

Virginia Department of Transportation  
Traffic Engineering Division  
**Category 2 Maintenance Project Safety Analysis Checklist**  
(Effective 04/20/2017)

**VDOT District:**

Bristol  
 Salem  
 Lynchburg

Richmond  
 Hampton Roads  
 Fredericksburg

Culpeper  
 Staunton  
 NOVA

**Schedule:**

**Project Location (Route Number):**

**From Mile Point <sup>a</sup>:**

**To Mile Point:**

**Field Visit Date/Time:**

**Field Visit Team Members:**

**Project Description:**

<b>PE Seal</b>
VDOT-Traffic Engineering Richmond, Virginia TRAFFIC ENGINEER (SAMPLE)

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<sup>a</sup> Mile Point refers to the official road referencing system used in the electronic VDOT road inventory such as HTRIS and RNS system. Mile Marker refers to the physical post by the side of a road indicating the number of miles from the start of the route. Mile Points and Mile Markers don't necessarily match with each other due to historical reasons.

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✓	Step	Needed Actions	Guidance	Documentation
<b>1. Evaluation of Existing Records</b>				
	1.1	Validate the scope and purpose of the project	<ul style="list-style-type: none"> <li>Review the proposed project to ensure it meets the intent of Category 2 projects per VDOT/FHWA most recent agreement letter.</li> </ul>	
	1.2	Support/coordinate with District L&D to establish applicable control design criteria to ensure safety	<ul style="list-style-type: none"> <li>District L&amp;D will provide documentation as defined in the section 4.2 of the most recent 3R agreement letter.</li> </ul>	
	1.3	Crash analysis (See flow chart for Category 2 and instruction in detailed crash analysis procedures)	<ul style="list-style-type: none"> <li>Follow the crash analysis procedure in the flow chart developed by CO TED Highway Safety Section.</li> <li>Detailed crash analysis procedure provides step-by-step instructions for conducting the above crash analysis.</li> <li>Then identify hot spot locations within the paving corridor.</li> </ul>	
	1.4	Known safety issues	<ul style="list-style-type: none"> <li>Consider significant, known safety issues raised by citizens, other agencies such as law enforcement and safety stakeholders.</li> </ul>	

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	1.5	Recommend focus areas for field review	<ul style="list-style-type: none"> <li>Use tools such as Google maps, VDOT GIS Integrator/Visiweb or RNS to identify focus areas of the project sites for field review.</li> </ul>	
<b>2. Field Review</b>				
	2.1	TE staff and other safety stakeholder such as L&D and Maintenance staff review following engineering elements:	<ul style="list-style-type: none"> <li>Conduct <u>windshield and appropriate site observation</u> of road traffic assets in the paving corridor and check deficient areas if necessary.</li> </ul>	
		<i>Signing</i>	<ul style="list-style-type: none"> <li>Conduct daytime/night time review for obvious visual deficiency of sign condition , location, and appropriateness (MUTCD).</li> </ul>	
		<i>Pavement marking</i>	<ul style="list-style-type: none"> <li>Assess appropriateness and condition of pavement marking such as using wider or enhanced material, adding left/right turn arrows and pedestrian cross walk.</li> <li>Assess the needs for further investigation of passing zone marking.</li> </ul>	
		<i>Edge Drop-offs</i>	<ul style="list-style-type: none"> <li>Identify any edge drop-off which would not normally be addressed by paving project. For example, consider adding shoulder wedge when not specified per IIM-MD-002.</li> </ul>	

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		<i>Guardrail</i>	<ul style="list-style-type: none"> <li>• For RM1, RM2 with election changes less and equal to 2 inches, conduct a windshield GR review using the attached “GR windshield review-paper form” or use mobile application. No detailed GR review is required.</li> <li>• For RM3 project, conduct a separate detailed guardrail field evaluation following TE Memos 366.3 and 367.</li> <li>• Guardrail with Condition “C” and “D” shall be upgraded as part of the 3R project.</li> </ul>	
		<i>Rumble Strip</i>	<ul style="list-style-type: none"> <li>• Check missing centerline or shoulder rumble strip(es) where applicable and ensure its installation during projects.</li> </ul>	
		<i>Other road elements</i>	<p>Identify other obvious road defects such as:</p> <ul style="list-style-type: none"> <li>• Fixed objects in the clear zone</li> <li>• Sight distance caused by excessive vegetation</li> <li>• Shoulder width or recoverable shoulder</li> <li>• Median cross-overs</li> <li>• Median width and/or barrier issues</li> <li>• Pedestrian accommodation which may affect road safety</li> </ul>	

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	2.2	Recommend corrective actions or measures	<ul style="list-style-type: none"> <li>Recommend potential actions for observed conditions and identified crash patterns.</li> </ul>	
<b>3. Post Field Review Documentation</b>				
	3.1	Develop a safety review report	<ul style="list-style-type: none"> <li>Based on the crash analysis and field review results, develop a safety review report signed and sealed by a licensed Professional Engineer in VA in accordance with TED guidelines.</li> <li>The report should include detailed crash analysis, field review summary, sketch of project locations and safety recommendations.</li> </ul>	
<b>4. Project Implementation</b>				
	4.1	Determine the implementation options of recommended countermeasures	<p>Coordinate with District maintenance staff to decide whether recommended countermeasures will be:</p> <ol style="list-style-type: none"> <li>Implemented as a low cost operational improvement outside paving projects.</li> <li>Programmed into the paving contract or through separate contract delivered in coordination with the paving project</li> <li>Dropped from the paving project due to significant uncorrectable safety</li> </ol>	

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			concerns (significant alignment issues, significant geometrics improvements required)	
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**Crash Analysis Results:**

**Key Findings in the Field  
Safety Review:**

**Recommendations:**

**Conclusion:**

**Attachments:**

## Guardrail Windshield Assessment – Paper Form

### Administrative Information:

Roadway Segment ID:	Project ID:
Survey Completed By:	Survey Date:

### Roadway Segment Location Identification

Route Information			
District:		Maintenance Jurisdiction:	
Route #:		Route Direction: NB <input type="checkbox"/> SB <input type="checkbox"/> EB <input type="checkbox"/> WB <input type="checkbox"/>	
Roadway Segment Start Location (not all fields required - provide sufficient information to accurately identify start):			
• Landmark:		Offset:	FT <input type="checkbox"/> MI <input type="checkbox"/>
• Milepoint:		County MP <input type="checkbox"/>	State MP <input type="checkbox"/>
• Coordinates:	Lat (Y):	Long (X):	(provide <u>min</u> of 6 decimal places)
• Description:			
Roadway Segment End Location (not all fields required - provide sufficient information to accurately identify end):			
• Landmark:		Offset:	FT <input type="checkbox"/> MI <input type="checkbox"/>
• Milepoint:		County MP <input type="checkbox"/>	State MP <input type="checkbox"/>
• Coordinates:	Lat (Y):	Long (X):	(provide <u>min</u> of 6 decimal places)
• Description:			

**Directions:** Complete the following section summarizing obvious deficiencies of Guardrail Systems observed during Windshield survey of Roadway Segment Limits. Indicate Begin Location of Survey.

**Windshield Survey Begin Location:** Roadway Segment Start  or Roadway Segment End

**Guardrail Deficiencies** - check this box if no deficient guardrail systems observed

GR	Approx. Offset <sup>1</sup>	Side of Road	Rail Run Deficiency <sup>2</sup>	Run-On Deficiency <sup>3</sup>	Run-Off Deficiency <sup>4</sup>
1	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
2	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
3	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
4	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
5	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
6	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			

<sup>1</sup> Record offset from Windshield Survey Begin Location (either Road Segment Start Location or Road Segment End Location)

<sup>2</sup> Summarize rail deficiencies including obsolete hardware or obvious condition issues

<sup>3</sup> Summarize run-on terminal deficiencies including obsolete hardware or obvious condition issues (see supplemental notes)

<sup>4</sup> Summarize run-off terminal deficiencies including obsolete hardware or obvious condition issues (see supplemental notes)

## Guardrail Windshield Assessment – Paper Form

GR	Approx. Offset <sup>1</sup>	Side of Road	Rail Run Deficiency <sup>2</sup>	Run-On Deficiency <sup>3</sup>	Run-Off Deficiency <sup>4</sup>
7	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
8	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
9	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
10	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
11	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
12	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
13	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
14	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			
15	miles	<input type="checkbox"/> Left <input type="checkbox"/> Right			

*Supplemental notes on guardrail deficiencies which may be observable from Windshield Survey:*

### Deficiency Area

- Obsolete Rail Type:

### Typical/Example Deficiency Observation

GR-1 – Strong Post W-Beam System without block outs

- Obsolete Run-On Type:

Blunt End or Radial Guardrail Terminals

GR-5: Turndown Terminals

GR-7: BCT or MELT Terminals

GR-9: X-Lite or ET-Plus Modified Terminals

- Note: ET-PLUS requires field measurement of channel width to determine if product is ET-PLUS Modified

GR-11, MGS-3, or GR-8 Type II Turndown Terminals

- Note: these are not acceptable for Run-On Conditions)

- Obsolete Run-Off Type:

Blunt End or Radial Guardrail Terminals

GR-5: Turndown Terminals

GR-7: BCT or MELT Terminals

GR-9: X-Lite or ET-Plus Modified Terminals

- Note: ET-PLUS requires field measurement of channel width to determine if product is ET-PLUS Modified

GR-11, MGS-3, or GR-8 Type II Turndown Terminals

- Note: these are not acceptable where may be struck from opposing direction

- Obvious Condition Issues:

Significantly Low, Major Rusting/Rotting, Missing Posts, Major Slope Issues

Severe and/or Extensive Damage

Rail Appears Shorter/Longer than Needed