SECTION TITLE: HIGHWAY OPERATIONS

CHAPTER TITLE: CONDITION ASSESSMENT PROCEDURE

Effective: 1/21/2014

I. GENERAL:

The Condition Assessment Program has been developed by the West Virginia Division of Highways to provide a uniform evaluation system for selected maintenance features on the state highway system. This is accomplished through rating statistically valid random sites which represent targeted state roadways. The information contained in the Condition Assessment Manual details the method for conducting the evaluation.

II. OBJECTIVE:

The Condition Assessment Surveys are to be conducted to give managers an unbiased external view of maintenance problems and successes and to provide a basis for possible future implementation of Performance Based Maintenance Planning.

III. PROCESS:

The following steps were used to develop the Condition Assessment Program:

1. Confirm Executive Sponsor, identify Maintenance Quality Assurance (MQA) Steering Committee members, and identify an MQA Coordinator in the Maintenance Division.
2. Identify maintenance elements, and assets within those elements, to be evaluated.
3. Develop level of service (LOS) measures for the respective assets.
4. Establish an evaluation scale for the measures.
5. Develop training materials (to include the Condition Assessment Manual).
6. Develop data collection forms.
7. Identify and train Inspector/Raters.
8. Select sites.
9. Perform the rating.
10. Conduct quality control checks.
11. Enter the data.
12. Analyze the results.
13. Adjust the maintenance work plan based on the results.

IV. MAINTENANCE FEATURE SELECTION:

The Condition Assessment Steering Committee will identify the maintenance elements and the assets within those elements to be evaluated and will develop the Level of Service (LOS) measures for the respective assets. The maintenance elements, assets, and elements to be evaluated and the LOS measures applicable can be found in the Condition Assessment Manual.

V. CONDITION ASSESSMENT MANUAL:

The Condition Assessment Manual is produced and made available by the Director, Maintenance Division. The manual provides the detailed information required for uniform and accurate data collection.

Periodic revisions to this manual may be required to improve rating consistency, incorporate changes to Department standards or procedures, safety consideration and/or public expectations.

The Condition Assessment Steering Committee will review the manual for needed revisions annually. Final revisions will be the responsibility of the Director, Maintenance Division and will be issued as needed.

VI. FIELD DATA COLLECTION FORM:

The Field Data Collection Form (OM-150) developed by the Condition Assessment Steering Committee is to be used for the collection of field data. Form OM-150 can be found in the Condition Assessment Manual and on the Maintenance Homepage @ http://sharepoint.wv.gov/sites/dot/highways/maintenance/default.aspx.

VII. INSPECTOR/RATERS:

Each Assistant District Engineer-Maintenance will ensure that an adequate number of Inspector/Raters, in their respective District, are identified and trained to understand the performance criteria being used, how to perform the evaluations, and how the data is to be recorded.

VIII. SITE SELECTION:

The sample sites are to be one-tenth mile in length, chosen at random, utilizing the DOH Roadway Inventory Log as the source file. The MQA Coordinator will generate the random sample locations each evaluation period and distribute the list of the selected sites to the appropriate Assistant District Engineer-Maintenance. The number of evaluation periods per year will be determined by the Condition Assessment Steering Committee.

The required number of random sites to achieve the confidence level desired by management will be determined by the Condition Assessment Steering Committee using

a statistical model provided in *Development Of A Guide To Statistics For Maintenance Quality Assurance Programs In Transportation* (2006).

Deletion of a sample site evaluation shall be approved only by the MQA Coordinator who will identify a replacement sample site.

IX. PERFORM THE RATING:

The Assistant District Engineer-Maintenance is responsible for ensuring the field data collection teams comply with established Departmental safety policies when performing the ratings and that the collection and reporting of data is accomplished in a timely and accurate manner in accordance with the Condition Assessment Manual.

Quality control checks will be conducted as prescribed by the Condition Assessment Steering Committee.

X. CONDITION ASSESSMENT DATA ENTRY:

The Assistant District Engineer-Maintenance is to ensure field data collected on Form (OM-150) for their respective District is entered into the asset management software in a timely and accurate manner. The software will calculate an overall level of service score for the targeted roadways. If desired by management, elements can be weighted based on importance.

Each respective Assistant District Engineer-Maintenance shall be responsible to ensure the MQA Coordinator is notified by e-mail when the District Condition Assessment Survey and data entry has been completed for each collection period.

XI. CONDITION ASSESSMENT DATA EVALUATION:

District and Central Office Management will review and analyze the respective District's overall level of service score via asset management software generated reports and adjust the maintenance work plan, if necessary, based on the results of the survey.

APPENDIX A: CONDITION ASSESSMENT MANUAL

The CONDITION ASSESSMENT MANUAL is included on the following pages.

Condition Assessment Manual

December 1

2013

West Virginia Division of Highways

Condition Assessment Manual

Table of Contents

I. Introduction

A. Purpose

The purpose of this manual is to describe the procedures for collecting data to assess the current condition of roadway features maintained by the West Virginia Division of Highways (WVDOH). This exercise, based on condition ratings and level of service, is part of an overall maintenance program.

The general approach for condition assessment consists of the following steps:

- Review and become familiar with management established criteria to be used to rate the condition of designated maintenance features.
- Participate in and/or conduct office and field training for WVDOH personnel involved in the data collecting process.
- Conduct field measurements/observations, collect and record the data. Condition assessments will be conducted on an on-going basis per a schedule determined by management (monthly, quarterly, semi-annually, annually, etc.) for each identified asset types.
- Upload the condition assessment data to the WVDOH software.

II. Data Collection Procedures

A. Field Sample Process

The sampling process for the roadway condition assessment process is as follows:

Statistical methods will identify randomly selected data sample sites along the WVDOH system of roads. The sites will be 0.10-mile (528 feet) in length. For expressways the segments will be on both directions of the roadway. The sample size will ensure a 95 percent confidence that the level-of-service average rating will be within 5 percent of the true value. A limited number of alternate sample locations will be selected to ensure a sufficient sample size in case some locations have to be rejected because they are not safe or otherwise not suitable for evaluation (e.g., bridges, construction zones, congested areas, etc.). The list of the random sample locations will be provided by Maintenance Division to the field data collection teams prior to their conducting the survey.

All identified features within each field sample segment will be evaluated. The survey is intended to assess the current condition that exists at the point in time when the evaluation takes place.

B. Data Collection Equipment

The equipment necessary for completing field assessments is as follows:

- Flashing light with magnetic base for mounting on top of vehicle (needed only if vehicle is not already equipped with flashing lights).
- Traffic cones (three minimum).
- Protective clothing, such as field boots, jeans, hat, and other outdoor wear appropriate for the season.
- Reflective American National Safety Institute (ANSI) green safety vest.
- Condition Assessment Data Collection Form, OM-150 (see Appendix) and clipboard, and several extra writing instruments for recording data collected and pertinent comments.
- Flexible metal measuring tape, ¾ inch to 1 inch wide by 25 feet long, graduated in inches and feet.
- Measuring wheel, with a capacity of at least 528 feet, for measuring distances longer than the length of the flexible tape.

- Carpenter's level, or other straight-edged metal bar, at least 3 feet long, for establishing a level plane from which to measure roadway feature elevation differential.
- Vehicle equipped with a Distance Measuring Instrument (DMI) capable of recording to the nearest 0.01 mile and calibrated for less than 1.0 percent error under normal operating conditions (i.e., temperature, tire pressure, vehicle load, etc.).

Additional optional equipment for completing field assessments is as follows:

- Lightweight laptop computer with USB or serial port.
- GPS receiver that can be connected to the computer or PDA device.
- Handheld laser or infrared range finder (the type commonly used for hunting or golfing), accurate to ± 1.0 yard.
- 12-volt socket "splitter" to allow more than one device to be plugged into the cigarette lighter (available at most automotive supply stores).

C. Safety Responsibility

The condition assessment data collection teams shall conduct the work in a manner that ensures minimal obstruction to traffic. During the data collection process, the team members shall be responsible for their safety and the safety and convenience of the traveling public. The team vehicle and team members must be properly outfitted with safety equipment.

If any unsafe roadway condition is observed, in or out of a field sample segment, the team will immediately notify the responsible maintenance organization (by radio or telephone) and describe the problem and request that the appropriate action be taken. The team is not expected to perform maintenance while conducting the condition assessment data collection; however, as a matter of courtesy to motorists, large items of debris should be removed from the roadway and roadside assistance should be provided as needed.

D. Field Data Collection

In every case, the primary concern of data collectors should be the safety of the team and of the road users. The general procedures for collecting condition assessment data is as follows:

1) Consult the list of sample sites for the mile point of the first sample. Go to the nearest mile marker post and, using the vehicle DMI device, locate and mark the starting mile point for the sample segment. Using the measuring wheel, locate and mark the end of the sample site (i.e., 528 feet from the starting point).
2) Identify the sample segment by spray paint at the outside edge of the shoulder so that it can be located again if necessary (a 1-inch x 18-inch is sufficient). Place a traffic cone on the starting and ending locations to help identify the limits of the field sample

segment during the data collection process and to serve as additional traffic control for the assessment team.

3) Move to the starting point of the sample and record the starting mile point and direction, maintenance section, number of lanes, surface type and other pertinent information on Form OM-150.

4) From the starting mile point, collect the required data for features on one direction of the roadway in the field sample segment. Return to the starting mile point, and collect the required data for features on the other direction of the roadway.

5) Move to the next sample segment and repeat the process (Steps 1 thru 4).

When finished with the last sample and as soon as possible, transfer the condition assessment data from Form OM-150 into the WVDOH computer system in the designated file location.

In performing these data collection activities, the following special instructions should apply as appropriate:

1) If any portion of the field sample segment falls on a bridge, move the sample segment forward or backward as necessary to avoid the bridge. Note and record any adjustments on the OM-150 (data collection form).

2) Field sample segments falling within construction zones should not be evaluated. Relocate the sample segment outside of the construction area but as close to the original segment as possible. Note any adjustments on the OM-150 (data collection form).

3) All linear measurements should be rounded up to the nearest foot. Do not use fractions or increments less than one foot.

E. Condition Assessment Data Collection Schedule

Condition assessment data collection will be conducted on a predetermined scheduled (monthly, quarterly, semi-annually, annually, etc.) as determined by management. Most assets will be rated at least twice annually.

The condition assessment data will be evaluated on an annual basis by fiscal year. Results from multiple condition assessments conducted during a fiscal year will be averaged together to get a level of service (LOS) score for a particular asset type or group of assets.

F. Roadway Condition Assessment Data Collection Methodology

The page number for the assessment criteria and inspection procedures for each maintenance feature can be found in the table below:

The following is a description of the inspection process for each roadway maintenance feature to be assessed. Technical References for proper feature maintenance include the WVDOH Maintenance Manual and Performance Standards.

Maintenance Group: Roadway- Flexible Pavement	**Date:** September 2013
Maintenance Feature: Potholes	
Definition: Potholes are bowl-shaped voids or depressions in the pavement surface that are greater than 6 inches by 6 inches (or greater than 36 square inches) by 1 inch deep. Potholes are localized failure areas usually caused by weak base or subgrade layers.	
Measurement Unit: Number of potholes equal to or greater than 6 inches by 6 inches (or 36 square inches) by 1 inch deep per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction, and number of lanes. Inspect the sample segment of paved surface for potholes in both lanes of the road in the identified direction. Record the number of potholes and milepost.	

Maintenance Group: Roadway- Flexible Pavement	**Date:** September 2013
Maintenance Feature: Patching	
Definition: Unacceptable patches are deteriorating patches of greater than 9 square feet in area, uneven patches with an elevation difference greater than 1 inch with the adjacent pavement, or patching not placed in accordance with the current Maintenance Performance Standards.	
Measurement Unit: Number of unacceptable patches greater than 9 square feet in area or uneven patches with an elevation difference greater than 1 inch with the adjacent pavement per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction, and the number of lanes. Inspect the sample segment of paved surface for unacceptable patches in both lanes of the road in the identified direction. Record the number of unacceptable patches and milepost.	

Maintenance Group: Roadway- Flexible Pavement	**Date:** September 2013
Maintenance Feature: Cracking/Sealing	
Definition: Unacceptable cracking includes unsealed block, longitudinal, reflective, seam, and transverse cracking greater than ½" in width. Longitudinal cracks include cracks formed parallel to the centerline of the roadway that are the result of paving joints, widening joints that have reflected up through the layers of overlay, or gear box segregation.	
Measurement Unit: Linear feet of unsealed cracking greater than ½" in width per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction and the number of lanes. Inspect the sample segment of paved surface for unacceptable cracking in both lanes of the road in the identified direction. Record the length and width of each unsealed crack in the selected site in all lanes.	

Maintenance Group: Roadway- Flexible Pavement	**Date:** September 2013
Maintenance Feature: Fatigue (Alligator) Cracking	
Definition: Alligator cracking is interconnecting cracking patterns that resemble alligator skin or chicken wire. Pavement pieces range from 1 in. to 6 in. on a side and generally occur in the wheel paths.	
Measurement Unit: Square feet of unsealed alligator cracking per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction and the number of lanes. Inspect the sample segment of paved surface for unsealed alligator cracking in both lanes of the road in the identified direction. Record the total square feet of unsealed alligator cracking in all lanes.	

Maintenance Group: Roadway- Rigid Pavement	**Date:** September 2013
Maintenance Feature: Potholes	
Definition: Potholes are bowl-shaped voids or depressions in the pavement surface that are greater than 6 inches by 6 inches (or greater than 36 square inches) by 1 inch deep. Potholes are localized failure areas usually caused by weak base or subgrade layers.	
Measurement Unit: Number of potholes equal to or greater than 6 inches by 6 inches (or 36 square inches) by 1 inch deep per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction, and number of lanes. Inspect the sample segment of paved surface for potholes in both lanes of the road in the identified direction. Record the number of potholes and milepost.	

Maintenance Group: Roadway- Rigid Pavement	**Date:** September 2013
Maintenance Feature: Patching	
Definition: Unacceptable patches are deteriorating patches of greater than 9 square feet in area, uneven patches with an elevation difference greater than 1 inch with the adjacent pavement or patching not placed in accordance with the current Maintenance Performance Standards.	
Measurement Unit: Number of unacceptable patches greater than 9 square feet in area or uneven patches with an elevation difference greater than 1 inch with the adjacent pavement per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction, and the number of lanes. Inspect the sample segment of paved surface for unacceptable patches in both lanes of the road in the identified direction. Record the number of unacceptable patches and milepost.	

Maintenance Group: Roadway- Rigid Pavement	**Date:** September 2013
Maintenance Feature: Cracking/Open Joints	
Definition: A crack or break is approximately parallel to the pavement centerline and is usually associated with subgrade settlement or insufficient bearing support. Unacceptable cracking and open joints include unsealed longitudinal, reflective, seam, and transverse cracking/joints greater than ½" in width. Longitudinal cracks include cracks formed parallel to the centerline of the roadway that are the result of paving joints, widening joints that have reflected up through the layers of overlay, or gear box segregation.	
Measurement Unit: Linear feet of unsealed cracking greater than ½" in width per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction and the number of lanes. Inspect the sample segment of paved surface for unacceptable cracking in both lanes of the road in the identified direction. Record the length and width of each unsealed crack in the selected site in all lanes.	

Maintenance Group: Roadway-Rigid Pavement	**Date:** September 2013
Maintenance Feature: Faulting (Mid-Slab Breaks)	
Definition: Faulting is the difference in elevation between abutting slabs at transverse joints or cracks (including block cracking). It is usually caused by a pumping action of underlying fine-grained materials, settlement of soft subgrade, or curling or warping of slabs due to temperature and moisture gradients.	
Measurement Unit: Number of slabs with faulting per lane mile.	
Inspection Procedure: Record the sample segment starting milepost, direction and number of lanes. Inspect the paved surface for concrete slabs with faulting. Count the number of slabs in each lane with faulting equal to or greater than ¼ inch of vertical displacement, and record the number of slabs.	

Maintenance Group: Shoulders	**Date:** September 2013
Maintenance Feature: Distress	
Definition: Bleeding, cracking, potholes, erosion, humps, sags, settlements and deformation are evidence of paved shoulder distress.	
Measurement Unit: Linear feet of shoulder distress per shoulder mile.	
Inspection Procedure: Record the sample segment starting milepost and direction. Inspect the shoulders within the field sample segment for surface distresses. Count the linear feel parallel to the centerline with shoulder distress for both shoulders. Record the total length of shoulder distress for both shoulders.	

Maintenance Group: Shoulders	**Date:** September 2013
Maintenance Feature: Low (Paved) Shoulders	
Definition: A change of elevation of 1 inch or more along the edge of the paved shoulder adjacent to the traveled way. The elevation change can also occur between the paved shoulder and the adjacent unpaved ground surface in which case an unacceptable change in elevation is 3 inches or more.	
Measurement Unit: Linear feet of shoulder with an unacceptable elevation change per shoulder mile.	
Inspection Procedure: Inspect shoulder areas on each side of the paved surface within the field sample segment for an unacceptable elevation change. For those segments exceeding the minimum acceptable, measure and record the total length that exceeds the minimum acceptable elevation change. All areas not within the range shall be combined to obtain a total unacceptable length.	

Maintenance Group: Shoulders	**Date:** September 2013
Maintenance Feature: High (Paved) Shoulders	
Definition: A change of elevation of 1 inch or more along the edge of the paved shoulder. The elevation change can also occur between the paved shoulder and the adjacent unpaved ground surface.	
Measurement Unit: Linear feet of shoulder with an elevation change of 1 inch or more per shoulder mile.	
Inspection Procedure: Inspect shoulder areas on each side of the paved surface within the field sample segment for an elevation change of 1 inch or more. For those segments exceeding the 1-inch minimum, measure and record the total length that exceeds the 1-inch minimum elevation change. All areas not within the range shall be combined to obtain a total unacceptable length.	

Maintenance Group: Shoulders	**Date:** September 2013
Maintenance Feature: Separation	
Definition: Shoulder separation occurs between the edge of the pavement and the shoulder found at the point of abutment between the pavement edge and the shoulder. Separation is evidence of poor adhesion at the paving seam between the pavement and shoulder. Unpaved shoulders are included in this feature. Separation exists if the pavement edge and the shoulder are more than 1 inch apart or if gullies are found in the unpaved shoulder deeper than 2 inches and/or wider than 4 inches.	
Measurement Unit: Linear feet of shoulder with separation per shoulder mile.	
Inspection Procedure: Record the sample segment starting milepost and direction. Inspect the edge of the pavement for areas where the pavement edge and the shoulder are more than 1 inch apart or where gullies deeper than 2 inches and wider than 4 inches exist in the unpaved shoulder. Measure the distance in feet along the roadway for each occurrence on both sides of the paved surface. Record and add the total length of separation to obtain a total unacceptable length.	

Maintenance Group: Roadside	**Date:** September 2013
Maintenance Feature: Litter and Debris	
Definition: Litter and debris consists of any object foreign to the right of way that is fist-sized or larger (including animal carcasses).	
Measurement Unit: Number of fist-size objects per mile. Field sample segment is to be 100% free of debris which represents a safety hazard and no more than 10 pieces of litter or debris that can be easily seen by vehicular traffic on any field sample segment. Any large animal carcass at the site automatically fails the characteristic.	
Inspection Procedure: Inspect the field sample segment for debris which presents a safety hazard; if any exists then the characteristic is unacceptable. Count and record the total number of fist-size objects which are easily visible.	

Maintenance Group: Roadside	**Date:** September 2013
Maintenance Feature: Mowing	
Definition: Mowing is to be performed to ensure the safety of motorists as well as to promote an aesthetic roadside.	
Measurement Unit: Per cent of shoulder mile with mowable vegetation not meeting current Maintenance Performance Standards. • mowable vegetation at all intersections and curves shall be controlled to assure an adequate sight distance. • the area between the edge of pavement and behind the guardrail (except for those located on grass shoulders) shall be free of mowable vegetation. • mowable vegetation around guardrail on grass shoulders shall be under 4 inches in height. • the area around headwalls, paved ditches, and paved shoulders shall be free of mowable vegetation.	
Inspection Procedure: Inspect the field sample segment to determine if the vegetation height is within the requirement; determine if an adequate sight distance has been maintained at intersections and curves; check around guardrails, headwalls, paved ditches, and paved shoulders for mowable vegetation. All areas not within the range shall be combined or added together to obtain a total unacceptable area. Compare to the total mowable area as defined in the Performance Standards to total unacceptable area.	

Maintenance Group: Roadside	**Date:** September 2013
Maintenance Feature: Brush/Tree Control	
Definition: The cutting/removal of roadside brush to maintain a neat and attractive appearance and to provide safe sight distances for motorist.	
Measurement Unit: Per cent of shoulder mile with roadside brush not meeting current Maintenance Performance Standards.	
Inspection Procedure: Inspect the field sample segment to determine if the roadside brush is maintained in a manner that ensures adequate sight distance at intersections and curves, around guardrails, headwalls, paved ditches, and paved shoulders. All areas not within the Performance Standards acceptable range shall be combined or added together to obtain a total unacceptable area.	

Maintenance Group: Roadside	**Date:** September 2013
Maintenance Feature: Guardrail/Barriers	
Definition: Guardrail (including post and end treatments) is used to redirect errant vehicles when the vehicle leaves the roadway. Barriers are used to redirect errant vehicles when the vehicle leaves the roadway and also to separate travel lanes. Both Guardrail and Barriers are used to protect vehicles from bridge ends and piers, deep fill sections, and other potentially dangerous locations.	
Measurement Unit: Linear feet of guardrail or barrier per shoulder mile with moderate to severe deficiencies or structural damage which reduces their effectiveness. Moderate to severe deficiencies/structural damage include, but is not limited to, displaced/broken parts, rusting, vertical or horizontal misalignment, and crumbling/severe cracking.	
Inspection Procedure: Inspect the field sample segment to determine if guardrail or barrier in the segment has moderate to severe deficiencies. Measure and record the total length of the guardrail/barrier and the total length of the deficient guardrail/barrier.	

Maintenance Group: Drainage	**Date:** September 2013
Maintenance Feature: Ditches	
Definition: Roadside and median ditches are trough-shaped channels located parallel to the roadway. The length of the ditch shall be less than 50% obstructed (50% of the depth) by soil, vegetation, or impermeable material and functioning as intended, otherwise it is considered defective. All paved ditches shall be structurally sound, free of soil, vegetation, or impermeable material and functioning as intended, otherwise they shall be deemed defective.	
Measurement Unit: Linear feet of defective ditch per shoulder mile.	
Inspection Procedure: Review ditches on roadway field sample section (both right, left, and the median of four lanes). Visually check for blockage, any standing water, or obstructions. If minor obstruction and/or blocking are found then the depth of the ditch must be measured and the depth of the obstruction must be measured. The ditch is deemed defective if greater than 50% of depth of the ditch is blocked or filled. Paved ditches are to be checked for cracks, misalignment, or undermining, and to determine if they are structurally sound or causing the roadway to improperly drain, if so, the ditch is deemed defective Measure and record the length of each type of ditch (open ditch or paved ditch) on each side of the field sample segment including the median ditches. Measure and record the length of the unacceptable ditch. .	

Maintenance Group: Drainage	**Date:** September 2013

Maintenance Feature: Minor Drainage Structures

Definition:

Catch Basins are designed to trap and hold sand and gravel from the water flow and prevent pipe or channel blockage.

Drop Inlets are openings through which water enters a structure.

Curbs and gutters are open channels that direct water from the roadway to the catch basin or other outlet.

Pipe culverts are used to carry water under a road.

Grates trap sticks and other floating debris.

Aprons are used to prevent soil erosion around the inlet or outlet.

Measurement Unit:

Number of unacceptable minor drainage obstructions per lane mile.

Curbs and gutters shall be free of structural distress (consisting of settlement or joint misalignment of greater than 1 in. in width, moderate chipping/crumbling, missing or extruded joint material, and unsealed cracking of more than 3/4 inches in width).

Each pipe shall be a minimum of 75% of depth unobstructed, undamaged, and functioning as intended, otherwise it is deemed unacceptable.

Each catch basin, drop inlet and outlet pipe opening shall be a minimum of 75% unobstructed, the unit shall be structurally sound, the apron shall not be undermined, and the grate and access cover shall be present (where applicable), otherwise it is deemed unacceptable.

Inspection Procedure:

Measure and record the total length of curb and gutter in the field sample segment including the median.

Inspect the field sample segment curb and gutter for structural distress, if observed then record the number of structural distressed (unacceptable) locations found.

Count and record the number of catch basins, drop inlets, and grates and check the openings for blockage and cracks; check for undermining of the apron and the presence of the grate/access cover. If the drainage feature is found to be partially obstructed, the area of blockage should be measured, and then the intended opening shall be measured. Calculate to determine if blockage area is over 25% of total intended opening. Record the number of obstructions (unacceptable locations) found to be greater than 25%.

Count and record the number of pipes within the roadway section and check both ends of all for obstructions, damage, and any other visual failures. Under drain outlet pipes shall also be counted, recorded and checked. (Box culverts and pipes larger than 10 feet in span length or diameter will not be checked.) Record the number of obstructions (unacceptable locations) found to be greater than 25%.

Add the total number of unacceptable locations found to obtain a total unacceptable number.

III. Appendix

Condition Assessment Definitions

- **Asset**: a physical item of roadway infrastructure that has value. Assets are sometimes referred to as roadway "furniture" or "features." An asset may be a single item, such as a sign, or a linear item such as a road or guardrail section. An asset may also be a spatial item such as a rest area or mowable acreage.
- **Asset inventory**: a physical count of assets. The count may be by coordinates, mile points, road section, geographical area, road network, maintenance section, or other convenient method of sorting and reporting the amount of assets in the road system.
- **Condition Assessment or Maintenance Quality Assessment (MQA)**: is a process of physically inspecting and rating the condition of the roadway assets and maintenance services. The condition assessment provides detail to quantify specific asset deficiencies in terms of area, length, number, or percentage. The maintenance condition assessment may also be referred to as a Condition Survey. The data from the condition assessments is used to assess outcomes, actual performance, and maintenance LOS.
- **Maintenance Level of Service (LOS)**: Maintenance levels of service measure the condition of individual assets as well as the overall condition of the roadway. LOS ratings are generally presented on a letter scale of A to F, (highest to lowest rating, respectively) and are calculated from the information collected during the condition assessment. LOS measures are a transformation of performance measure information to a defined scale that indicates degree of acceptability or degree to which current performance meets expectations.
- **Performance Measure:** a unit of measurement used to rate asset condition or maintenance performance. Examples of performance measures include height of grass, number of potholes per lane mile, percent of signs below standard and International Roughness Index (IRI) for pavements.
- **Performance Target:** is a goal or objective for the condition of assets on the road system. A performance target is usually a numerical rating, such as the desired percentage of highway features that meet a Performance Measure (e.g., at least 90 percent of all roadway lighting shall be operational or at least 90 percent of all Interstate pavements shall have and IRI of 120 inches/mile or less.) A Performance Target can also be defined using a targeted LOS (i.e. maintain Interstate guardrail at a LOS B).
- **Maintainable Assets**: Assets that will be considered as part of maintenance activities in the planning process.
- **Activity:** The type of work that is used to address defects. Performance Based Maintenance Planning requires that treatment models be developed to identify which activity needs to be performed to address a specific deficiency.
- **Maintenance Index**: A summary index or statistic that may be defined for use in the MQA approach. To optimize a particular planning analysis, the defect elements which are taken into consideration and applicable coefficient have to be defined. For example, in the maintenance index named "Vegetation Control", mowing and weed control could be two defects that are selected with weighting coefficients of 0.75 and 0.25, as their applicability to that index.

County/District
Route
Mile Post
Direction
# of Lanes

Form OM-150 (Revised 9/2013)

Date _____

Rater(s) _____

_____

PAVEMENT

Potholes (number >36 sq. in. and/or 1 in. deep)	_____	
Patches (number >9 sq. ft. and/or 1" height difference)	_____	
Cracking/Sealing (linear feet > 1/2" wide)	_____	
Fatigue/Alligator Cracking (Square feet unsealed)	_____	

CONCRETE

Potholes (number >36 sq. in. and/or > 1" deep)	_____	
Patches (# >9 sq. ft. unacceptable > 1/2" height difference)	_____	
Cracking/Open Joints (linear feet >1/4" wide)	_____	
Faulting (Mid-slab Breaks) (# slabs with faulting)	_____	

SHOULDERS

Distress (linear feet)	_____
Low Shoulders (linear feet > 2" low)	_____
High Shoulders(linear feet > 1/2" high)	_____
Separation (linear feet with separation)	_____

ROADSIDE

Mowing (% not meeting standard)	_____
Brush/Tree Control (% not meeting standard)	_____
Guardrail/Barriers (linear feet/ linear feet w/deficiencies)	_____
Litter/Debris (# fist-size objects)	_____

DRAINAGE

Ditches (linear feet/linear feet of unacceptable ditch)	_____	
Minor Drainage Structures (Total/Total of unacceptable)	_____	
- Catch Basins (number/number of unacceptable)	_____	
- Drop Inlets (number/number of unacceptable)	_____	
- Edge Drains & Under Drains (#/# of unacceptable)	_____	
- Paved Gutters (number/number of unacceptable)	_____	
- Pipes (number /number of unacceptable)	_____	
- Pipe Headwalls (number / number of unacceptable)	_____	

Comments: (use back for additional space)