HR.1 Shoulder Rumble Strips – Tier One

Description: Around 40 people die in Alaska each year in run-off-road crashes. At location where shoulder rumble strips are installed, data indicate shoulder rumble strips will eliminate 30 to 50 percent of these crashes (during snow free months – reduction factor when roads are snow covered is not known), if installed in areas currently without rumble strips. (Note that this does not mean that 20 lives will be saved, as many roads do not meet the criteria for rumble strips).

This plan recommends installation and maintenance of rumble strips on all state highways that meet rumble strip installation criteria. Three steps need to be taken:

1. The three DOT&PF regions need to create a list of roads within their region that meet the criteria for rumble strip installation in the Chief Engineer's Directive dated 5/30/2001.
2. Rumble Strips on Individual Projects. On the roads identified above, require milled rumble strips on all projects that construct a new paved surface, including reconstruction, resurfacing, and other project types.
3. Areawide Rumble Strip Projects. In addition, consider areawide milled rumble strip projects to fill in any substantial gaps in your region's existing rumble strip coverage. This work is eligible for HSIP funding.

Responsible Agency:

Lead Agency: Alaska Department of Transportation and Public Facilities (DOT&PF)

Contact Name, Title: Kurt Smith, State Traffic and Safety Engineer

Phone: (907) 465-6963 E-mail: Kurt.Smith@alaska.gov

Necessary Partners:

- DOT&PF Headquarters and Regional Offices.
- FHWA.

Data Analysis Needs or Available Resources:

Inventory roads to determine whether rumble strip criteria are met. Identify what type of environmental document is needed.

Expected Effectiveness/Outcome:

Narrative: To eliminate fatal and major injury crashes on high-speed rural roads – estimated number yet to be determined.

Average number of lives lost and major injuries sustained due to this problem over the past five years: Approximately 40 lives lost per year (all roads).

Estimated number of lives saved and major injuries prevented in one year following implementation: Need to inventory roads that qualify for shoulder rumble strips, and what proportion of those roads have shoulder rumble strips before we can estimate this.

Funding and Resource Requirements:

Narrative: Funding for large area rumble strip projects is available through the HSIP. Funding for rumble strips on individual projects would come from the fund sources used by those projects.

Estimated Cost to Implement: $3,000 per shoulder mile (includes all project costs).

Action Steps and Timeline

Action Step	Responsible Agency	Timeline/Due Date
Each region prepares a map of roads to receive rumble strips.	DOT&PF	August 2007
Regionwide rumble strip projects in Central and Northern.	DOT&PF	2008
Require rumble strips to be installed on individual projects where appropriate.	DOT&PF	Ongoing

MEASUREMENT AND EVALUATION
STRATEGY PERFORMANCE MEASURES: Measured crash reductions for run-off-road.
EVALUATION: Actual crash reduction factors for areawide projects will be evaluated after project completion. Results will be published in the HSIP Annual Report in the year of evaluation.

HH.1 CENTERLINE RUMBLE STRIPS – TIER ONE

DESCRIPTION: Approximately 15 people die in Alaska each year in head-on crashes. Data indicate centerline rumble strips could eliminate 12-50 percent of these crashes in locations where installed.

This plan recommends installation and maintenance of centerline rumble strips on high-speed rural roads where there is a history of head-on collisions. A policy will be needed on rumble strip dimensions and whether to only install them in no-passing zones.

RESPONSIBLE AGENCY:

Lead Agency: Alaska Department of Transportation and Public Facilities

Contact Name, Title: Kurt Smith, State Traffic and Safety Engineer

Phone: (907) 465-6963 E-mail: Kurt.Smith@alaska.gov

NECESSARY PARTNERS:

- DOT&PF Headquarters and Regional Offices.
- Federal Highway Administration.

DATA ANALYSIS NEEDS OR AVAILABLE RESOURCES:

Inventory roads to determine where CLRS may be effective. Crash analysis to identify hot spots and segments with history of head-on collisions.

EXPECTED EFFECTIVENESS/OUTCOME:

Narrative: To eliminate fatal and major injury crashes on high-speed rural roads – estimated number yet to be determined.

Average number of lives lost and major injuries sustained due to this problem over the past five years: Approximately 15 per year.

Estimated number of lives saved and major injuries prevented in one year following implementation: Need to inventory roads that qualify for centerline rumble strips before we can estimate this.

FUNDING AND RESOURCE REQUIREMENTS:

Narrative: Funding for centerline rumble strip projects is available through the HSIP where cost-beneficial.

Estimated Cost to Implement: $3,750 per centerline mile (includes all project costs).

ACTION STEPS AND TIMELINE

ACTION STEP	RESPONSIBLE AGENCY	TIMELINE/DUE DATE
Centerline Rumble Strip Policy	DOT&PF State Traffic and Safety Engineers	June 2008
Identify high-crash sites susceptible to correction by CLRS. Propose HSIP projects.	DOT&PF Regional Traffic and Safety Engineers	2008-2009
Fund cost-beneficial HSIP projects.	DOT&PF State Traffic and Safety Engineer	

MEASUREMENT AND EVALUATION

STRATEGY PERFORMANCE MEASURES:

Reducing head-on crashes.

EVALUATION:

12-15 percent reduction in fatalities from head-on crashes using before/after crash studies. If funded under the HSIP, post project effectiveness analysis will be published in the HSIP Annual Report.

HH.2 INSTALL PASSING LANES TO REDUCE HEAD-ON COLLISIONS –TIER ONE

DESCRIPTION: Strategically site passing lanes every 5 to 10 miles to optimize their benefits and usage. Strive for uphill passing lanes and a balance of opportunities in both directions of travel. Review severe crash clusters and data for evidence of areas where passing opportunities are "bottlenecked" and lanes are needed. Do not use short truck lanes on highways where passing lanes are expected.

Install passing lanes where they will provide the most passing opportunities and crash reduction. Note that passing lanes add little or no capacity. Past practice has been to site passing lanes on a project by project, rather than a systemwide basis. Over time, centerline passing availability has been reduced by increasing development, turn lanes, intersection conflicts, and most of all – increasing opposing traffic levels. The net effect is to nearly eliminate passing opportunities (even if skip striping is still present) as traffic increases the demand for passing. Instead of optimizing placement for performance, new passing lanes have been sited to minimize impacts to a project's limits, bridge work, or earth work, etc. This results in many cases of passing lanes being in only one direction for over 20 miles, or having all lanes are within a few miles of each other and then none are present for over 10 miles. Many passing lanes were more economically placed on level or downhill grades. The tradeoff is this creates a difficult and less desirable passing opportunity as this enables slower vehicles speed up. Uphill lanes stand the best chance to pass slow vehicles at reasonable and prudent speeds. The result is poor level of service and location for one direction of travel. This is evident from increasing driver demand to pass in downhill directions, to pass on curves, and pass on double yellow lines, all in passing lanes areas for the opposing direction.

Poor driving choices under congestion and lack of gaps in opposing traffic cause head-on collisions and fatalities, often involving innocent victims in the second vehicle. Passing-lane frequency currently is sporadic and not consistently spaced or sited on grades. They should be located according to best practices for optimum performance.

RESPONSIBLE AGENCY:

Lead Agency: Alaska Department of Transportation and Public Facilities

Contact Name, Title: TBD Phone: TBD E-mail: TBD

NECESSARY PARTNERS:

- EMS Responders.
- DPS State Troopers.
- Alaska Highway Safety Office.
- DOT&PF Traffic and Safety.
- M&O.
- Bridge Design.

DATA ANALYSIS NEEDS OR AVAILABLE RESOURCES:

Need mapping, inventory of rural NHS system topography, grades, and existing passing lanes, direction.

EXPECTED EFFECTIVENESS/OUTCOME:

Narrative: The goal is to create a master plan for passing lanes and then construct the most beneficial ones. The need for passing should be categorized at four levels: 1) traditional opposing lane passing zones at low volumes; 2) alternating three-lane passing sections at intermediate volumes with less need for centerline passing, 10-mile passing zone spacing; 3) up to 5-mile passing zone spacing; and 4) in some cases four-lane highways with medians at high volumes. Categorization should be based upon factors such as seasonal ADT, percent time spent following, head-on crash history, and access conflicts per mile.

Average number of lives lost and major injuries sustained due to this problem over the past five years: 85 fatalities and 242 major injuries (rural head-on collisions checked for miscoding as angles. As many as 20 percent of rural angles are head-ons).

Estimated number of lives saved and major injuries prevented in one year following implementation: 5 fatalities and 15 major injuries per year (at 30 percent reduction).

FUNDING AND RESOURCE REQUIREMENTS:

Narrative: Federal and state funding to identify opportunities to fill in a 10-mile passing-lane spacing initially, with a strategy for up to 5-mile passing-lane spacing in busier segments. Ultimately, passing lanes will result in both directions in the most congested segments, creating a four-lane, barrier or median separated highway. Total mileage eligible for passing lanes: Parks (350), Glenn (250), Sterling (200), Seward (120), Richardson (400) = 1,320 miles of which about half of the Glenn and Parks are eligible due to volumes, very little of the Richardson. Thus, mileage for passing lanes = 645 miles. Quantity of one mile or longer passing lanes are about 65 sites minimum, 120 maximum. Passing lanes in place ~ 30 sites to date. Final quantity is likely to result in two directional passing lanes, or four-lane highways, along approximately 50 miles of roadway.

Estimated Cost to Implement: $ 80 million (10-mile spacing), $200 million (5-mile spacing, some 4 lanes). (This is the cost of passing lanes only, sometimes side by side in each direction. It is not the cost to create continuous divided highways / freeways or interchanges).

ACTION STEPS AND TIMELINE

ACTION STEP	**RESPONSIBLE AGENCY**	**TIMELINE/DUE DATE**
Inventory existing passing lanes.	DOT&PF	2008
Map existing topography, grade along highways at Reconn level, and traffic volumes.	DOT&PF	2009
Identify the best opportunities for passing-lane locations.	DOT&PF	2009
Create route-specific priority list. Consider prioritized list in development of project schedules, limits, and budgets in STIP Development. Submit passing lanes that are safety cost-beneficial for possible HSIP funding.	DOT&PF	Ongoing

MEASUREMENT AND EVALUATION

STRATEGY PERFORMANCE MEASURES:

Passing-Lane spacing achieved.

EVALUATION:

1. Improved consistency of passing opportunities per mile in both directions; 2) lower-speed passing-lane operations; and 3) reduced head-on collisions.