Item 514
Permanent Concrete Traffic Barrier

1. DESCRIPTION

Construct permanent concrete traffic barrier.

2. MATERIALS

Furnish new barrier using materials that meet the pertinent requirements of the following Items:
- Item 416, “Drilled Shaft Foundations”
- Item 420, “Concrete Substructures”
- Item 421, “Hydraulic Cement Concrete”
- Item 424, “Precast Concrete Structural Members (Fabrication)”
- Item 440, “Reinforcement for Concrete”
- Item 442, “Metal for Structures”

Furnish the class of concrete shown on the plans.

3. CONSTRUCTION

3.1. General

Perform excavation and embankment work in accordance with Item 400, “Excavation and Backfill for Structures,” except for measurement and payment.

Place reinforcing steel in accordance with Item 440, “Reinforcement for Concrete.” Welding of additional bars to the reinforcing cage is allowable, if approved, when slipform placement is used. Weld in accordance with Item 448, “Structural Field Welding.”

Cast barrier in place, slipform barrier, or construct barrier using precast concrete sections unless otherwise shown on the plans. Use forms meeting the requirements of Item 424, “Precast Concrete Structural Members (Fabrication)” for precast sections. Wood forms are allowable for curves and transitions. Construct formwork in accordance with Item 420, “Concrete Substructures.”

Multi-project fabrication plants (as defined in Item 424, “Precast Concrete Structural Members (Fabrication)”) that produce concrete traffic barrier must be qualified in accordance with DMS-7350, “Qualification Procedure for Multi-Project Fabrication Plants of Precast Concrete Traffic Barrier.” See the Department’s MPL for approved fabricators. Construct drilled shaft foundations in accordance with Item 416, “Drilled Shaft Foundations,” when required.

Construct barrier in accordance with Item 420, “Concrete Substructures.” Form-cure or water-cure concrete, except for precast sections, for at least 4 days, or cure with Type 1-D or Type 2 membrane curing compound. Cure precast sections in accordance with Item 424, “Precast Concrete Structural Members (Fabrication).”

Remove concrete, mortar, oil, and other substances leaked onto the roadway.

3.2. Cast-in-Place Barrier.

3.2.1. Conventionally Formed Barrier. Accurately set forms for conventionally formed barrier. Secure the forms in a manner that is not detrimental to roadway pavement and will maintain barrier in a true position during concrete placement. Remove forms after the concrete has reached sufficient strength to prevent physical damage to the barrier.
3.2.2. **Slipformed Barrier.** Ensure slipformed barriers are within a vertical and horizontal alignment tolerance of $\pm 1/4 \text{ in. in 10 ft.}$ Construct barrier with a smooth and uniform appearance. Remove and replace unsatisfactory barrier at the Contractor’s expense. Consolidate concrete so it is free of honeycomb. Provide concrete with a consistency that will maintain the shape of the barrier without support. Minimize starting and stopping of the slipform operation by ensuring a continuous supply of concrete. Provide a wire line to maintain vertical and horizontal alignment of the slipform machine. Attach a grade line gauge or pointer to the machine so a continuous comparison can be made between the barrier being placed and the established grade line. Do not exceed the manufacturer’s recommended speed for the slipform machine. Rails or supports at the required grade are allowed instead of sensor controls.

3.3. **Precast Sections.** Notify the Engineer of the location of the casting site and date on which work will begin if precast sections are used. Form cure concrete until the concrete has reached sufficient strength to permit handling without visible cracks or other damage to the sections. Produce precast barrier sections to the tolerances of Table 1 unless otherwise shown on the plans.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>$\pm 1 \text{ in.}$</td>
</tr>
<tr>
<td>Insert Placement</td>
<td>$\pm 1/2 \text{ in.}$</td>
</tr>
<tr>
<td>Horizontal Alignment</td>
<td>$\pm 1/8 \text{ in. per 10 feet of length}$</td>
</tr>
<tr>
<td>Deviation of Ends</td>
<td></td>
</tr>
<tr>
<td>Horizontal Skew</td>
<td>$\pm 1/4 \text{ in.}$</td>
</tr>
<tr>
<td>Vertical Batter</td>
<td>$\pm 1/8 \text{ in. per foot of depth}$</td>
</tr>
</tbody>
</table>

Repair or replace concrete traffic barrier damaged during fabrication, curing, handling or placing, as directed.

4. **MEASUREMENT**

This Item will be measured by the foot. Barriers with 2 longitudinal half-sections will be measured once along the centerline between the 2 halves.

5. **PAYMENT**

The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Permanent Concrete Traffic Barrier” of the shape (e.g., Single Slope or “F” Shape), Type (1, 2, 3, etc.), and height (for Single Slope) specified. This price is full compensation for furnishing and placing materials, including footings and drilled-shaft anchors; and excavation and embankment, equipment, labor, tools, and incidentals.

Unless shown on the plans as a bid item, asphalt concrete pavement used for lateral support will not be paid for directly but will be subsidiary to this Item.