Item 770
Guard Fence Repair

1. DESCRIPTION

Repair guard fence elements, posts, terminal anchor sections, single guard fence terminals, and other appurtenances.

2. MATERIALS

Furnish the following materials, unless otherwise shown on the plans:
- rail elements, posts, blockouts, fittings, and anchor concrete meeting Item 540, “Metal Beam Guard Fence;”
- single guardrail terminal (SGT), in accordance with Item 544, “Guardrail End Treatments;”
- steel posts with base plates or terminal anchor posts to match original design, meeting ASTM A36 or better;
- paint as required;
- concrete for structural repair, in accordance with Item 429, “Concrete Structure Repair;”
- grout meeting the requirements of Item 421, “Hydraulic Cement Concrete;” and
- backfill material as approved.

Pick up materials furnished by the Department at the locations shown on the plans. Load and deliver furnished material to the project location. Pick up Department-furnished materials during normal business hours.

3. WORK METHODS

Replace guard fence, including thrie beam, curb, and transitions, in accordance with Item 540, “Metal Beam Guard Fence,” and as shown on the plans or as directed. Work requests are made on a callout basis. Begin physical work within 72 hr. of notification, unless otherwise shown on the plans. Replace end treatments in accordance with Item 544, “Guardrail End Treatments,” and as shown on the plans or as directed. Weld in accordance with Item 448, “Structural Field Welding.” Repair concrete in accordance with Item 429, “Concrete Structure Repair.” Remove guard fence in accordance with Item 542, “Removing Metal Beam Guard Fence.” Replace rail and posts removed during the same workday, unless otherwise approved.

- Protect traffic from exposure to unattached rail elements left overnight, as approved.
- Cover or fill postholes at the end of each day.
- Place rail to a smooth line and grade, with posts plumb to the correct height, in accordance with the plans.
- Remove salvageable rail elements in original lengths. Remove fittings from posts and rail elements. Deliver salvageable materials to a designated stockpile site and neatly stack as directed. Reuse salvageable materials in the repair as approved.
- Dispose of debris and damaged components in accordance with all federal, state, and local regulations.

3.1. Repair of Rail Element. Remove and replace rail elements as directed. Bolt rail elements end to end and lap in the direction of traffic in the lane adjacent to the guard fence. Provide prefabricated curved rail when needed. Field-drill, punch, or use other approved methods to create holes for special details. Tighten nuts. Replace bridge end connection when required, in accordance with Item 540, “Metal Beam Guard Fence.”
3.2. Removal and Replacement of Timber or Steel Post. Replace posts as directed. Dispose of any concrete removed. Drill new post holes as needed. Clean postholes free of loose dirt and debris, and thoroughly compact bottom of hole to the correct elevation for placement of post. Place post to the correct alignment, elevation, and plumb. Backfill with select material by thoroughly compacting material to the density of adjacent undisturbed material. Replace concrete foundations only as directed. Use grout to fill space between riprap and posts when replacing posts.

3.3. Realignment of Posts. Realign existing posts to a smooth line and grade.

3.4. Repair of Terminal Anchor Post. Repair the steel anchor post by straightening or welding to the existing post above the concrete foundation.

3.5. Replacing Terminal Anchor Posts. Remove and replace damaged anchor posts with foundation or install new anchor posts with foundation. Remove anchor and clean existing holes or drill new holes, as approved.

3.6. Removal of Guardrail End Treatment and Replacement with SGT. Remove damaged guard fence end treatment and replace with complete new SGT.

3.7. Repair of SGT. Remove damaged SGT components and replace with new components. Salvage and reuse components as approved.

3.8. Repair of Steel Post with Base Plate. Replace damaged steel posts with base plates. Drill anchor holes and install new bolts or weld new anchor bolts to existing bolts as directed. Field-weld in accordance with Item 448, “Structural Field Welding,” or shop-weld in accordance with Item 441, “Steel Structures.” Repair damaged galvanized coating in accordance with Section 445.3.5., “Repairs.”

3.9. Raise Rail Element. Raise rail as shown on the plans.

3.10. Repair of Blockouts. Remove and replace damaged or deteriorated blockouts with new blockouts when shown on the plans or as directed.

4. MEASUREMENT

This Item will be measured as follows:

4.1. Repair of Rail Element (W-Beam, Thrie-Beam, or Thrie-Beam Transition to W-Beam). By the foot along the face of the rail from center to center of the slotted hole at each end of the rail elements repaired, including the terminal anchor section and the rail with any bolt hole spacing, but excluding the first 2 rail elements of the SGT section.

4.2. Removal and Replacement of Timber or Steel Posts without Concrete Foundation. By each post replaced.

4.3. Removal and Replacement of Timber or Steel Posts with Concrete Foundation. By each post replaced.

4.4. Realignment of Posts. By each post realigned.

4.5. Repair of Terminal Anchor Post. By each post repaired.


4.7. Removal of Guardrail End Treatment and Replacement with SGT. By each SGT.

4.8. Replacement of SGT Impact Head. By each head.
4.9. **Replacement of SGT Rail.** By the foot from center to center of posts, 2 rails.

4.10. **Replacement of SGT Post.** By each post replaced, includes metal sleeves.

4.11. **Remove and Replace Blockouts.** By each blockout replaced.

4.12. **Repair of Steel Post with Base Plate.** By each post repaired. Includes top or side mount posts.

4.13. **Remove and Reset SGT Impact Head.** By each head reset.

4.14. **Replace SGT Object Marker.** By each marker replaced, as directed, including the removal and disposal of the existing rubber bumpers.

4.15. **Replace SGT Cable Anchor.** By each cable anchor replaced.

4.16. **Replace SGT Cable Assembly.** By each cable assembly replaced.

4.17. **Replace SGT Strut.** By each strut replaced.

4.18. **Raise Rail.** By the foot along the face of the rail from center to center of the slotted hole at each end of the rail element raised.

---

**5. PAYMENT**

The work performed and the materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid at the unit price bid for: “Repair Rail Element of the type specified,” “Raise Rail of the type specified,” “Remove Post of the type specified,” “Replace Post of the type specified,” “Repair Post of the type specified,” “Realign Posts of the type specified,” “Remove Guardrail End Treatment and Replace with SGT,” “Replace SGT Impact Head,” “Remove and Reset SGT Impact Head,” “Remove and Replace Blockouts,” “Replace SGT Object Marker,” “Replace SGT Cable Anchor,” “Replace SGT Cable Assembly,” and “Replace SGT Strut.”

This price is full compensation for repairing rail and furnishing equipment, materials, labor, tools, and incidentals. Realignment of existing rail without removing will not be paid for directly but considered subsidiary to realigning posts. Replacement of concrete riprap around posts, removal and replacement of curbs, and bridge end connection will not be paid for directly but considered subsidiary to the various bid items. Replacement of SGT components not mentioned above will not be paid for directly but considered subsidiary to the various bid items. Concrete repair will be paid for in accordance with pertinent Items. Payment for repair of steel posts with base plate includes work performed above the concrete foundation. Any rail removed and replaced to remove/replace posts will not be paid for directly but considered subsidiary to various bid items.

Coring new holes and furnishing new bolts and epoxy for the repair or replacement of posts with base plate will be considered subsidiary to various bid items.