**Special Note for Guardrail**

**I. DESCRIPTION**

Except as specified herein, perform all work in accordance with the Department's Standard and Supplemental Specifications, Special Notes and Special Provisions, and the Standard and Sepia Drawings, current editions. Article references are to the Standard Specifications. Furnish all equipment, labor, materials, and incidentals for the following work items:

(1) Site preparation; (2) Remove existing guardrail systems; (3) Construct Guardrail, Guardrail with Extra Length Post, End Treatments, Bridge End Connectors, and Terminal Sections, as applicable; (4) Delineators for guardrail; (5) Maintain and Control Traffic; and (6) all other work specified as part of this contract.

**II. MATERIALS**

Except as specified herein, provide for all materials to be sampled and tested in accordance with the Department's Sampling Manual and make the materials available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing.

1. **Maintain and Control Traffic.** See Traffic Control Plan.
2. **Guardrail.** Furnish guardrail system components according to Section 814 and the Standard and Sepia Drawings; except use steel posts only, no alternates. Furnish the quantity of Extra Length Post (9 foot length, steel, no alternates) shown in the proposal. Furnish Bridge Guardrail (Case I, I-A, I-B, or II, as applicable) according to the detail drawings included elsewhere in the proposal. Furnish Guardrail – Steel W Beam – Single Face A according to Standard Drawing BHS-007, current edition, except use steel posts only, no alternates.
3. **Precast Concrete Bridge Rail Block.** Furnish precast concrete bridge rail blocks, manufactured with Class A Concrete and Steel Reinforcement (grade #40, #50, or #60), according to the Precast Concrete Bridge Rail Block detail drawing, when required.
4. **Delineators for Guardrail.** Furnish white and/or yellow Delineators for Guardrail according to Standard Drawing RBR-055 – Delineators for Guardrail, current edition.
5. **DGA.** Furnish Dense Graded Aggregate as per Section 805.
6. **Erosion Control.** See the Special Note for Erosion Control.

**III. CONSTRUCTION METHODS**

1. **Maintain and Control Traffic**. See Traffic Control Plan.
2. **Site Preparation.** Remove existing guardrail system, including the guardrail end treatments; bridge end connectors; bridge handrail and/or existing bridge guardrail, when specified in the summary; and all other elements of the existing guardrail system; as per Section 719, except that the Contractor will take possession of all concrete posts and all concrete associated with the existing bridge and/or guardrail end treatments. Locate all disposal areas off the Right of Way. Be responsible for all site preparation, including but not limited to, clearing and grubbing, excavation, embankment, and removal of all obstructions or any other items; regrading, reshaping, adding and compacting of suitable materials on the existing shoulders to provide proper template or foundation for the guardrail; filling voids left as the result of removing existing guardrail and guard posts with dry sand; temporary pollution and erosion control; disposal of excess, waste materials, and debris; and final dressing, cleanup, and seeding and protection. Perform all site preparation as approved or directed by the engineer.
3. **Guardrail.** Except as specified herein, construct guardrail system according to Section 719 and the Standard and Sepia Drawings, current editions. Locations listed on the summary and/or shown on the drawings are approximate only. The Engineer will determine the exact termini for individual guardrail installations and locations for Extra Length Posts at the time of construction. Unless directed otherwise by the Engineer, provide a minimum two (2) foot shoulder width. Construct radii at entrances and road intersections as directed by the Engineer.

Erect guardrail to the lines and grades shown on the current Standard and Sepia Drawings, or as directed by the Engineer by any method approved by the Engineer which allows construction of the guardrail to the true grade without apparent sags.

When removing existing guardrail and installing new guardrail, do not leave the blunt end exposed where it would be hazardous to the public. When it is not practical to complete the construction of the guardrail and the permanent end treatments and terminal sections first, provide a temporary end by connecting at least 25 feet of rail to the last post, and by slightly flaring, and burying the end of the rail completely into the existing shoulder. If left overnight, place a drum with bridge panel in advance of the guardrail end and maintain during use.

Erect the Bridge Guardrail according to the detail drawings. Erect Guardrail – Single Face A on all four corners of the bridge(s) according to Standard Drawing BHS-007, current edition.

1. **Precast Concrete Bridge Rail Block.** Excavate, fill and compact as needed to set the block according to the detail sheets. Unless otherwise directed by the Engineer, set the blocks on all four corners of the bridge.
2. **DGA.** Place and compact DGA along and under the guardrail as shown on the Typical Section(s) or as directed by the Engineer. Place a Double Asphalt Seal Coat over the entire width of the DGA along and under the guardrail. See the Special Note for Double Asphalt Seal Coat.
3. **Delineators for Guardrail.** Construct Delineators for Guardrail according to Standard Drawing RBR-055 – Delineators for Guardrail, current edition.
4. **Property Damage.** Be responsible for all damage to public and/or private property resulting from the work. Restore damaged roadway features and private property at no additional cost to the Department.
5. **Coordination with Utility Companies.** Locate all underground, above ground, and overhead utilities prior to beginning construction. Be responsible for contacting and maintaining liaison with all utility companies that have utilities located within the project limits. Do not disturb existing overhead or underground utilities. It is not anticipated that any utility facilities will need to be relocated and/or adjusted; however, in the event that it is discovered that the work does require utilities to be relocated and/or adjusted, the utility companies will work concurrently with the Contractor while relocating their facilities. Be responsible for repairing all utility damage that occurs as a result of guardrail operations at no additional cost to the Department.
6. **Right of Way Limits**. The Department has not established the exact limits of the Right-of-Way. Limit work activities to obvious Right-of-Way, permanent or temporary easements, and work areas secured by the Department through consent and release of the adjacent property owners. Be responsible for all encroachments onto private lands.
7. **Clean Up, Disposal of Waste.** Dispose of all removed concrete, debris, and other waste and debris off the Right-of-Way at sites obtained by the Contractor at no additional cost to the Department. See the Special Provision for Waste and Borrow Sites.
8. **Final Dressing, Seeding and Protection.** Apply Class A Final Dressing to all disturbed areas, both on and off the Right-of-Way. Sow all disturbed earthen areas with the applicable seed mixture(s) according to Section 212.03.03.
9. **Erosion Control.** See the Special Note for Erosion Control.

**IV. METHOD OF MEASUREMENT**

1. **Maintain and Control Traffic.** See Traffic Control Plan.
2. **Site preparation.** Other than the bid items listed, the Department will not measure Site Preparation for separate payment but shall be incidental to the Guardrail, End Treatments, Bridge End Connectors, and Terminal Sections, as applicable.
3. **Guardrail, Extra Length Post, End Treatments, Bridge End Connectors, Terminal Sections, and Remove Guardrail.** The Department will measure according to Section 719.04.
4. **Remove Concrete Masonry.** When specified in the proposal, the Department will measure the removal of the existing concrete bridge parapet wall in cubic yards.
5. **Remove Bridge Handrail.** When specified in the proposal, the Department will measure the removal of the existing aluminum bridge handrail in linear feet.
6. **Remove Bridge Guardrail.** When specified in the proposal, the Department will measure the quantity of bridge guardrail removed in linear feet, along the face of the rail.
7. **Bridge Guardrail Case I, I-A, I-B, II.** The Department will measure Bridge Guardrail of each type in linear feet along the face of the rail and between the limits of the Guardrail – Single Face A.
8. **Guardrail – Steel W Beam – Single Face A.** See Standard Drawing BHS-007, current edition.
9. **Precast Concrete Bridge Rail Block.** The Department will measure the Precast Concrete Bridge Rail Block quantity in individual units, Each.
10. **DGA.** The Department will measure according to Section 302.04.
11. **Delineators for Guardrail.** See Standard Drawing RBR-055 – Delineators for Guardrail.
12. **Clean Up, Disposal of Waste, Final Dressing, and Seeding and Protection.** The Department will NOT measure for payment the operations of: Clean Up, Disposal of Waste, and Final Dressing. These activities shall be incidental. Seeding and Protection will be measured according to Section 212.
13. **Erosion Control.** See the Special Note for Erosion Control.

**V. BASIS OF PAYMENT**

1. **Maintain and Control Traffic.** See Traffic Control Plan.
2. **Guardrail, Extra Length Post, End Treatments, Bridge End Connectors, Terminal Sections, and Remove Guardrail.** The Department will make payment according to Section 719.05.
3. **Remove Concrete Masonry.** Payment at the Contract unit price per cubic yard shall be full compensation for all labor, equipment, materials, and incidentals necessary to remove the existing concrete bridge parapet wall.
4. **Remove Bridge Handrail.** Payment at the Contract unit price per linear foot shall be full compensation for all labor, equipment, materials, and incidentals necessary to remove the existing aluminum bridge handrail.
5. **Remove Bridge Guardrail.** Payment at the Contract unit price per linear foot shall be full compensation for all labor, equipment, materials, and incidentals necessary to remove the existing bridge guardrail.
6. **Bridge Guardrail Case I, I-A, I-B, II.** Payment at the Contract unit price per linear foot shall be full compensation for all labor, equipment, materials, and incidentals necessary to construct the applicable Case(s) of Bridge Guardrail according to the detail drawings and these notes.
7. **Guardrail – Steel W Beam – Single Face A.** Payment at the Contract unit price per linear foot shall be full compensation for all labor, equipment, materials, and incidentals necessary to construct the Guardrail – Single Face A according to Standard Drawing BHS-007, current edition, and these notes.
8. **Precast Concrete Bridge Rail Block.** Payment at the Contract unit price per Each shall be full compensation for all labor, equipment, materials, and incidentals necessary to install the Precast Concrete Bridge Rail Block(s) according to the detail drawings and these notes.
9. **DGA.** The Department will make payment according to Section 302.05.
10. **Delineators for Guardrail.** See Standard Drawing RBR-055 – Delineators for Guardrail.
11. **Erosion Control.** See the Special Note for Erosion Control.