>
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<tr>
<td>115 mm</td>
<td>40 mm or</td>
<td>40 mm on</td>
<td>75 mm</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>125 mm</td>
<td>40 mm or</td>
<td>40 mm on</td>
<td>90 mm</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>140 mm</td>
<td>40 mm or</td>
<td>40 mm on</td>
<td>100 mm</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>140+ mm</td>
<td>25 mm or</td>
<td>25 mm on</td>
<td>40 mm on</td>
<td>Nec.</td>
<td>3</td>
</tr>
</tbody>
</table>

Notes:

1. Type 6 or Type 7 Top Courses shall not be applied directly to Type I Base Course.
2. For sidewalks and driveways included in this work, the surface course shall be Type 6 or Type 7. The surface course of bicycle paths shall be Type 7 Top.
3. On two course applications, except Commercial Driveways, where Type 3 Binder is called for in thicknesses of 40 mm or 50 mm Type 6 Top course layer may be substituted for the Type 3 Binder course.
4. A course shall consist of one or more separate lifts of asphalt concrete, as directed by the Engineer to attain the indicated thickness.

608-3.03 Brick Paved Sidewalks and Driveways. All brick pavers shall be laid in the pattern shown in the contract documents or as directed by the Engineer to provide a uniformly even surface. Joints shall be hand tight unless otherwise specified. No brick pavers shall be laid or grouted in freezing weather.

A dry mixture of mortar for brick paving shall be swept over the brick pavers until the joints are completely filled. The joints shall be lightly wetted with water. Brick pavers shall be cleaned of excess mortar, and joints shall be finished prior to the mortar setting up. All brick paving shall be kept moist for 4 days after filling the joints with mortar. After the 4 day curing period, removal of remaining mortar film may be accomplished by the use of a light acid wash (10% solution of hydrochloric or muriatic acid) followed by flushing clean with water or as approved by the Engineer. Care shall be taken to avoid the use of acid in areas where runoff could damage trees or other vegetation.

All brick pavers used over tree pits shall be laid in a 75 mm bed of cushion sand with sand filled joints.

A. Brick Paved Sidewalks and Driveways (Sand Setting Bed). Brick pavers shall be laid in a properly compacted 50 mm bed of cushion sand over the specified subbase or subgrade.
B. Brick Paved Sidewalks and Driveways (Mortar Setting Bed). Brick pavers shall be laid in a bed of mortar with a minimum thickness of 25 mm over the specified concrete or bituminous subbase.

C. Brick Paved Sidewalks and Driveways (Bituminous Setting Bed). Brick pavers shall be laid in a 20 mm thick bituminous setting bed over the specified concrete or bituminous subbase. The setting bed shall consist of asphalt cement meeting the requirements outlined in either §702-02 or §702-03 mixed with fine aggregate meeting the requirements of §703-01. The asphalt cement shall be 7.0% of the total batch weight. The mix shall be heated to approximately 163°C. A coating of neoprene-modified asphalt adhesive shall be applied by mopping, squeegeeing or troweling over the top surface of the setting bed to provide bond under the bricks.

D. Brick Paved Sidewalks and Driveways (Sand-Cement Setting Bed). Brick pavers shall be laid on a 50 mm setting bed of sand-cement over the specified subbase. The sand-cement setting bed shall not be placed more than 4 hours prior to installing the brick paving.

E. Brick Paved Sidewalks and Driveways (Optional Concrete Setting Bed). The Contractor shall have the option of installing Brick Paved Sidewalks and Driveways by one of the following methods:

1. Bricks shall be laid on a bed of cement concrete as specified in the contract documents. The bricks shall be laid in the cement concrete while it is still fresh as approved by the Engineer and they shall be firmly positioned to provide a uniformly even surface, and a solid bedding under each brick.

2. Bricks shall be laid as provided for under “Brick Paved Sidewalks and Driveways (Mortar Setting Bed)” provided the finished surface shall conform to the lines and grades shown in the contract documents.

608-3.04 Grouted Stone Block Paved Sidewalks and Driveways. All grouted stone block pavers shall be laid in the pattern shown in the contract documents or as directed by the Engineer to provide a uniformly even surface. Joints between blocks shall be a maximum of 32 mm or as specified. No blocks shall be laid or grouted in freezing weather.

Unless otherwise approved by the Engineer, a dry mixture of mortar as specified for Brick Paved Sidewalks and Driveways, §608-2.03, shall be swept over the stone blocks until the joints are completely filled and the joints lightly wetted with water prior to the mortar setting up. All grouted stone block paving shall be kept moist for four days after filling the joints with mortar. After the four day curing period, removal of remaining mortar film may be accomplished by the use of a light acid wash (10% ± solution of hydrochloric acid) followed by flushing clean with water, or as approved by the Engineer. Care shall be taken to avoid the use of acid in areas where runoff could damage trees or other vegetation.

All blocks used over tree pits shall be laid in a 25 mm bed of cushion sand with sand filled joints.

A. Grouted Stone Block Paved Sidewalks and Driveways (Sand Setting Bed). Blocks shall be laid in a 75 mm bed of cushion sand over the specified subbase or subgrade.

B. Grouted Stone Block Paved Sidewalks and Driveways (Mortar Setting Bed). Blocks shall be laid in a bed of mortar with a minimum thickness of 25 mm over the specified concrete or bituminous subbase.

C. Grouted Stone Block Paved Sidewalks and Driveways (Sand-Cement Setting Bed). Blocks shall be laid on a 50 mm setting bed of sand-cement over the specified subbase. The sand-cement setting bed shall not be placed more than 4 hours prior to installing the block paving.

D. Grouted Stone Block Paved Sidewalks and Driveways (Optional Concrete Setting Bed). The Contractor shall have the option of installing Grouted Stone Block Paved Sidewalks and Driveways by one of the following methods:
§608-3

1. Blocks shall be laid on a bed of cement concrete as specified in the contract documents. The blocks shall be laid in the cement concrete while it is still fresh as approved by the Engineer and they shall be firmly positioned to provide a uniformly even surface, and a solid bedding under each stone block.

2. Blocks shall be laid as provided for under “Grouted Stone Block Paved Sidewalks and Driveways (Mortar Setting Bed)” provided the finished surface shall conform to the lines and grades shown in the contract documents.

608-3.05 Precast Concrete Block Paved Sidewalks and Driveways. Precast concrete pavers shall be laid in the pattern shown in the contract documents or as directed by the Engineer to provide a uniformly even surface. Joints shall be hand tight unless otherwise specified. No pavers shall be laid in freezing weather.

After the pavers are in place, an approved sand joint filler shall be swept over the pavers until the joints are completely filled.

Unless otherwise specified in the contract documents, or directed by the Engineer, the Contractor shall install the pavers in accordance with the manufacturer's recommended procedures.

Precast Concrete Block Paved Sidewalks and Driveways (Granular Material Setting Bed). Unless otherwise specified in the contract documents, precast concrete pavers shall be laid on a setting bed not to exceed 50 mm of uniformly compacted material placed over the specified subbase.

608-4 METHOD OF MEASUREMENT

608-4.01 Concrete Sidewalks and Driveways. Portland Cement concrete sidewalks and driveways will be measured by the number of cubic meters of cement concrete necessary to construct sidewalks and driveways shown in the contract documents or as ordered by the Engineer.

608-4.02 Asphalt Concrete Sidewalks, Driveways and Bicycle Paths. Asphalt concrete sidewalks, driveways and bicycle paths will be measured by the number of metric tons of asphalt concrete furnished and incorporated in the work. Quality payment adjustments will be measured as outlined in §402-4, Method of Measurement.

608-4.03 Brick Paved Sidewalks and Driveways. Brick paving shall be measured as the number of square meters placed as shown in the contract documents or as ordered by the Engineer.

608-4.04 Grouted Stone Block Paved Sidewalks and Driveways. Grouted stone block paving shall be measured as the number of square meters placed as shown in the contract documents or as ordered by the Engineer.

608-4.05 Precast Concrete Block Paved Sidewalks and Driveways. Precast concrete paving will be measured by the number of square meters placed as shown in the contract documents, or as ordered by the Engineer.

608-5 BASIS OF PAYMENT

608-5.01 Concrete Sidewalks and Driveways. The unit price bid per cubic meter shall include the cost of preparing the subgrade, all materials, equipment and labor necessary to complete the work as specified except that any necessary excavation and subbase course will be paid for under their appropriate items.

Payment at the unit bid price will be made after the concrete sidewalk or driveway, and curing application have been properly placed.

608-5.02 Asphalt Concrete Sidewalks, Driveways, and Bicycle Paths. The unit price bid per metric ton shall include the cost of preparing the subgrade, all materials, equipment and labor necessary to complete the work as specified except that any necessary excavation and subbase course will be paid for under their appropriate items. 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.

608-5.03 Brick Paved Sidewalks and Driveways. The price bid per square meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work, including setting bed material, as specified except that any necessary excavation and subbase course will be paid for under their appropriate items;

608-5.04 Grouted Stone Block Paved Sidewalks and Driveways. The unit bid per square meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work, including setting bed material, as specified except that any necessary excavation and subbase course will be paid for under their appropriate items.

608-5.05 Precast Concrete Block Paved Sidewalks and Driveways. The unit price bid per square meter shall include the cost of all labor, materials and equipment necessary to complete the work, including setting bed material, except that any necessary excavation and subbase course will be paid for under their appropriate items.

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SECTION 609 - CURB AND CURB & GUTTER

609-1 DESCRIPTION. Construct and place curb, and curb & gutter, and/or reset curb as specified 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
- Coarse Aggregate: 703-02
§609-2

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  
Asphalt Concrete or 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.

609-2.04 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:

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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 shall be set on a 75 mm thick continuous bed of dry concrete mix, or on a 75 mm thick dry concrete mix bed at the joints as shown on the Standard Sheets and plastic concrete between the joints, or on a 75 mm minimum thick continuous bed of compacted granular material, at the Contractor's option.

Precast concrete curb, stone curb, and granite 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 300 mm 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 255 mm or to the top of the hot mix asphalt pavement, whichever is greater, measured from the bottom of the curb.

Precast curb and stone 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 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:

A. Unless special construction details are called for in the contract documents, Type A and Type T2 curbs, when not on structures, shall be set true to line and grade on a concrete bedding.

B. Types F1, G1, M, R1, R2, S and T1 curbs shall be set in full mortar beds on structures. Excess mortar which extrudes around the curb shall be struck off flush with the front face of the curb and the top surface of the roadway.

C. Anchor bars for stone and granite bridge curb shall be installed where and as indicated in the contract documents.

All curb on structures shall be fitted together allowing 6 mm full mortared joints finished flush with exposed curb surfaces. Curb surfaces shall be cleaned of excess mortar to the satisfaction of the Engineer.

Mortar used for bedding and filling of joints shall conform to §705-21 Masonry Mortar or §701-04 Concrete Repair Material.

**609-3.04 Cast-In-Place Concrete Curb and Curb & Gutter.** Cast-in-place concrete curb and curb & gutter shall either be conventionally formed or machine formed to the size and shape shown on the standard sheets or as indicated in the contract documents.

Curb anchors, as required on the standard sheets or the contract documents, shall not be coated with materials which impair bonding. Curb anchors shall be installed a minimum of 300 mm from the ends of a pavement slab. Curb anchors for new concrete pavement, when placed simultaneously with pavement concrete, shall be placed by equipment which can demonstrate to the satisfaction of the Engineer placement of the anchors in accordance with these specifications. Curb anchors, when not placed simultaneously with pavement concrete, shall be placed rigidly secured by chairs or other supports to prevent displacement of the anchors when pavement concrete is placed. Curb anchors for existing concrete pavement shall be inserted into holes drilled in the side of the existing concrete pavement. The holes shall be thoroughly cleaned and filled with Concrete Grouting Material §701-05 or Anchoring Materials - Chemically Curing §701-07 immediately before placing the curb anchor. The curb anchor shall be securely supported in position until the grout has hardened.

Curing of the curb and curb & gutter shall comply with the requirements of §502-3.11 Curing, except that a clear membrane curing compound with fugitive dye conforming to the requirements of Membrane Curing Compound §711-05 may be used in lieu of the white pigmented membrane.
A. Conventionally Formed Curb and Curb & Gutter

1. **Forms.** Forms shall be free from warp and of such construction that there will be no interference to inspection for grade and alignment. All forms shall extend to the full curb depth and be secured so no displacement will occur during the placement of concrete.

2. **Casting Segments.** Curb and curb & gutter shall be cast in segments having a uniform length of approximately 3 m. The joints between segments shall not exceed 6 mm in width. When curb and curb & gutter is constructed next to concrete pavement, the curb and curb & gutter joints shall line up with the pavement joints or additional joints shall be provided in the curb and curb & gutter which line up with the pavement joints.

3. **Expansion Joints.** Expansion joints shall be 18 mm wide and contain Premoulded Resilient Joint Filler §705-07. The filler shall be cut to conform to the cross section of the curb and curb & gutter. Expansion joints shall be located at all immovable objects (bridge structures, etc.), adjacent to expansion joints in the pavement, and where shown in the contract documents or directed by the Engineer. Expansion joints will not be required at regular intervals unless otherwise shown in the contract documents.

4. **Concrete Placing and Vibrating.** Concrete shall be placed in the forms in accordance with the applicable requirements of §555-3.04 and shall be compacted with an immersion type mechanical vibrator. The vibrator shall be of a size and weight capable of thoroughly vibrating the concrete without damaging or misaligning the forms. The forms shall be left in place until the concrete has hardened sufficiently to permit removal without damage to the curb and curb & gutter. The front form may be removed before the other forms to facilitate finishing the curb and removal of the joint dividers. After removal of the forms, the exposed faces of the curb and curb & gutter shall be immediately rubbed to a uniform surface. No plastering will be permitted.

B. Machine Formed Concrete Curb and Curb & Gutter. The equipment proposed for use by the Contractor shall demonstrate, to the satisfaction of the Engineer, the capability of placing the concrete in accordance with these specifications.

When machine forming, the Contractor may provide additional width of curb without any other change in shape or dimension, if provided by the Contractor at no additional cost to the State. If the Contract Documents or the Engineer require no curb be placed across driveway entrances or the Contract Documents have no reference to placing curb across driveway entrances, the Contractor may continue placing curb across driveway entrances but the curb placed across driveway entrances, excluding transitions, must be cut out and the concrete disposed in a manner approved by the Engineer.

Any curb and curb & gutter placed outside the tolerance of 12 mm of the established line or 6 mm of the established grade shall be removed and replaced by the Contractor.

1. **Crack Control Joints.** Crack control joints shall be formed or saw cut to a width of 3 mm minimum, 6 mm maximum and to a depth of 38 mm. The cut or formed joints shall extend slightly below the surface of the adjacent pavement and shall be spaced at 3 m intervals. When the curb, and curb & gutter is constructed next to concrete pavement, the curb and curb & gutter joints shall line up with the pavement joints or additional joints shall be provided in the curb and curb & gutter which line up with the pavement joints. The saw cut or formed joints shall be left unfilled.

2. **Expansion Joints.** Expansion joints shall be 18 mm wide and contain Premoulded Resilient Joint Filler §705-07. The filler shall be cut to conform to the cross section of the curb and curb & gutter.

The expansion joints shall be located at all immovable objects (bridge structures, etc.), adjacent to expansion joints in the pavement, where shown in the contract documents, or
directed by the Engineer. Expansion joints shall not be required at regular intervals unless otherwise shown in the contract documents.

609-3.05 (Vacant)

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 shall be mixed in a batch type bituminous concrete mixing plant. The additive as specified in §714-06 shall be introduced into the pugmill within an accuracy of ± 0.1% of the total batch weight. The additive may be introduced through a mineral filler feed system only if the above delivery tolerance can be maintained. The dry mixing time shall be a minimum of 15 seconds after the complete introduction of aggregates and additive into the pugmill. The wet mix time shall be a minimum of 45 seconds.

B. Preparation of Surface. When hot mix asphalt curb is constructed on a freshly laid hot mix asphalt surface, the curb shall be laid only on a clean dry surface. When curb is to be laid on a cured or aged concrete base, hot mix asphalt pavement, or performance grade 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 of asphalt emulsion, Material Designation 702-3001 as specified in Table 702-5. The tack coat shall be applied at a rate of 0.15 to 0.50 L/m2. 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 Manual of Uniform Traffic Control Devices. 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 L per 16 m 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 10°C 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 meters, rounded to the nearest tenth of a meter. 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

609-5.01 Concrete Curb, Curb & Gutter, Stone Curb, Granite Curb, Optional Curb. The unit price bid per meter shall include the cost of all labor, materials, curb anchors, equipment, and excavation to, in accordance with these specifications, place, backfill, 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 meter 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 meter 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 meter 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.

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NEW YORK STATE DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS of January 2, 2002
609.0901 M  Optional Curb (Precast Concrete Type PVF150
or Cast-In-Place Concrete Type VF150 or Granite Type C)  Meter

609.0902 M  Optional Curb (Precast Concrete Type PM100
or Cast-In-Place Concrete Type M100 or Granite Type E100)  Meter

609.0903 M  Optional Curb (Precast Concrete Type PT100
or Cast-In-Place Concrete Type T100)  Meter

609.15 M    Resetting Existing Curb  Meter

609.21XX M  Painted Hot Mix Asphalt Curb* (Various Types as indicated)  Meter

609.22XX M  Unpainted Hot Mix Asphalt Curb* (Various Types as indicated)  Meter

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

SECTION 610 - TURF AND WILDFLOWER ESTABLISHMENT

610-1 DESCRIPTION. The work covered by this section includes work necessary to establish and care for turf and wildflowers.

610-1.01 Applying Soil Amendments. The work consists of furnishing and placing soil amendments as specified at the locations indicated in the contract documents or where directed by the Engineer.

610-1.02 Establishing Turf. The work consists of preparing ground surfaces for seeding; furnishing and installing fertilizer, seed, mulch, and mulch anchorage on areas indicated in the contract documents or where directed by the Engineer. The work also consists of producing a satisfactorily established turf and caring for the turf as specified. The work may also include furnishing and applying limestone as specified in the contract documents.

610-1.03 Establishing Wildflowers. The work consists of preparing ground surfaces for seeding; furnishing and installing seed, mulch and mulch anchorage on areas indicated in the contract documents or where directed by the Engineer; and caring for and establishing the work specified.

610-2 MATERIALS

610-2.01 Applying Soil Amendments. The materials shall meet the requirements of the following subsections of section 700-Materials Details and/or as further specified in the contract documents.

| Limestone     | 713-02 | Fertilizer  | 713-03 |

610-2.02 Establishing Turf. The materials shall meet the requirements of the following subsections of section 700-Materials Details and/or as further specified in the contract documents.

| Limestone     | 713-02 | Mulch anchorage | 713-12, Type A |
| Fertilizer    | 713-03 | Hay            | 713-18 |
| Seeds         | 713-04 | Straw          | 713-19 |
| Wood fiber    | 713-11 |                |        |

Turf establishment materials not otherwise specified in the contract documents shall be as follows:

| Fertilizer   | 713-03 | Type No. 3 10-6-4 (50% N-UF) |
| Hay or Straw | 713-18 | or 713-19 |
| Mulch anchorage | 713-12, Type A |
| Seeds        | 713-04 | and as follows: |
§610-3

<table>
<thead>
<tr>
<th>Name</th>
<th>Variety</th>
<th>Wt. of Pure Live Seed Per m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Fescue (Festuca rubra)</td>
<td>Commercial</td>
<td>6.0 g</td>
</tr>
<tr>
<td>Perennial Ryegrass (Lolium perenne)</td>
<td>Commercial</td>
<td>3.4 g</td>
</tr>
<tr>
<td>White Clover (Trifolium repens)</td>
<td>Commercial</td>
<td></td>
</tr>
<tr>
<td>Max. 25% hard seed</td>
<td></td>
<td>0.6 g</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>10.0 g</td>
</tr>
</tbody>
</table>

610-2.03 Establishing Wildflowers. The materials shall meet the requirements of the following subsections of section 700-Materials Details and/or as further specified in the contract documents.

Seeds 713-04 Mulch anchorage 713-12, Type A
Straw 713-19

610-3 CONSTRUCTION DETAILS

610-3.01 Applying Soil Amendments. Fertilizer and/or limestone shall be evenly spread over the surface of the soil in the areas described in the contract documents or where directed by the Engineer. The rates of application shall be as specified in the contract documents. Any method of application that will insure an even distribution will be acceptable. When hydraulic application is used the minimum rate of water shall be 0.5 L/m² unless otherwise specified in the contract documents.

610-3.02 Establishing Turf

A. Rates. Application rates for turf establishment materials shall be specified in the contract documents. When no rates for establishing turf are specified in the contract documents, the following shall apply:

<table>
<thead>
<tr>
<th>Material</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fertilizer</td>
<td>90 g/m²</td>
</tr>
<tr>
<td>Seed</td>
<td>10 g pure live seed/m²</td>
</tr>
<tr>
<td>Mulch</td>
<td>0.5 kg/m²</td>
</tr>
<tr>
<td>Mulch Anchorage</td>
<td>Manufacturer's recommended rate</td>
</tr>
</tbody>
</table>

B. Limitations. The contractor shall notify the Engineer at least 2 working days before the start of any seeding operation and shall not begin the work until the Engineer has given permission. When sodding and turf establishment are to be done in the same general areas, the sodding shall be done first, and equipment used during turf establishment shall not damage the sodded areas.

C. Inoculation of Leguminous Seeds. All seeds of leguminous plants requiring inoculation shall be inoculated prior to mixing or sowing unless otherwise specified or approved or unless accompanied by a certificate of preinoculation. When seeds requiring inoculation are to be sown dry, the inoculant shall be applied in accordance with its accompanying instructions and the seeds allowed to dry sufficiently for proper handling. Seeds shall be sown within thirty hours after this treatment. When seeds requiring inoculation are to be sown by water pressure, the inoculant may be added to the water and seed mixture, together with limestone and/or fertilizer as specified, providing the pH of the solution does not exceed 8.

D. Ground Preparation and Seeding. All turf establishment areas shall be approved by the Engineer prior to seeding. Areas to be seeded with turf seeds shall be maintained at approved grades and irregularities that will hold water shall be eliminated. Weed growth that, in the Engineer's judgment, may adversely affect germination or growth shall be removed or controlled as approved or as directed by the Engineer prior to seeding. Limestone, fertilizer and seeds in the amounts specified shall be evenly distributed on the areas to be seeded. All mechanical equipment used for soil preparation for seeding shall be as approved. Equipment shall pass parallel to the contours unless otherwise approved except that crawler tractors shall pass at right angles to the contours. Establishing turf shall be done using Method No. 1, unless Method No. 2 is specified. Regardless
of the method used, the finished surface of any area that is seeded shall not be rougher, more uneven or have more or larger stones, clods, roots, or other foreign materials than the area it adjoins. In built up and residential areas handraking will usually be necessary to produce the required smoothness and uniformity, particularly where grading and turf establishment is to be adjacent to lawns.

**Method No. 1.** Areas to be seeded shall be scarified sufficiently to break up the surface crust immediately before seeding except where, in the judgment of the Engineer, the ground is already loose and friable as immediately following grading. Where topsoil is not specified, all loose stones and other objects over 50 mm in greatest dimension, or other sizes as specified, shall be removed and disposed of as approved. All embedded stones and other objects protruding more than 50 mm above the surface, or other heights specified, shall also be removed and disposed of as approved. Where topsoil is specified the maximum loose stone size shall be 50 mm or as otherwise specified under §613-2. Unless otherwise specified in the contract documents, only limestone and/or fertilizers may be mixed together with the seeds (including legume inoculants when required) immediately before sowing. Any method of sowing that does not injure the seeds in the process of spreading will be acceptable.

**Method No. 2.** Areas to be seeded shall be harrowed, disked, or otherwise completely pulverized to a state of tillage acceptable to the Engineer. All stones and other undesirable material over 25 mm in greatest dimension or other sizes as specified shall be removed and disposed of as approved. Fertilizer and/or limestone as specified shall be uniformly distributed on the area to be seeded. Seeds shall be distributed uniformly by any approved method that does not injure the seeds in the process of spreading. Following distribution, seeds shall be incorporated into the soil to a depth not exceeding 5 mm by raking, rolling brush or chair harrowing, or any other approved method.

**E. Mulching.** Mulch shall be spread uniformly in a continuous blanket of sufficient thickness to hide the soil from view, taking care not to over apply. Mulch may be spread by hand or by machinery. Mulch may be spread before seeding turf but not later than 72 hours after seeding turf unless otherwise approved or directed. Anchorage is required unless otherwise specified in the contract documents. Mulch and mulch anchorage shall be applied separately from seeds unless otherwise specified in the Contract Documents.

**F. Liability.** When the Engineer determines that any seeded area has failed for any reason to produce a satisfactorily established turf after a suitable period of time has elapsed, the Contractor shall repeat all the work required by the Section until a satisfactory growth of turf has been established. Any work to be corrected shall be at the Contractor’s expense. The contract will not be accepted until a satisfactory turf has been established.

**G. Care During Construction.** The Contractor shall care for seeded turf areas until final acceptance of the contract. Care shall consist of providing protection against traffic by providing approved warning signs or barricades; and shall consist of repairs to any seeded turf areas damaged by wind, water, fire, traffic or other causes. Damaged areas shall be repaired to re-establish the condition and grade of the area prior to seeding and shall then be re-fertilized, reseeded and remulched as specified herein.

**Method No. 1.** The Contractor shall mow all turf establishment areas seeded on 1 on 3 or flatter slopes unless otherwise specified or directed by the Engineer. Such turf areas shall be mowed to a height of 100 mm when growth reaches 200 mm and thereafter as directed by the Engineer.

**Method No. 2.** The Contractor shall mow all turf establishment areas seeded under Method No. 2 to a height of 75 mm after initial growth reaches 125 mm, and then once a week thereafter unless otherwise approved. Clippings from the first mowing shall be removed.
610-3.03 Establishing Wildflowers

A. Rates. Application rates for wildflower establishment materials shall be as specified in the contract documents.

B. Limitations. The contractor shall notify the Engineer at least 2 working days before the start of any seeding operation and shall not begin the work until the Engineer has given permission.

C. Inoculation of Leguminous Seeds. Shall be as required under §610-3.02 C. Inoculation of Leguminous Seeds.

D. Ground Preparation and Seeding. All wildflower establishment areas shall be approved by the Engineer prior to seeding. Areas to be seeded with wildflower seeds shall be maintained at approved grade sand irregularities that will hold water shall be eliminated. Weed growth that, in the Engineer's judgment, may adversely affect germination or growth shall be removed or controlled as approved or as directed by the Engineer prior to seeding. Seeds in the quantities specified shall be evenly distributed on the areas to be seeded. All mechanical equipment used for soil preparation or seeding shall be as approved and shall pass parallel to the contours unless otherwise approved except that crawler tractors shall pass at right angles to the contours. Areas to be seeded shall be scarified sufficiently to break up the surface crust immediately before seeding except where the ground is already loose and friable as immediately following grading. All stones and other objects over 50 mm in greatest dimension or other sizes as specified shall be removed and disposed of as approved. Any method of sowing that does not injure the seeds in the process of spreading will be acceptable. The finished surface of any area that is seeded shall not be rougher, more uneven or have more or larger stones, clods, roots, or other foreign materials than the area it adjoins.

E. Mulching. Mulch shall be spread uniformly in a continuous blanket taking care not to over apply. Mulch may be spread by hand or by machinery. Mulch shall not be spread before nor later than 72 hours after seeding wildflowers. Anchorage is required unless otherwise specified in the contract documents. Mulch and mulch anchorage shall be applied separately from seeds.

F. Liability. When the Engineer determines that any seeded area has failed for any reason to produce a satisfactorily established growth of wildflowers after a suitable period of time, the Contractor shall reseed such areas in the same manner as specified in the contract until a satisfactorily established growth of wildflowers has been established. Any work to be corrected shall be at the Contractor's expense. The contract will not be accepted until a satisfactory growth of wildflowers has been produced.

G. Care of Wildflowers During Construction. The Contractor shall care for the seeded wildflower areas until final acceptance of the contract or as required under §610-3.04. Care of wildflowers shall consist of keeping the wildflowers in a healthy growing condition by watering, controlling weeds, and by any other necessary operations. Care shall also consist of providing protection against traffic by providing approved warning signs or barricades, and shall consist of repairs to any seeded wildflower area damaged by wind, water, fire, traffic or other cause. Damaged areas shall be repaired to re-establish the condition and grade of the area prior to seeding and shall be reseeded and remulched as specified herein. The Contractor shall mow wildflower establishment areas once a year in the autumn after the seed heads have matured, as approved by the Engineer for the duration of the contract.

610-3.04 Period of Establishment for wildflowers. The Period of Establishment for Wildflowers shall begin immediately following the satisfactory completion of all the wildflower seeding as confirmed in writing by the Engineer. The Contractor shall be required to continue the work specified under §610-3.03 G. Care of Wildflowers During Construction for a period of one year or until the contract is complete, whichever is later.

In the event the Contractor requests acceptance of the contract and the “Period of Establishment” is not yet completed, the State, if approved by the Commissioner, may pay the Contractor monies
§610-5

retained under provisions of Section 38 Subdivision 7 of the Highway Law upon receipt of a certified check or securities as are listed in Subdivision 3 of Section 139 of the State Finance Law, in the amount of at least double the value of the uncompleted work under “Period of Establishment”. For the purpose of determinations for contract acceptance prior to completion of the work under “Period of Establishment”, the value of the work required under “Period of Establishment”, including necessary reseeding, shall be considered as a sum equal to 10% of the price bid for the item of Establishing Wildflower unless otherwise specified.

When all work in the contract excepting §610-03, Establishing Wildflowers, has been completed and accepted, the Contractor agrees to procure and maintain for the duration and purposes of any such work of establishment, and at the Contractor's expense, insurance for liability for damages imposed by law, in insurance companies authorized to do such business in the State covering all such operations, whether performed by the Contractor or subcontractors.

Before commencing any such work, the Contractor agrees to furnish to the Commissioner a certificate or certificates of insurance, in a form satisfactory to the Commissioner, showing that the Contractor has complied with this provision as to insurance, which certificate or certificates shall provide that the policies shall not be changed or cancelled until 30 days written notice has been given to the Commissioner.

The kind and amounts of insurance are as specified under §611-3.06 Period of Establishment.

At the conclusion of the Period of Establishment the Contractor shall remove any trash or debris from the wildflower planting area. Areas that, in the judgment of the Engineer, have failed to produce an established growth of wildflowers shall be noted for reseeding in accordance with the contract specifications.

This requirement shall not prevent the release of the retained monies as herein defined at the expiration of the Period of Establishment but a certified check or securities, as previously described, equal to at least double the value of any uncompleted work will be required. No work other than re-grading to establish condition of the area, reseeding and remulching will be required after the conclusion of the Period of Establishment for Wildflowers.

610-4 METHOD OF MEASUREMENT

610-4.01 Applying Soil Amendments. Applying soil amendments will be measured as the number of kilograms of soil amendments that have been acceptably applied.

610-4.02 Establishing Turf. Establishing turf will be measured as the number of square meters of surface area that have been satisfactorily seeded.

610-4.03 Establishing Wildflowers. Establishing wildflowers will be measured as the number of square meters of surface area that have been satisfactorily seeded.

610-5 BASIS OF PAYMENT

610-5.01 Applying Soil Amendments. The unit price bid per kilogram shall include the cost of all labor, equipment, materials and incidentals, including water necessary to complete the work as specified.

610-5.02 Establishing Turf. The unit price bid per square meter shall include the cost of all labor, equipment, materials and incidentals, including water necessary to complete the work as specified.

610-5.03 Establishing Wildflowers. The unit price bid per square meter shall include the cost of all labor, equipment, materials and incidentals, including water and watering necessary to complete the work as specified.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>610.0101 M</td>
<td>Applying Soil Amendments</td>
<td>Kilogram</td>
</tr>
<tr>
<td>610.0203 M</td>
<td>Establishing Turf</td>
<td>Square Meter</td>
</tr>
<tr>
<td>610.03 M</td>
<td>Establishing Wildflowers</td>
<td>Square Meter</td>
</tr>
</tbody>
</table>