

UPN 8761 Raynolds Pass – Quake Lake: Shoulder Rumble Strip Evaluation

A cost effectiveness analysis was completed to determine if a modified shoulder rumble strip would be beneficial along the corridor. The cost-effectiveness is measured by the Benefit-Cost (B/C) ratio which represents the ratio of the benefits derived from the crash reduction expressed in dollars to the cost of construction and maintenance over the life cycle of the project. A benefit to cost ratio of greater than 1 indicates an improvement is economically justified.

The cost of shoulder rumble strips was estimated at \$2,000 per mile (\$14,000 for the project) with a service life of 10-years. Only non-junction related fixed object and rollover crashes are included in the analysis. There have been a total of 5 crashes that were considered to be addressable with the installation of a modified rumble strip. The severity of the addressable crashes resulted in 2 non-incapacitating injury crashes with a total of 2 persons injured and 3 property damage only crashes. The 2013 road log indicates this section of roadway generally has 3-foot shoulders. The following table provides a summary of the analysis for various crash reduction factors:

Crash Reduction Factor (%)	Benefit/Cost Ratio
5%	1.02
10%	2.04
20%	4.07

Given the number of non-junction related fixed object and rollover crashes (5), the low AADT, and the cost effectiveness evaluation, installation of a modified shoulder rumble strip should be considered.

UPN 8714 Vida North and South: Shoulder Rumble Strip Evaluation

A cost effectiveness analysis was completed to determine if a modified shoulder rumble strip would be beneficial along the corridor. The cost-effectiveness is measured by the Benefit-Cost (B/C) ratio which represents the ratio of the benefits derived from the crash reduction expressed in dollars to the cost of construction and maintenance over the life cycle of the project. A benefit to cost ratio of greater than 1 indicates an improvement is economically justified.

The cost of shoulder rumble strips was estimated at \$2,000 per mile (\$42,000 for the project) with a service life of 10-years. Only non-junction related fixed object and rollover crashes are included in the analysis. There have been a total of 19 crashes that were considered to be addressable with the installation of a modified rumble strip. The severity of the addressable crashes resulted in 2 incapacitating injury crashes, 5 non-incapacitating injury crashes, 4 possible injury crashes with a total of 17 persons injured and 8 property damage only crashes. According to the 2013 road log shoulder widths in the rural areas vary from 0 to 2 feet. Based on a desktop review of the corridor it appears sufficient shoulder is generally available for installation of a modified shoulder rumble strip.

The following table provides a summary of the analysis for various crash reduction factors:

Crash Reduction Factor (%)	Benefit/Cost Ratio
5%	1.57
10%	3.15
20%	6.29

Given the number of non-junction related fixed object and rollover crashes (19), the low AADT, the identified overturning crash pattern, and the cost effectiveness evaluation, installation of a modified shoulder rumble strip should be considered.