RICHARDSON
TRANSPORTATION & MOBILITY

SIGN AND PAVEMENT MARKING MAINTENANCE PROGRAM MANUAL

April 2026

1. PURPOSE

The purpose of this program is to ensure that all traffic signs and pavement markings maintained by the City remain visible to road users at night and during low-light conditions in accordance with the requirements of the Texas Department of Transportation Texas Manual on Uniform Traffic Control Devices (TMUTCD). Maintaining adequate retroreflectivity improves roadway safety and ensures compliance with federal and state traffic control device standards.

2. REGULATORY REQUIREMENTS

The 2025 TMUTCD requires that agencies maintain traffic sign retroreflectivity at or above minimum levels as defined in Section 2A.22. For longitudinal pavement marking retroreflectivity, Section 3A.05 defines minimum levels to maintain. Agencies must implement an assessment or management method designed to maintain retroreflectivity above the minimum values specified in the TMUTCD.

Key regulatory requirements include:

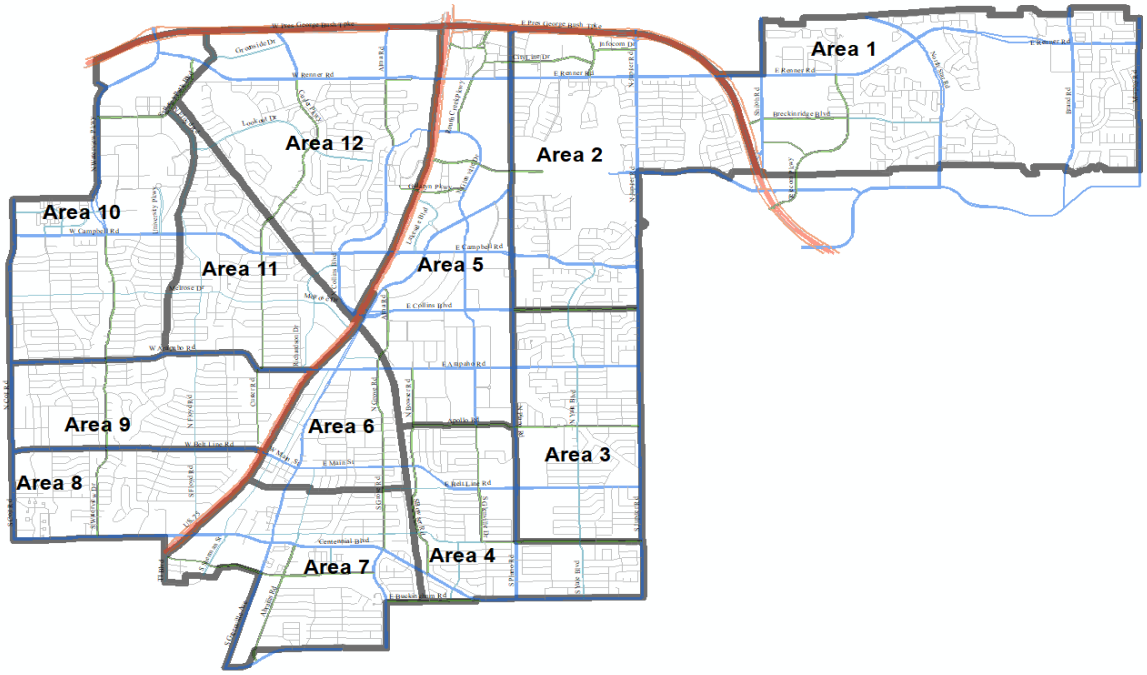
- All public agencies must use a documented method to maintain sign and pavement marking retroreflectivity.
- Minimum retroreflectivity levels for signs are based on sign color and sheeting type.
- Minimum retroreflectivity levels for pavement markings are based on roadway speed and pavement marking type (i.e. longitudinal vs. non-longitudinal, such as transverse, words, symbols, or crosswalks)
- Compliance is achieved by implementing and following a maintenance method, even if some individual signs or pavement markings temporarily fall below the minimum values.

3. RICHARDSON SIGN MAINTENANCE PROGRAM

The City maintains a systematic traffic sign maintenance program to ensure compliance with the requirements of the TMUTCD and to maintain adequate nighttime visibility of traffic control devices. The program is based on methods described in “Methods for Maintaining Sign Retroreflectivity” (FHWA-SA-07-020, Revised 2013). The program combines scheduled replacement cycles with routine inspections and replacements during roadway improvement projects. This approach ensures that traffic signs remain visible, legible, and in good condition throughout their service life.

All new and replacement signs use diamond-grade reflective sheeting with an expected minimum service life of approximately twelve (12) years. For maintenance purposes, the

City is divided into twelve geographic zones in order to replace signs on a rotating schedule with one zone that is completed each year, resulting in a full replacement cycle every twelve years meeting the expected service life of the signs. In addition to the scheduled program, signs may be replaced earlier if they become damaged, faded, or missing, or when roadway reconstruction projects require new or relocated signs.



Signs are categorized into four primary types for maintenance and inventory management:

- Regulatory signs
- Warning signs
- Guide signs
- Street name signs

This approach ensures that the City's traffic sign inventory remains compliant with TMUTCD visibility requirements while providing a predictable replacement schedule for maintenance planning and budgeting.

3.1 Regulatory Signs

Regulatory signs communicate traffic laws and rules that must be followed by road users. Examples include STOP, YIELD, and SPEED LIMIT signs. Because these signs directly influence driver behavior and safety, they receive the highest maintenance priority.

Regulatory signs are inspected regularly to ensure they remain visible, properly installed, and free from damage or fading. Maintenance practices include:

- Annual inspection of regulatory signs.
- Immediate replacement if signs are damaged, missing, vandalized, or faded.
- Scheduled replacement as part of the 12-year zone cycle.
- Replacement during roadway reconstruction projects when signs must be relocated or upgraded.

3.2 Warning Signs

Warning signs alert drivers to upcoming roadway conditions that require additional awareness, such as horizontal curves, school zones ahead, or pedestrian crossings.

These signs are monitored during routine maintenance activities and replaced when visibility or condition deteriorates.

Typical maintenance practices include:

- Evaluation during routine field inspections.
- Replacement when signs become damaged, faded, or less visible.
- Scheduled replacement as part of the 12-year zone replacement program.

3.3 Guide Signs

Guide signs provide directional and navigational information that helps drivers travel through the roadway network. Examples include route markers, destination signs, and directional wayfinding signs.

Guide signs are maintained through the zone replacement program and updated as needed to reflect roadway network changes or new destinations.

Maintenance practices include:

- Evaluation during the zone replacement cycle.
- Replacement when signs become damaged, outdated, or difficult to read.
- Updates when roadway configurations or wayfinding information change.

3.4 Street Name Signs

Street name signs identify roadways at intersections and support navigation, mapping, and emergency response. These signs are installed and maintained in accordance with TMUTCD standards for letter size, contrast, and retroreflectivity.

Street name signs are maintained through:

- Replacement as part of the 12-year zone cycle.
- Replacement during intersection reconstruction or roadway improvement projects.
- Installation that meets current TMUTCD visibility and design requirements.

4. PAVEMENT MARKING MAINTENANCE PROGRAM

Pavement markings provide visual guidance to road users and reinforce roadway functions such as lane boundaries, crossings, and bicycle facilities. The City maintains pavement markings to ensure adequate visibility and performance consistent with TMUTCD guidance.

The City maintains several types of pavement markings, each with specific materials and maintenance practices. Unlike the zone-based sign program, pavement markings are maintained citywide based on functional priority and material lifespan.

Longitudinal Lines (Edge Lines, Lane Lines, Bay Lines)

- Raised pavement markers are typically used for longitudinal markings instead of surface markings.

- Arterial and Major Collector roadways are inspected periodically and longitudinal pavement markings replaced every three (3) to five (5) years or as needed due to wear or damage.
- Minor Collector roadways are inspected periodically and longitudinal pavement markings replaced every five (5) to seven (7) years or as needed due to wear or damage.

Intersections (Crosswalks and Stop Bars)

- Typically installed using methyl methacrylate (MMA) surface markings.
- Replaced at least every five (5) years or as needed due to wear or damage.

School Zones

- Typically installed using MMA surface markings.
- All markings, including crosswalks, stop bars, and school zone boundaries, are refreshed every two (2) years due to their safety importance.

Bike Lanes

- Markings are applied using MMA surface materials.
- Refreshed every five (5) years to maintain visibility and clear lane delineation.

5. EMERGENCY MAINTENANCE AND REPORTING

The City responds promptly to damaged or missing traffic control devices to maintain roadway safety. Emergency maintenance procedures include:

- Damaged or missing regulatory and warning signs are replaced within 24 hours of notification.
- Reports of damaged, faded, or obscured signs or markings are logged and prioritized based on type and location.
- School zones and bike lanes receive elevated response priority due to their safety importance.

7. DOCUMENTATION AND ASSET MANAGEMENT

Traffic control devices are tracked through a GIS-based asset management system that supports maintenance scheduling and program evaluation.

The system records:

- Installation date
- Location
- Sign or marking type

8. PROGRAM REVIEW AND MONITORING

The City reviews this maintenance program annually as part of the City budget development. Program updates may be made based on:

- Updates to the TMUTCD
- Improvements in materials or technology
- Community and stakeholder feedback

This ongoing review ensures that the City's traffic control device maintenance program continues to support safe and effective operation of the transportation network.