

Regional Traffic Sign Retroreflectivity Maintenance and Management Plan for the Jackson Urbanized Area November 2011



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In Cooperation with the
Mississippi Department of Transportation
Federal Highway Administration
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Retroreflectivity Maintenance and
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for the
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I. PURPOSE

The purpose of the Jackson Urbanized Area's Regional Sign Retroreflectivity Maintenance and Management Plan is to establish a regional system for the Local Public Agencies (LPA's), located in the Jackson Metropolitan Planning Organization's (MPO) study area, designed to inventory, inspect, replace and/or repair (as needed) and maintain all regulatory, warning and guide signage which fail to meet the minimum retroreflectivity requirements as established by the Federal Highway Administration in a timely, cost efficient manner.

II. OBJECTIVES

The objectives of this Maintenance and Management Plan is to establish a region-wide system applicable and useful to each LPA in the Jackson MPO area that will provide a sign inventory and management system that balances the needs of safety for road users and pedestrians while strategically replacing signs degraded below minimum required levels in a safe and cost-effective manner. This plan outlines the regional assessment method, inventory system, routine maintenance plan and also a sign management plan necessary to be in compliance with Federal Highway Administration regulations.

III. INVENTORY

A signage inventory and assessment will be completed by each LPA in the Jackson MPO area. The Central Mississippi Planning and Development District (CMPDD) will provide each LPA with an inventory assessment tool that can be used to inventory each roadway sign in the LPA's respective area. The inventory assessment tool includes information concerning sign type, sign size, mounting height, GPS coordinates and reason for sign replacement (if applicable), as well as other pertinent information relevant to this inventory. This collected inventory data will then be provided by each LPA to the CMPDD to create a region-wide signage inventory database. This database will be updated as needed with newly installed signs, signs located on newly constructed or reconstructed roadways and also with updated assessment data for each sign. CMPDD staff shall be available to provide technical assistance in training individual LPA staff on the use of the inventory assessment tool and inputting of the data into the region-wide database system. However, each LPA will be responsible for meeting minimum retroreflectivity standards as found in the most recent edition of the Manual on Uniform Traffic Control Devices (MUTCD).

IV. ASSESSMENT METHOD

There are several methods proposed by the Federal Highway Administration (FHWA) that could be used to complete the retroreflectivity assessments of roadway signs in the Jackson MPO planning area. These include: Visual Nighttime Inspection (Calibration Signs, Comparison Panels and Consistent Parameters); Measured Retroreflectivity, Expected Sign Life; Blanket Replacement; and Control Signs. Each has its own advantages and disadvantages.

The Visual Nighttime Inspection method has three (3) different options for measuring Retroreflectivity. They are the calibration sign, comparison panels and consistent parameters methods. Regardless of the option selected each is required to be used at nighttime. By using the calibration sign method, the LPA would obtain control signs that are at or near the minimum levels. Each night prior to the inspection, the inspector views the control signs from the inspection vehicle to calibrate his eyes to the minimum retroreflectivity standards. The inspector conducts the inspections that night and visually makes a determination of whether the sign is nearing the minimum limit of the control signs viewed prior to beginning visual assessments.

The comparison panels method requires the LPA to obtain a sample panel that is at or near the minimum retroreflectivity standards. The inspector conducts his/her inspection and when a sign that is questionable is found, the inspector stops and clips the panel to the sign and compares the real sign to the comparison panel. If the panel appears brighter than the panel, the sign is replaced.

The consistent parameters method requires the LPA to use a model year 2000 or newer full-size SUV or pickup to complete the assessment. It also requires that an inspector be over 60 years of age. The inspector would ride in the SUV or pickup and use his/her best judgment based on what he/she sees with his/her own eyes.

The next method is the Measured Retroreflectivity Method. This method requires the LPA to measure the retroreflectivity levels of its signs. This requires the purchase of a retroreflectometer. By using the retroreflectometer, a determination can be made as to which signs are approaching a retro value near the minimum standards established by the FHWA and those signs would be scheduled for replacement. Though this is a costly option, with the exception of the blanket replacement and expected sign life methods, it is the only alternative that is not subjective and provides hard measurable data.

The Expected Sign Life Method is the ideal method in a perfect world. However, this method requires that an LPA already have an accurate inventory and some type of marking on the sign indicating the date when the sign was installed. If the LPA does not have this information currently available, then this method would not be an option. The Expected Sign Life method considers the date the sign was installed and based on the end of life retroreflectivity value determined by the FHWA. The LPA would establish a system that would certify that signs are replaced on a cycle that would ensure they are replaced prior to no longer meeting the minimum retroreflectivity standards. A part of

this method would probably be periodic nighttime inspections to verify that the method is working.

The Blanket Replacement Method is based on expected life of a given sheeting material, similar to the Expected Sign Life Method. For this method, the LPA determines the expected life of the sheeting being used in its geographical area. The expected life time period could be determined by an LPA's evaluation, or by borrowing the results of research from an area near them. However, with this method, an LPA does not need to track individual signs. All signs in an area, or along a corridor, are replaced at the same time, based on the expected life. Though this is the best way to ensure all signs meet the minimum retroreflectivity standards, it can also be the most cost prohibitive method. A major pitfall of this method is that the LPA would be blanket replacing some signs that still meet the minimum standards.

The Control Sign Method uses control signs to determine when to replace a larger set of signs. For example, an LPA might have a City or County-wide signing project. By using this method the LPA would install a small number of signs in a maintenance yard. The retroreflectivity of those control signs is tracked and all the associated signs are replaced when the retroreflectivity of the control signs approaches the suggested levels. Additionally, an LPA could use a small controlled sampling of signs that have recently been installed as the control signs. Those few signs would be monitored to determine when the larger group of signs fail to meet the minimum retroreflectivity standards and are all signs in that controlled group would be replaced.

The following is a chart listing the advantages and disadvantages of each method listed above:

Retroreflectivity Assessment Methods Advantages and Disadvantages

Method	Advantages	Disadvantages
Visual Inspection	<ul style="list-style-type: none"> • Inexpensive method to inspect and monitor signs • Can be done relatively quickly, approximately half of the time it took to directly measure retroreflectivity 	<ul style="list-style-type: none"> • Annual process • Research has shown it is not 100% reliable (risk for tort liability?) • Calibration Signs and Comparison Panels not available commercially at this time. • All visual assessment methods will have to be conducted at night.
Measured Retroreflectivity	<ul style="list-style-type: none"> • Extremely Accurate way of Evaluating Signs 	<ul style="list-style-type: none"> • Annual process • Large Time and Resource commitment • Can be expensive to capture this information • Outsourcing this activity can be costly as well.
Expected Sign Life	<ul style="list-style-type: none"> • Once established very easy to use and plan replacements • Annual assessments are very minimal if at all • Ability to utilize preexisting asset management systems to comply 	<ul style="list-style-type: none"> • Does not consider signs that, based on certain conditions, might fail early or last longer than their expected life. This could mean an increased risk for tort liability. • Requires that the LPA have up to date records as to when each sign was installed.
Blanket Replacement	<ul style="list-style-type: none"> • No Need to Track Individual Signs or Assess Retroreflectivity • Easiest Method to Manage 	<ul style="list-style-type: none"> • Will be replacing good signs that do not necessarily need it, unless all signs are consistently one material type. • Can be extremely costly.
Control Sign	<ul style="list-style-type: none"> • Less costly and time consuming than monitoring all signs in the field 	<ul style="list-style-type: none"> • Creating and Setting up the appropriate Control environment • Based on a sample which will create inaccuracies and unreliability. This could mean an increased risk for tort liability. • Control signs will need to be protected from vandalism/knock downs

In order to remain budget conscious while also attempting to replace signs that have become deficient in a timely manner to meet the safety needs of roadway users and pedestrians, the assessment method recommended is the measured retroreflectivity method. This method requires that ALL signs be measured using a retroreflectometer, and signs not meeting the minimum required retroreflectivity levels be replaced immediately. The MPO will utilize Federal transportation funds to purchase equipment necessary to gather sign data to comply with the standards established by the FHWA found in the MUTCD, thus greatly reducing the cost burden that would be placed on each LPA in the Jackson MPO planning area. This method was selected due to several factors. After analyzing all of the advantages and disadvantages it was determined that the Measured Retroreflectivity Method was the most reliable, (due to measurable data) and least subjective (outside of blanket replacement, which would be extremely cost prohibitive), thus being the least likely option to result in tort liability. By using this assessment method this plan also requires that each LPA use the data collected from the retroreflectometer study to rank the condition of each sign to project its future usefulness, as well as potential timeframe for replacement. Additionally, this assessment method is used to assess the condition of the sign support and sign view (if the sign is clearly visible from a minimum distance and is not blocked by obstructions such as trees, fences or improper sign location). Each LPA is individually responsible for ensuring that the signage retroreflectivity assessments conducted by its technical in-field representative meets the minimum required standards as found in the most recent edition of the MUTCD.

The CMPDD's recommendation to use the Measured Retroreflectivity method does not in any way require every LPA listed in Section VIII, to use this method. This is a recommendation only. The LPA, throughout the course of implementing this plan, can choose to use the recommendations provided by the CMPDD or choose an alternative method. The LPA at all times is responsible for making the final decisions concerning implementation of this plan.

V. MAINTENANCE AND MANAGEMENT

Each LPA will maintain and manage all signs located in its respective jurisdiction that are not maintained by the Mississippi Department of Transportation. In every instance, the LPA's appointed technical in-field representative must assess the conditions of the traffic sign and rely on judgment and experience to determine the proper action to correct problems with the sign, whether those problems are simply straightening the support, replacing the sign due to damage, theft or its inability to meet the minimum prescribed retroreflectivity requirements or to clear obstructions reducing the visibility of the sign. Factors that may delay completion of sign replacement and/or maintenance include other repair needs, fabrication or procurement of necessary materials, weather

conditions including severe cold, limited access, significant winds, limited visibility and other staff and field condition issues. All signs will be installed and maintained to meet all federal standards and guidelines as set forth in the most recent edition of the MUTCD.

Once a sign has been replaced or a new sign has been added along a roadway, it is the responsibility of the LPA's appointed in-field representative to indicate the current month and year the sign was replaced or added along the roadway, on the back of the sign for future maintenance purposes and provide this information to the CMPDD or enter the data into the regional sign inventory database. This makes tracking the expected sign life and projecting future maintenance of each sign more manageable. All signs that have been replaced and marked with the month and year shall be inventoried and placed on a recurring maintenance schedule. Newly installed signs will be scheduled for reassessment no later than 10 years from the date of installation.

If the initial assessment of a sign indicates that it still meets minimum retroreflectivity requirements, but is nearing the end of its usefulness for safety, the LPA's appointed in-field representative will schedule a sign reassessment date. The reassessment date can range from one year to three years depending on the signs condition. However, EVERY sign determined to be nearing the end of its safety usefulness WILL be reassessed at a minimum of every three years until said deficient sign has been replaced.

VI. AUTHORITY

The Central Mississippi Planning and Development District's (CMPDD) responsibility associated with the Regional Sign Retroreflectivity Maintenance and Management Plan will be to create a regional sign inventory database utilizing sign data captured by each LPA. Each LPA participating in this regional system will be able to access its individual data collected and input into the system. Access to the CMPDD server will be user specific and password protected to prevent the potential for data tampering and unauthorized viewing. The CMPDD will be responsible for the purchasing of some equipment, as needed to complete the sign retroreflectivity assessments. This equipment will be loaned to LPA's for a pre-determined length of time, with each LPA assuming responsibility for damage or loss of the equipment. The CMPDD will also provide a standardized inventory assessment tool to be used when collecting the data in the field. Additionally, the CMPDD will provide hands on training, as necessary, to all LPA's, found in Section VIII, who are a part of this regional plan in regard to use of purchased retroreflectivity measuring equipment (retroreflectometers), the standardized inventory assessment tool and inputting of data into the regional database created by the CMPDD.

The responsibilities of the LPA's participating in this plan will be to populate the regional sign database system with collected sign data. Each LPA will inventory the signage in its own jurisdiction and provide this data to CMPDD. Additionally, it is the sole responsibility of each LPA to conduct and complete sign retroreflectivity assessments, and reassessments as needed, for each of its inventoried signs. It is the sole responsibility of each participating LPA, listed in Section VIII, to implement the plan by completing a sign inventory and assessment, maintaining and managing all inventoried signage and ensuring all signage found in its individual jurisdiction meets the minimum required retroreflectivity standards as set forth in the most recent edition of the MUTCD. The CMPDD shall bear no responsibility for the sign inventory and retroreflectivity assessments conducted and input by the LPA's listed in section VIII.

The CMPDD will help provide recommendations to the LPA's. The CMPDD makes itself available as a technical resource in aiding the LPA's in completion of this plan and will provide recommendations as needed. However, it is the responsibility of the LPA to follow up on recommendations provided by the CMPDD and at all times the LPA is responsible for making the final decisions whether to use the recommendations or choose another alternative in order to implement and complete this plan and comply with the minimum retroreflectivity standards established by the FHWA.

VII. OUTCOME

The product of this plan will be to provide the LPA with a useful comprehensive sign inventory system for maintaining compliance with required MUTCD standards.

VIII. LIST OF LPA's PARTICIPATING IN THIS PLAN

Hinds County

Town of Bolton

City of Byram

City of Clinton

City of Jackson

Town of Raymond

Town of Terry

Madison County

City of Canton

Town of Flora

City of Madison

City of Ridgeland

Rankin County

City of Brandon

City of Florence

City of Flowood

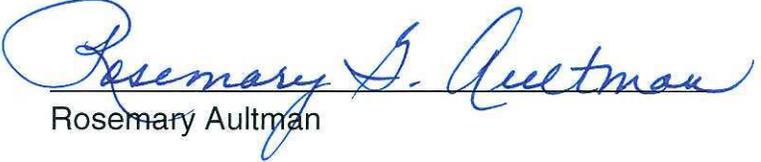
City of Pearl

Town of Pelahatchie

City of Richland

Pearl River Valley Water Supply District

This plan was presented and approved by the MPO this the 15th day of November, 2011.



Rosemary Aultman

Chairman, Jackson Metropolitan Planning
Organization