

2021

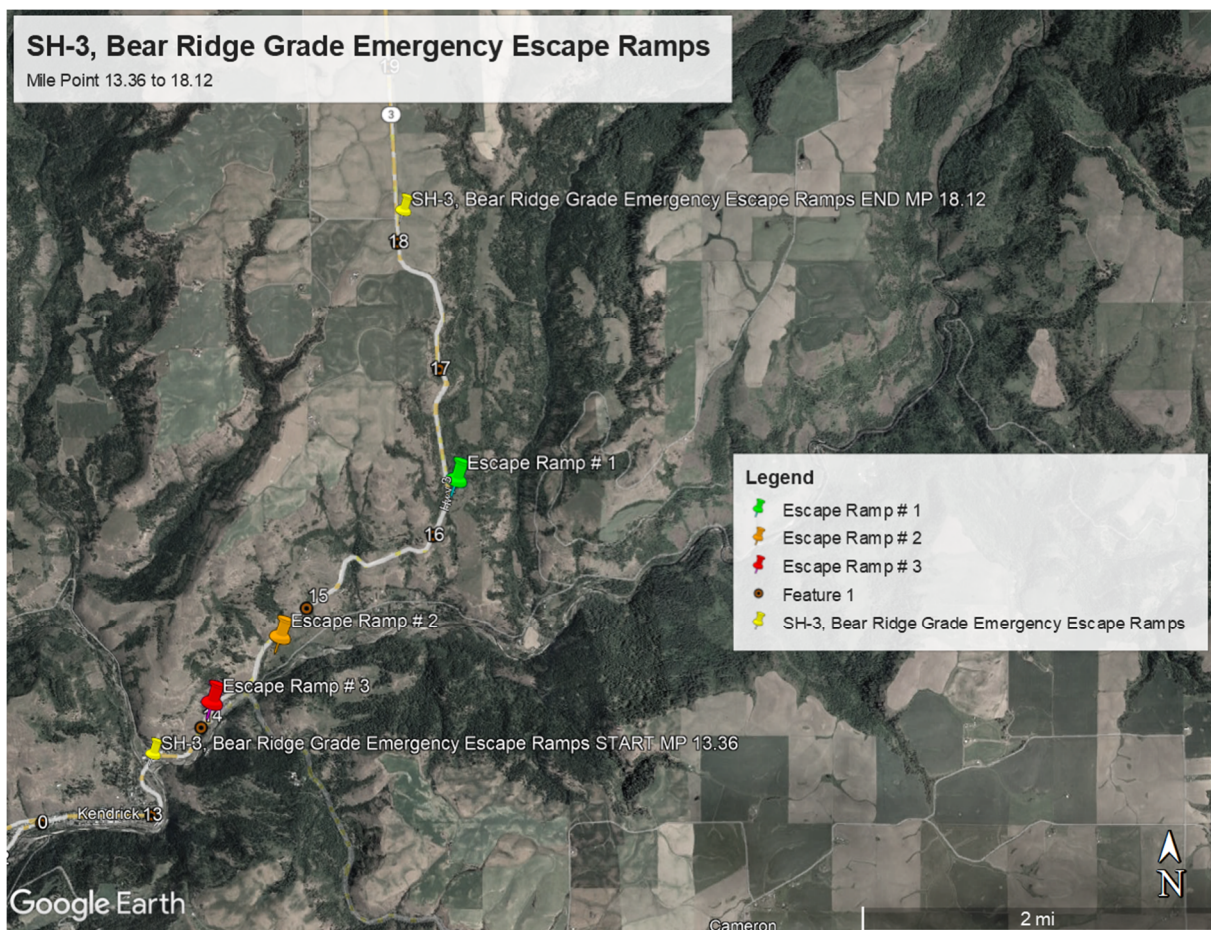
Freight Program

Project Application

SH-3, Bear Ridge Grade

Emergency Escape Ramps,

Latah Co



Projects selected for freight formula funds require a minimum of 7.73% match for interstate projects and 7.34% match for projects not on an interstate.

Submit applications via electronic means to scott.luekenga@itd.idaho.gov. When transmitting the application include all supporting maps, letters and other documents, as a pdf. If the file size exceeds e-mail transmittal capabilities (15MB), submit using a thumb drive and send via FedEx/UPS delivery to the following address:

Idaho Transportation Department
Attn: Scott Luekenga
HQ – Highway Planning Service
P.O. Box 7129
Boise, Id. 83707-1129

Applicant Information:

Applicant: Idaho Transportation Department, District 2

Mailing Address: P. O. Box 837
City: Lewiston
State: Idaho
Zip Code: 83501

Contact person: Bob Schumacher
Title: District Engineering Manager
Phone: 208-799-5090
Email: bob.schumacher@itd.idaho.gov

Co-Applicant (if different from Applicant): Not Applicable

Mailing Address:
City:
State:
Zip Code:

Contact Person:
Title:
Phone:
Email:

Application Specifics

Project Cost Estimate:

The SH-3, Bear Ridge Grade Emergency Escape Ramps project, sponsored by the Idaho Transportation Department District 2, is located in Latah County, on SH-13 between MP 13.36 and MP 18.12. This portion of SH-3 is referred to as Bear Ridge Grade and the objective of this project is to rehabilitate the emergency escape ramps, chain up area, brake check area, and other truck pull offs.

One of District 2's goals is to rehabilitate all emergency escape ramps within the district. Currently, District 2 has rehabilitated an escape ramp on the US-95, Whitebird Grade, two escape ramps on the US-95, Lewiston Hill, and will be rehabilitating a third ramp on the Lewiston Hill in FY2024. The current D2 District Engineer, Doral Hoff, started the emergency escape ramp rehabilitation projects in 2013 when rehabilitating the Lewiston Hill Escape Ramp 3 as the D2 Operations Engineer. Bob Schumacher, the current D2 Engineer Manager, rehabilitated an escape ramp on the Whitebird Hill and Lewiston Hill in 2015 and 2016 respectively during his tenure as the D2 Operations Engineer.

SH-3 is not on the interstate system. Therefore, the project match will be 7.34% and State funds will be used for the match.

The design of the SH-3, Bear Ridge Grade Emergency Escape Ramps, Latah Co project has not been started. In order to design the project with District resources, District 2 is requesting the following funding in FY 23: \$103,770 PE and \$65,400 PC. Consultant funds are needed in order to complete the on-site surveying of the emergency escape ramps. The environmental and administration requirements are included in the Preliminary Engineering line item in the Project Cost Estimate shown in Table 1 below. There will be no Right-of-Way needed for this project. District 2 is flexible on the construction year but would prefer to companion this project with the Key No. 23220, SH-3, BEAR RIDGE GRADE RESURFACING, LATAH CO, which is a FY28 Pavement Preservation project.

It is anticipated that the project will be ready for PS&E and Construction in FY28. District 2 is requesting \$103,770 CE and \$65,400 CC for Construction Engineering. The total cost of this project is anticipated to be \$ 2,747,947 CN and the Idaho Transportation Department will match with State funds at 7.34% for a total of \$ 201,699.

Work Item	Quantity	Unit Cost	Units	Item Cost
Emergency Escape Ramps				
Excavation	9,900	25	CY	\$ 247,500
Arrestor Material	18,000	30	TON	540,000
Milling	3,228	12.5	SY	40,350
Plantmix Pavement	1,126	90	TON	101,322
Escape Ramp Drainage Repair	1	50,000	LS	50,000
Chain Up Area, Break Check Area, & Other Truck Pulloffs				
Milling	13,122	12.5	SY	164,025
Soft Spot Repairs	485	60	SY	29,100
Plantmix Pavement	4,576	90	TON	411,858
Shoulder Barrier Improvements	11,474	28	FT	321,260
Shoulder Barrier Grading	1	60,845	LS	60,845
Temporary Traffic Control (10%)				196,626
Miscellaneous Items (10%)				216,289
Mobilization (10%)				<u>237,917</u>
Base Construction Cost				2,617,092
Construction Contingency (5%)				<u>130,855</u>
Total Construction Cost			CN	2,747,947
Preliminary Engineering			PE	103,770
Preliminary Engineering by Consultant			PC	65,400
Construction Engineering			CE	103,770
Construction Engineering by Consultant			CC	<u>65,400</u>
Total Project 2021 Present Cost			OTIS Total	<u>\$ 3,086,287</u>
Total Project 2028 Future Cost (With Inflation)				\$ 3,545,173

Table 1. Project Cost Estimate



Photo: Emergency Escape Ramp #1



Photo: Emergency Escape Ramp #2



Photo: Emergency Escape Ramp #3 without Signage

Project Details:

This project, sponsored by the Idaho Transportation Department, District 2, will rehabilitate the emergency escape ramps, chain up area, brake check area, and other truck pull offs on State Highway 3 between mile points 13.36 and 18.12.



Photo: Chain Up Area Needing Rehabilitation

This project will include rehabilitating the Emergency Escape Ramps on State Highway 3 at mile points 16.32, 14.84, and 14.07. The rehabilitation will consist of removing existing arrestor aggregate, drainage repairs, placing new arrestor material, updated advance warning signs and delineation, reconstructing the transition ramps into the arrestor beds, and rehabilitating the paved approaches between the highway and arrestor beds. In addition, this project will rehabilitate the Chain Up Area at the bottom of the grade, the Brake Check Area at the top of the grade, and 9 additional pull-offs used by trucks at various locations on the grade. The rehabilitation will consist of milling, soft spot repairs, constructing plantmix pavement overlays, and shoulder barrier improvements. All construction will adhere to the current version of the ITD Standard Specification for Highway Construction Standards



Photo: Truck Pull-off Needing Rehabilitation

This project is located within the current right of way and utility relocations are not anticipated.

State Highway 3 (SH-3) is a state highway in northern Idaho, connecting US Highway 12 near Spalding, east of Lewiston, with Interstate 90 near Rose Lake, east of Coeur d'Alene. It is 117.68 miles (189.4 km) in length and runs north–south, east of and generally parallel to Idaho's primary north–south highway, US Highway 95. Presently, SH-3 is classified as a Minor Arterial which handles intrastate and interstate cargo. As an intrastate route, SH-3 is used to transport logs and finished lumber products from the mills in St. Maries, Potlatch, Lewiston, and Clarkston WA, along with agricultural products from the Palouse to the Port of Lewiston for barge transport to the Pacific Coast.

The advantage of this project is that the new arrestor aggregate in the emergency escape ramps will have a higher rolling resistance to stop runaway vehicles quicker as has been proven on the last 3 emergency escape ramp rehabilitation projects done on the Lewiston and Whitebird Hills. It will also have a coarser gradation that will prevent the arrestor aggregate from freezing during the cold months. The higher performance arrestor aggregate, rehabilitated Chain Up, Brake Check, and pull off areas, and updated advance warning signs and delineation will make Bear Ridge Grade safer for commercial and passage traffic. This project will meet the Department's goal to improve safety, economic opportunity, and enhance the mobility of the traveling public.



Photo: Brake Check Area Needing Rehabilitation

Safety, Economic and Mobility Improvement Details:

Rehabilitated emergency escape ramp arrestor aggregate will outperform existing aggregate which will slow runaway vehicles quicker, will not freeze and become hazardous during the winter, and will require less maintenance for ITD year round. With the new arrestor aggregate it is anticipated that there will be a safer, more controlled deceleration resulting in less damage to the vehicle and increased safety for the driver. The economic cost to the community of a fatal crash is estimated to be approximately 10 million dollars based on the Highway Safety Manual, this 3 million dollar investment in maintenance of these critical escape ramps provides a significant benefit to the economy. In theory, just one runaway truck utilizing any of the escape ramps will provide a return on project investment and then for the next 50 years this project will provide an economic benefit every time an emergency escape ramp is used.

The 2019 Average Annual Daily Traffic (AADT) was 1,230 vehicles per day with 340 (27%) being commercial truck traffic. The 2050 projection for AADT indicates 2,100 vehicles per day with 650 (31%) being commercial truck traffic. The 2020 AADT data is not available for use.



Photo: Finished Lumber Truck Passing Emergency Escape Ramp 2

This project will not increase the traveling speeds for freight or non-freight traffic but the improvements on this project could save lives in runaway vehicles which would prevent the highway from being shut down for fatality crashes. Fatality crashes are a terrible tragedy leading to closed highways which creates economic burdens on freight and non-freight traffic.

This project does not increase traffic volumes or capacity.

The goal of this project is to save future lives. Rehabilitated emergency escape ramps will slow down runaway vehicles quicker than currently and should reduce the severity of the crashes and the damage to the vehicles. New, coarser arrestor aggregate will drain freely and will not freeze during the winters. Frozen emergency escape ramp arrestor beds are unable to slow down runaway vehicles which then lead to severe crashes. The downhill end of Bear Ridge Grade leads into the City of Kendrick. September of 2016 a runaway commercial vehicle passed the three emergency escape ramps and eventually lost control which led to a the driver's death (shown in Appendix III).

The 2016 to 2020 Crash Data shows that there were 14 crashes within the project limits in the following categories:

- 1 Fatality
- 1 Serious Injuries
- 3 Minor Visible Injuries
- 1 Possible Injuries / Complaint Crash
- 8 Property Damage

Idaho's fatality rate on U.S. and State Highways per 100 million vehicle miles traveled (AVMT) was 1.6. The proposed project has a fatality rate of 8.4 per 100 million AVMT. Idaho's total crash rate on U.S. and State Highways was 139.4 per 100 million AVMT in 2019. This project has a total crash rate of 117.46 per 100 million AVMT. This location was identified for consideration of a safety project due to the high fatal crash rate within the project limits which exceeded the Idaho average rate for U.S. and State Highways. See Appendix I for more details on the crash history within the proposed project limits.

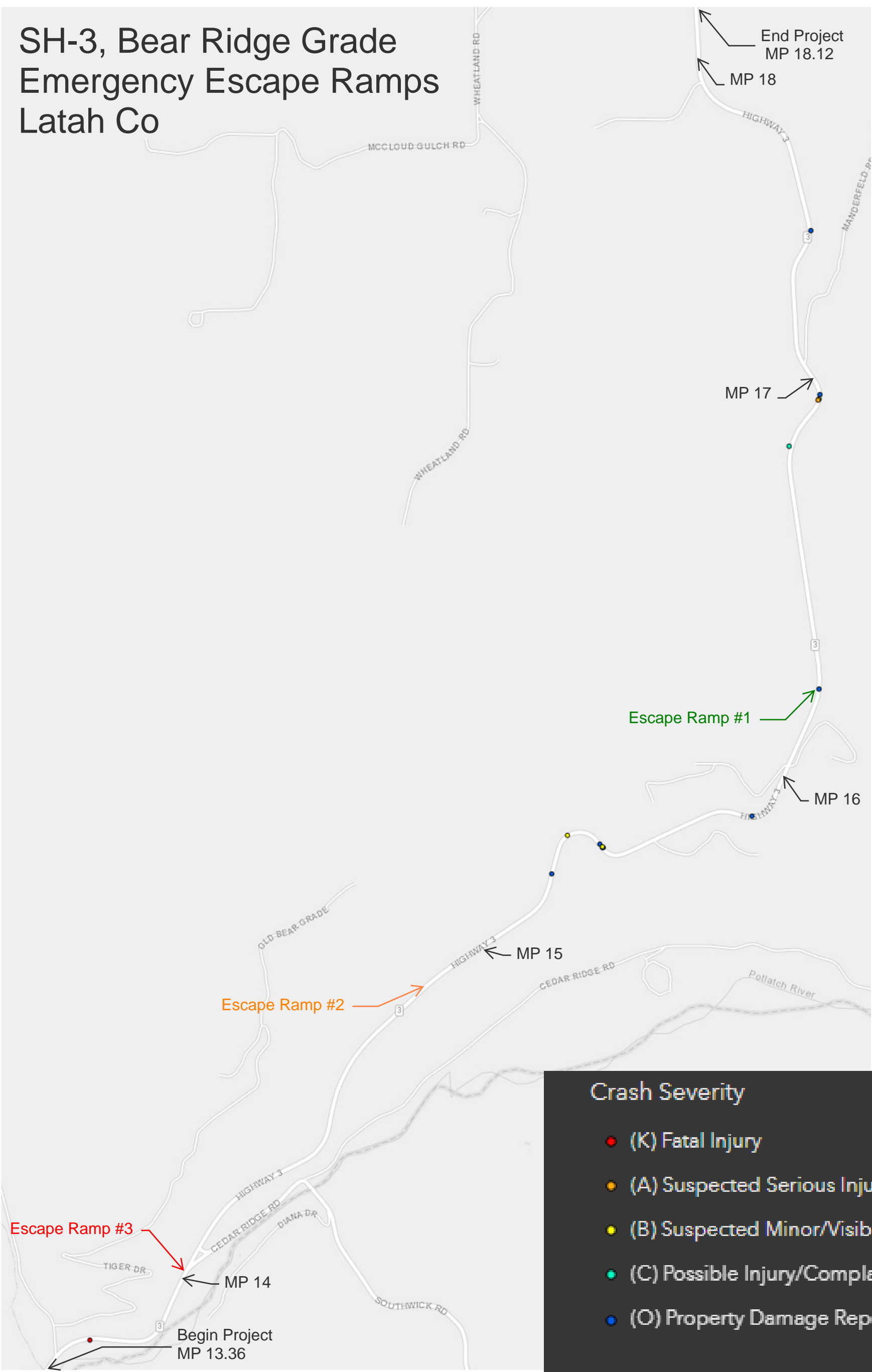
ITD used the following two counter measures to evaluate the safety benefit of the proposed project: Change Barrier along Embankment to less Rigid Type and Install Signs to Conform to MUTCD. It is estimated that these counter measures would prevent approximately 11 crashes over the 20 year service life. The calculated safety cost benefit ratio is 5.99. See Appendix II for more details about the Benefit Cost Ratio.

This project is not located on the National Highway Freight Network, but this the route is currently listed as one of Idaho's Critical Rural Freight Corridors (CRFC).

Appendix I-

Crash Map and Crash Report

SH-3, Bear Ridge Grade Emergency Escape Ramps Latah Co



Crash Severity

- (K) Fatal Injury
- (A) Suspected Serious Injury
- (B) Suspected Minor/Visible Injury
- (C) Possible Injury/Complaint
- (O) Property Damage Report

CRASH SUMMARY REPORT

SH-3, Bear Ridge Grade Emergency Escape Ramps

Created on November 30, 2021

Created by Janet Zarate

Requested by Janet Zarate

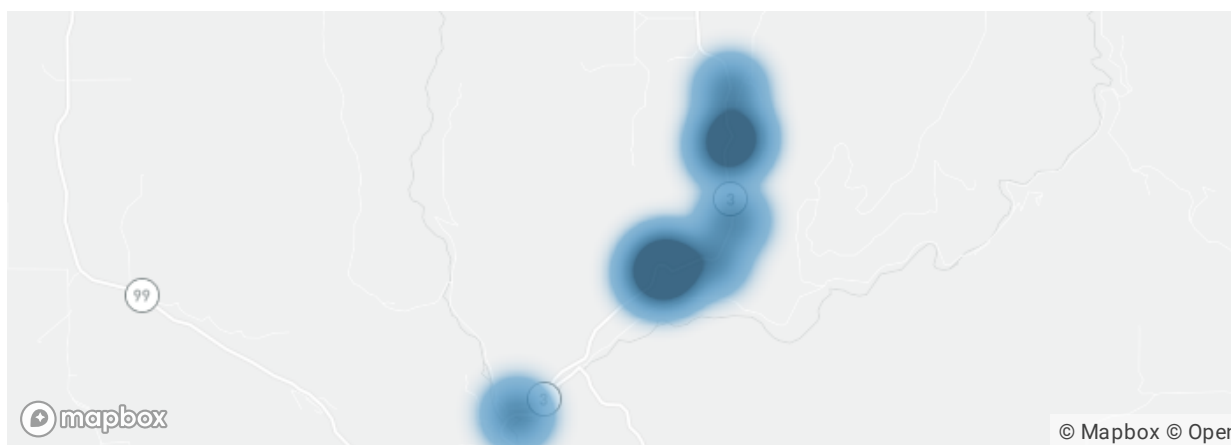
Data extents: May 20, 2016 to October 18, 2020


IDAHO
TRANSPORTATION DEPARTMENT

Applied Filters

Route / Street Name = SH 3 Route Measure ≤ 13.45176 - 17.87778

Accident Date ≤ 01/01/2016 - 12/31/2020



Total Crashes

14

Fatal Crashes

1

ITD Crash Summary

Crashes

Total Crashes	14	100.00%
Fixed Object Related	6	42.86%
Motorcycle Related	3	21.43%
Alcohol Related	1	7.14%
CMV Related	1	7.14%
Distracted Driver Related	1	7.14%
Fatal Crashes	1	7.14%
Impaired Driver Related	1	7.14%
+ 4 more	1	7.14%

Crash Severity

Crashes

(O) Property Damage Report	8	57.14%
(B) Suspected Minor/Visible Injury	3	21.43%
(A) Suspected Serious Injury	1	7.14%
(C) Possible Injury/Complaint	1	7.14%

(K) Fatal Injury	1	7.14%
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Date & Time (Year)	Crashes	
2020	2	14.29%
2019	2	14.29%
2018	1	7.14%
2017	4	28.57%
2016	5	35.71%
+ 9 more	0	0%

Urban / Rural	Crashes	
Rural	10	71.43%
Urban	0	0.00%

Intersection Related	Crashes	
No	14	100.00%
Yes	0	0.00%

Date & Time (Month of Year)	Crashes	
May	3	21.43%
June	5	35.71%
July	1	7.14%
September	2	14.29%
October	2	14.29%
December	1	7.14%
+ 6 more	0	0%

Date & Time (Day of Week)	Crashes	
Monday	1	7.14%
Tuesday	1	7.14%
Wednesday	2	14.29%
Thursday	3	21.43%
Friday	3	21.43%
Saturday	2	14.29%
Sunday	2	14.29%

County	Crashes	
Latah	14	100.00%
+ 43 more	0	0%

Most Harmful Event	Crashes	
Guardrail Face	4	28.57%
Overturn	4	28.57%
Concrete Traffic Barrier	3	21.43%
Embankment	2	14.29%
Animal - Wild	1	7.14%
+ 58 more	0	0%

Contributing Circumstances (All)	Crashes	
Speed Too Fast For Conditions	7	50.00%
Animal(s) in Roadway	3	21.43%
Failed to Maintain Lane	3	21.43%
Other Vehicle Defect	2	14.29%
Alcohol Impaired	1	7.14%
Brakes	1	7.14%
Following Too Close	1	7.14%
Inattention	1	7.14%
+ 32 more	2	14.28%

Appendix II-
Highway Safety Improvement Program
(HSIP) Analysis

Please input data in the colored cells:



District: 2
 Contact Person: Janet Zarate
 Email Address: janet.zarate@itd.idaho.gov
 Phone:
 Route: SH-3
 Project Name: SH-3, Bear Ridge Grade Emergency Escape Ramp
 Key Number:
 Segment Code: 01800ASH003
 Intersection/Cross Street:
 Beg MP: 13.360
 End MP: 18.120
 Total Project Cost (include non safety costs): \$ 3,086,287



PROJECT CRASH DATA AND COSTS

	Total Crash Count Previous 5 Years	Idaho Crash Costs (2017)	Economic Cost
*Fatal	1	\$10,179,994.00	\$10,179,994
*Serious Injury Crashes (A injury)	1	\$486,859.00	\$486,859
*Non-Incapacitating Injury Crashes (B injury)	3	\$132,605.00	\$397,815
*Possible Injury Crashes (C injury)	1	\$67,712.00	\$67,712
*Property Damage Only Crashes	8	\$3,430.00	\$27,440
TOTAL:	14	-	\$ 11,159,820

Countermeasure #1 :

Countermeasure: Change barrier along embankment to less rigid type

CMF ID: 40

Service Life, years: 20

Crash Reduction Factor (%): 41% Star Rating (1-5): 3 Type of Crashes: Run off Road

Crash Severity: K

Area Type: Not Specified

Countermeasure Analysis

	Crash Count for Previous 5 Years	% Crashes Addressed	Annualized Crashes	Est. Crashes Prevented Over Service Life	Cost Savings over Service Life	Annualized Crash Prevented
Fatal	1	100.00%	0.20	1.64	\$16,695,190	0.08
Serious Injury Crashes (A injury)	0	0.00%	0.00	0.00	\$0	-
Non-Incapacitating Injury Crashes (B injury)	0	0.00%	0.00	0.00	\$0	-
Possible Injury Crashes (C injury)	0	0.00%	0.00	0.00	\$0	-
Property Damage Only Crashes	0	0.00%	0.00	0.00	\$0	-
TOTALS:	1	7%	0.20	1.64	\$ 16,695,190	0.08

Notes:

Countermeasure #2 :

Countermeasure: Change barrier along embankment to less rigid type

CMF ID: 41

Service Life, years: 20

Crash Reduction Factor (%): 32% Star Rating (1-5): 3 Type of Crashes: Run off Road

Crash Severity: A, B, C

Area Type: Not Specified

Countermeasure Analysis

	Crash Count for Previous 5 Years	% Crashes Addressed	Annualized Crashes	Est. Crashes Prevented Over Service Life	Cost Savings over Service Life	Annualized Crash Prevented
Fatal	0	0.00%	0.00	0.00	\$0	-
Serious Injury Crashes (A injury)	1	100.00%	0.20	1.28	\$623,180	0.06
Non-Incapacitating Injury Crashes (B injury)	3	100.00%	0.60	3.84	\$509,203	0.19
Possible Injury Crashes (C injury)	1	100.00%	0.20	1.28	\$86,671	0.06
Property Damage Only Crashes	0	0.00%	0.00	0.00	\$0	-
TOTALS:	5	36%	1.00	6.40	\$ 1,219,054	0.32

Notes:

Countermeasure #3 :

Countermeasure: Install signs to conform to MUTCD

CMF ID: 62

Service Life, years: 20

Crash Reduction Factor (%): 15% Star Rating (1-5): 3 Type of Crashes: All

Crash Severity: A, B, C

Area Type: Urban

Countermeasure Analysis

	Crash Count for Previous 5 Years	% Crashes Addressed	Annualized Crashes	Est. Crashes Prevented Over Service Life	Cost Savings over Service Life	Annualized Crash Prevented
Fatal	0	0.00%	0.00	0.00	\$0	-
Serious Injury Crashes (A injury)	1	100.00%	0.20	0.60	\$292,115	0.03
Non-Incapacitating Injury Crashes (B injury)	3	100.00%	0.60	1.80	\$238,689	0.09
Possible Injury Crashes (C injury)	1	100.00%	0.20	0.60	\$40,627	0.03
Property Damage Only Crashes	0	0.00%	0.00	0.00	\$0	-
TOTALS:	5	36%	1.00	3.00	\$ 571,432	0.15

Notes:

Countermeasures Summary:

	Total Crashes for Mitigation Measures Previous 5-Years	Annualized Total Crashes	Service Life Est. Crashes Prevented	Annualized Economic Cost Savings	% Crashes Mitigated
*Fatal	1	0.20	0.08	\$ 834,760	41.0%
*Serious Injury Crashes (A injury)	1	0.20	0.09	\$ 45,765	47.0%
*Non-Incapacitating Injury Crashes (B injury)	3	0.60	0.28	\$ 37,395	47.0%
*Possible Injury Crashes (C injury)	1	0.20	0.09	\$ 6,365	47.0%
*Property Damage Only Crashes	0	1.60	0.00	\$ -	0.0%
TOTALS:	6	2.80	0.55	\$ 924,284	3.9%

BENEFIT COST RATIO

Benefit cost ratio is computed by multiplying the Annualized Economic Cost Savings by the assumed service life of the project, 20-years, and then dividing by the total construction cost.

5.99

Appendix III-
The Lewiston Tribune-Kendrick Fatality
Article

https://Imtribune.com/northwest/kendrick-fatality/article_4c09bf53-0b3c-55d1-a871-800e682cf65b.html

Kendrick fatality

Sep 16, 2016



A 27-year-old St. Maries man died early Thursday when his loaded logging truck left the road in Kendrick and overturned. Detreik S. Vaughn was traveling south around 7:20 a.m. on State Highway 3 in a loaded 2000 Peterbilt logging truck near the bottom of the Kendrick Grade when the Idaho State Police said the truck veered across the median, tipped over, rolled into a ditch and overturned. Police said they received reports from witnesses who saw the truck's brakes smoking near the top of the grade, three miles north of the accident. The driver was pronounced dead at the scene.

Thad Davis photo

Thad Davis photo A 27-year-old St. Maries man died early Thursday when his loaded logging truck left the road in Kendrick and overturned. Detreik S. Vaughn was traveling south around 7:20 a.m. on State Highway 3 in a loaded 2000 Peterbilt logging truck near the bottom of the Kendrick Grade when the Idaho State Police said the truck veered across the median, tipped over, rolled into a ditch and overturned. Police said they received reports from witnesses who saw the truck's brakes smoking near the top of the grade, three miles north of the accident. The driver was pronounced dead at the scene.