Recommended Design Criteria for Grade Crossing Tubular Telescopic Gate Arm
Revised 2025 (2 Pages)

A. Purpose

This Manual Part recommends design criteria for tubular telescopic gate arms, up to 32 ft. (9.75 m) in length, applied to grade crossing devices.

B. Design

1. Tubular telescopic gate arm should be designed so that:

   a. With conversion bracket, see Manual Part 3.2.21 Recommended Design Criteria for Breakaway Gate Arm Adapter, Mounting Pin, and Conversion Bracket, it can be applied to existing grade crossing gate mechanism support arms.

   b. In any position, arms of up to 32 ft (9.75 m) in length shall withstand winds of 80 mi/h and not break or separate from their support.

   c. When in the down position and due to the gate arm weight the vertical deflection at the tip of gate arms up to 32 ft (9.75 m) in length should not exceed 2 ft (61.0 cm).

   d. Retroreflective coverings should not interfere with the telescopic effect of tubular gate sections.

2. Gate Arm Assembly Construction

   a. Retroreflective striping should be 16-inch (40.6 cm) stripes alternately red and white, applied in accordance with currently approved MUTCD requirements and shall be in accordance with Manual Part 15.2.20 Recommended Developmental Criteria and Functional Guidelines for Retroreflective Sheet Material.

   b. Base sections, and reinforcing sleeves (when required), should be designed to mount over gate arm adapters as defined in MP 3.2.21 Recommended Design Criteria for Breakaway Gate Arm Adapter, Mounting Pin and Conversion Bracket.

C. General

1. Retroreflective striping shall be in accordance with Manual Part 15.2.20 Recommended Developmental Criteria and Functional Guidelines for Retroreflective Sheet Material.

2. The electric light units located on the gate arm shall conform to Manual Part 3.2.40 Recommended Design Criteria for Electric Light Unit on Grade Crossing Gate Arm.

3. Bolts, nuts and threads: See Manual Part 14.6.20 Recommended Design Criteria for Bolts, Nuts and Threads.

4. Aluminum: See Manual Part 15.1.5 Recommended Developmental Criteria for Various Types of Non-Ferrous Metals and Alloys.

5. Washers: See Manual Part 14.6.21 Recommended Design Criteria for Plain and Spring Lock Washers.

6. Steel: See Manual Part 15.1.4 Recommended Developmental Criteria for Various Types of Steel, Section 1.

7. Painting: See Manual Part 1.5.10 Recommended Instructions for Painting and Protective Coatings.