

DESIGN APPROVAL

OLD STEESE HIGHWAY SHOULDER WIDENING

PROJECT NO. NFHWY00527 / 0002(472)

Requested by:

Carl F. Heim, P.E. Engineering Manager Northern Region 11-29-2022

Date

Design Approval Granted:

Sarah Schacher, P.E. Preconstruction Engineer Northern Region 12/2/2022

Date

Distribution: NR Design Directive 20-01 Distribution

DESIGN STUDY REPORT FOR

OLD STEESE HIGHWAY SHOULDER WIDENING

PROJECT NO. NFHWY00527 / 0002(472)

PREPARED BY: Tadeusz Tomasic, P.E.



ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES NORTHERN REGION DESIGN, ENGINEERING, & CONSTRUCTION NOVEMBER 2022

OLD STEESE HIGHWAY SHOULDER WIDENING PROJECT NO, NFHWY00527 / 0002(472)

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INTRODUCTION/HISTORY

The Old Steese Highway is a rural collector located North of Fairbanks and supports an Average Annual Daily Traffic (AADT) of 1,400 vehicles per day. The highway is located in flat terrain with total truck volume of 3.75%.

A crash analysis on the corridor of the Old Steese Highway from Gold Dredge #8 to the Fox Intersection examined 1 fatal, 2 serious injury, and 2 property damage only (PDO) crashes over a 4 year time period. An additional fatal crash occurred outside the analysis period within the project limits. Current shoulder widths within the corridor vary between 2 inches to 2 feet, averaging 1 foot.



Figure 1: Location and Vicinity Map

PROJECT DESCRIPTION

The Alaska Department of Transportation & Public Facilities (DOT&PF) proposes to construct data driven highway safety improvements on the Old Steese Highway (see Figure 1). Improvements will include reconstructing and widening the highway with 6 foot shoulders. The new roadway will be approximately 10 feet wider than existing. The shoulders will accommodate bicycles and pedestrians. The crash analysis indicates that increasing the shoulder width to 6 feet will provide a 23% crash reduction run-off-road, head on, and sideswipe crashes (See Appendix C for Crash Reduction Factor work sheet).

The project includes the following elements:

- Construction of 6 foot shoulders.
- Minor realignment to horizontal curve nearest BOP to conform to current design standards.
- Replacement of existing guardrail to conform to current design standards.
- Raising crossing overhead utilities at 6 locations from a vertical clearance of 18 feet or less to 20.5 feet or more.
- Construction of drainage ditches.
- Replacement of old culverts.

DESIGN STANDARDS

The design standards followed for this project are:

- *A Policy on the Geometric Design of Highway and Streets* (GB), 2011, American Association of State Highway and Transportation (AASHTO).
- *Alaska DOT&PF Highway Preconstruction manual* (PCM), State of Alaska, Department of Transportation and Public Facilities (ADOT&PF).
- Alaska Flexible Pavement Design Manual, 2004, ADOT&PF, and associated software.
- Alaska Traffic Manual (ATM), 2016, ADOT&PF.
- *Roadside Design Guide*, 2011, AASHTO.

The project design designation and design criteria are included in Appendix. A design speed of 50 miles per hour was selected in accordance with PCM and GB guidance. Old Steese Highway is a rural collector with flat terrain.

DESIGN EXCEPTIONS AND DESIGN WAIVERS

There are no design exceptions or design waivers.

DESIGN ALTERNATIVES

Use of Asphalt Treated Base (ATB)

PREFERRED DESIGN ALTERNATIVE

Use of Crushed Asphalt Base Course (CABC)

This proposed alternative would use CABC in lieu of ATB in the pavement structure typical section. Following pavement analysis and consultation with the DOT*PF's materials and geotechnical sections, use of CABC will provide suitable support throughout the pavement's design life. Due to low truck volume and competent foundation soils consisting of mining tailings, use of the costlier ATB is not necessary.

3R ANALYSIS

Not applicable.

TRAFFIC ANALYSIS

Old Steese Highway is classified as a major rural collector. Present year (2022) ADT was 1,412 vehicles per day (3.75% trucks), and is projected to be 1,687 vehicles per day in the design year (2043). See the project design designation in Appendix A for additional information.

HORIZONTAL/VERTICAL ALIGNMENT

This project will reconstruct Old Steese Highway primarily on the existing horizontal and vertical alignment, however, the centerline at the first horizontal curve will be flattened and shift approximately 4.75 feet to conform to current design standards.

The terrain in the project area is flat. Existing grades throughout the project vary from 0.04% to 2.45%. Grades post-construction will be similar to existing conditions. Minor elevation adjustments will be made to balance cut/fill quantities. See Appendix D for preliminary plan and profile sheets.

TYPICAL SECTION(S)

Insert text here.

Old Steese Highway corridor will consist of 12 foot lanes with 6 foot paved shoulders. Widening will take place primarily between BOP and guardrail section towards EOP.



Figure 2 Old Steese Widening Typical Section

PAVEMENT DESIGN

The selected pavement design was evaluated using the Alaska Flexible Pavement Manual and associated software. The design life of the pavement is 20 years in accordance with the General Policy-6. The preliminary pavement design was based on General Policy-6 and General Policy-13.

The selected pavement design consists of 2-inches hotmix asphalt, type II; class "A", 4-inches of crushed asphalt base course (CABC), 12-inches of select material type A outside of existing shoulders, and 36-inches of select material type A beyond existing toe of slope. See Appendix C for the approved pavement design and engineering calculations.

PRELIMINARY BRIDGE LAYOUT

Not applicable. There are no bridges within the project limits.

RIGHT-OF-WAY REQUIREMENTS

All improvements will occur within existing right of way limits. Temporary Construction Permits will be obtained for driveway reconstruction. Housing encroachment on the southeast corner of the Old Steese and Goldstream intersection is within DOT&PF right of way by approximately 13 feet by 43 feet (triangular) for an area of approximately 280 square feet (see Figure 3). DOT&PF Property Management staff is working with the property owner on vacation and/or temporary permitting to rectify this issue.



Figure 3, Encroachment

MAINTENANCE CONSIDERATIONS

Primary M&O concerns are rehabilitation of drainage. To address these issues, new ditches will be installed at cut locations, and new culverts will replace existing culverts at the end of their service life. The widened shoulders will increase pavement area by approximately 1.6 lanemiles through this corridor. During winter maintenance, widened shoulders will provide greater interim snow storage without altering plow operations/number of passes.

MATERIAL SOURCES

Material requirements include paving aggregates, aggregate base course, crushed asphalt base course, and select material type A. CABC will be generated from reclamation of existing asphalt; all other materials will be contractor furnished. Commercial sources are available in the area for select materials and paving products. Material sites will be Contractor furnished.

UTILITY RELOCATION & COORDINATION

Preliminary utility relocation plans (65%) and cost estimate have been developed for this project. The preliminary plans have been reviewed by the Department and affected stakeholders and comments received will be incorporated into the final design.

Utility coordination and relocation is required for this project. Alaska Communications (ACS) and Golden Valley Electric Association (GVEA) have overhead utilities crossing the Old Steese Highway at a substandard vertical clearance.

ACCESS CONTROL FEATURES

No access control features are included. Old Steese Highway in not a fully access controlled facility, and access control is maintained by the driveway permitting process.

PEDESTRIAN/BICYCLE (ADA) PROVISIONS

Existing shoulders average 1 foot width within project corridor. Currently, no ADA accommodations are present for cyclists or pedestrians. This project will construct 6 foot shoulders which will accommodate cyclists and pedestrians.

SAFETY IMPROVEMENTS

This project involves the following safety improvements identified in the HSIP project nomination (see appendix F).

- Add 6 foot paved shoulders to reduce run-off the road type crashes
- Relocate utilities to meet vertical clearance requirements
- Adjust substandard horizontal curve near BOP to meet design speed requirements.

INTELLIGENT TRANSPORTATION SYSTEM FEATURES

Not applicable. There are no intelligent transportation system features within the project limits.

DRAINAGE

Drainage in the project area typically flows toward Fox Creek and Goldstream Creek. Existing ditches and culverts generally appear adequately sized for conveying surface runoff away from the roadway. Ditches and cross culverts will be constructed to accommodate the widened roadway to keep water out of the embankment. Culverts will be limited to 36" diameter.

SOIL CONDITIONS

The corridor is located in the Tanana Hills which constitute part of the Yukon Tanana Upland. This area was the scene of gold dredging operations in the 1940s to early 1950s. The structure foundation of the road primarily consists of dredge tailings and bedrock schist. Current roadway structural conditions indicate competent foundation soils.

The average monthly air temperature, freezing degree days, and thawing degree days for Fairbanks, AK are provided in table 1. Historical climate data for the 1981-2010 was taken from the Western Regional Climate Center website. The mean annual air temperature is 27.9 F, and the freezing and thawing indices are 5,029 F-days and 3,604 F-days respectively.

Month	Mean	Freezing Degree	Thawing Degree
	Temperature (F)	Days ()	Days ()
Jan	-6.5	1192.0	0
Feb	-0.9	920.6	0
Mar	12.3	611.5	0
Apr	32.4	77.7	89.3
May	49.8	0	550.3
Jun	60.6	0	857.8
Jul	62.6	0	947.9
Aug	56.3	0	754.3
Sep	45.0	0	389.8
Oct	24.3	253.8	14.5
Nov	3.4	857.8	0
Dec	-4.0	1115.6	0
	TOTAL	5,029.0	3,603.6

Table 1 Mean Monthly Air Temperature and Freezing/Thawing Degree Days.

EROSION AND SEDIMENT CONTROL

The area of ground disturbance is approximately 15 acres. A SWPPP will be required. The project will begin construction in 2023. During construction, erosion sediment control policy (ESCP) will consist of temporary best management practices (BMP) such as the use of fiber matting, track walking, and coverage of stockpiles to prevent erosion; and perimeter control primarily using vegetative buffer where applicable, and where buffer requirements cannot be met, use of perimeter control devices (e.g. silt fence, waddles) will be employed. Finished slopes will be seeded for permanent erosion prevention. BMPs will require using a certified weed-free native perennial grass seed mix for soil stabilization.

ENVIRONMENTAL COMMITMENTS

There are no project-specific environmental commitments for this project. Approved environmental document signature page is included in Appendix B.

WORK ZONE TRAFFIC CONTROL

The preferred work zone traffic control will be to maintain one way traffic during construction. Nearby intersections at Goldstream and Fox will facilitate one way closures such that commercial and residential access impacts are minimized. The contractor will be required to provide and follow a Traffic Control Plan for all phases of construction that will maintain stakeholder access within project limits. The project is not considered significant per the PCM section 1400.2.

VALUE ENGINEERING

A value engineering study will not be prepared because the total estimated cost is less than the minimum threshold (PCM 450.15 and Policy and Procedure 05.01.030).

COST ESTIMATE

The estimated costs for this project are as follows:

Design	\$394,000.00
Utilities	\$112,500.00
Right of Way	\$0.00
Construction (Includes 15.00% Engineering)	\$4,949,000.00
Total Cost of Project	\$5,455,500.00

Attachments:

Appendix A: Design Criteria and Design Designation

- Appendix B: Environmental Document Signature Page
- Appendix C: Highway Safety Improvement Program Nomination
- Appendix D: Pavement Design
- Appendix E: Preliminary Plan and Profile Sheets

APPENDIX A

DESIGN CRITERIA AND DESIGN DESIGNATION

ALASKA DOT&PF PRECONSTRUCTION MANUAL Chapter 11 - Design PROJECT DESIGN CRITERIA

Project Name:	Old Steese Highv	vay Shoulder	Widening			
✓ New Construction/Reconstruction	3R	PM	Other	:		
Project Number:					NHS	✓ Non NHS
Functional Classification:	Rural Major Colle	ctor				
Design Year:	2043		Present ADT:			1,412 (2022)
Design Year ADT:	1,687		Mid Design Pe	riod ADT:		1,550 (2033)
DHV:	11.90%		Directional Spl	lit:		65/35
Percent Trucks:	3.75%		Equivalent Axl	e Loading:		149,082
Pavement Design Year:	2043		Design Vehicle):		WB-62
Terrain:	Flat		Number of Roa	adways:		1
Design Speed:	50 MPH					
Lane Width:	11 FT					
Shoulder Width:	Outside:	6 FT		Inside:	0 FT	
Cross Slope:	2%					
Superelevation:	e max = 6%					
Min. Radius of Horizontal Curvature:	835 FT					
Maximum Allowable Grade:	6%					
Stopping Sight Distance:	425 FT					
Vertical Clearance:	20.5 FT					
Design Loading Structural Capacity:	HS 15					
Bridge Width:	None					
Min. Allowable Grade:	0%					
Min. K-Value for Vert. Curves:	Sag:	96		Crest:	84	
Passing Sight Distance:	1835 FT			•		
Surface Treatment:	T/W:	Asphal	t Concrete	Shoulders:	Aspha	alt Concrete
Side Slope Ratios:	Foreslopes:		4:1, 3:1, 2:1	Backslopes:	3:1, 2:	1
Degree of Access Control:	No access contr	ol, permitte	d driveways allo	wed		
Median Treatment:	None					
Illumination:	None					
Lateral Offset to Obstruction:	None					
Curb Usage and Type:	None					
Bicycle Provisions:	6 FT Shoulder					
Pedestrian Provisions:	6 FT Shoulder					
Misc. Criteria:						

Proposed - Designer/Consultant: Endorsed - Engineering Manager: Approved - Preconstruction Engineer:

Tilla	
Smah Chall	
<u> </u>	

Date: 11.10.2022	
Date: 11-29-2022	
Date: 11/29/2022	

Shaded criteria are commonly referred to as *FHWA controlling criteria for NHS high-speed roadways (design speed >= to 50 mph)*. For NHS low-speed roadways (design speed < 50 mph), the only two *FHWA controlling criteria* which apply are design speed and design loading structural capacity. For NHS routes only, controlling criteria must meet the minimums established in the Green Book, unless a design exception is approved. For all other routes, all criteria must meet the minimums established in the Alaska Highway Preconstruction Manual, unless a Design Waiver is approved.

Design Criteria marked with a "#" do not meet minimums and must have a Design Exception(s) and/or Design Waiver(s) approved. See the Design Study Report for Design Exception/Design Waiver approval(s) and approved design criteria values.

DESIGN DESIGNATION Northern Region Planning Traffic Data & Forecasting

ROUTE NAME:	Old Steese Highway
CDS NO:	150105
ROUTE ID:	2581130X000
MILEPOINT:	6.350-8.568
FUNCTIONAL CLASS:	Major Collector
URBAN/RURAL:	Rural

	YEAR	AADT	%	
	2021	1400		
AADT	2030	1510		
	2040	1640		
DHV	2030		11.90	180
	2040			200
D				35-65
Т			3.75	Total
			0.10	Class 4
			3.40	Class 5
			0.25	Class 6
ESAL'S	To Be Provided			
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Traffic Data Request Form TDR Form-1-10/20/03							
Alaska Department of Transportation & Public Facilities							
Requested By: Carl Heim			Design Project Num NFHWY00527	ber:		Date Requested: 6/15/22	
Base Year:	2021		Common Route Nam Old Steese Hw	ne: y		CDS Route Name:	
Base Year Tota	I AADT:	1400	Functional Class:		2581130X000		
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Scott Vockeroth			\bigcirc			6/23/2022	



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Southcoast * Present AADT Design Year AADT Mid-Design Year AADT (Please specify Year) 2040 Mid-Design Year AADT (Please specify Year) 2030 Design Hourly Volume (DHV) Directional Split (D) Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * ease specify any other requested data fields not listed above:			Northern
Present AADT (Please specify Year) 2040 Mid-Design Year AADT (Please specify Year) 2030 Design Hourly Volume (DHV) Directional Split (D) 2030 Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * Intersection Turning Movements (Please specify Locations) * Intersection Turning Movements (Please specify Locations) *			
Present AADT Present PresentPresent Present Present Present Pre			Southcoast
Present AADT (Please specify Year) 2040 Mid-Design Year AADT (Please specify Year) 2030 Design Hourly Volume (DHV) Directional Split (D) Directional Split (D) Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) Intersection Turning Movements (Please specify Locations) Intersection Turning Movements (Please specify Locations) Intersection Turning Movements (Please specify Locations)	ata Fields Reques	sted: (please pick at least	one) *
Design Year AADT (Please specify Year) 2040 Mid-Design Year AADT (Please specify Year) 2030 Design Hourly Volume (DHV) Directional Split (D) Encent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) Lease specify any other requested data fields not listed above: Intersection Turning Movements (Please specify Locations)	Present AADT		
Mid-Design Year AADT (Please specify Year) 2030 Design Hourly Volume (DHV) Directional Split (D) Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * Intersection Turning Movements (Please specify Locations) * Intersection Turning Movements (Please specify Locations) *	Design Year AA	DT ·	(Please specify Year) 2040
Design Hourly Volume (DHV) Directional Split (D) Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * lease specify any other requested data fields not listed above:	Mid-Design Yea	r AADT	(Please specify Year) 2030
Directional Split (D) Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * lease specify any other requested data fields not listed above:	Design Hourly W	(olume (DH\/) »)	
Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * Lease specify any other requested data fields not listed above:	Directional Calit		
Percent Trucks Road Functional Classification Intersection Turning Movements (Please specify Locations) * lease specify any other requested data fields not listed above:	Directional Split	(D) *	
Road Functional Classification Intersection Turning Movements (Please specify Locations) * lease specify any other requested data fields not listed above:	Percent Trucks	•	
Intersection Turning Movements (Please specify Locations) *	Road Functiona	I Classification	
lease specify any other requested data fields not listed above:	Intersection Tur	ning Movements (Please spe	cify Locations) *
lease specify any other requested data fields not listed above:			
	lease specify any	other requested data fiel	ds not listed above:

Route ID	Route Name	Measure	Feature	Location	Attribute1	Attribute2	Attribute3
2581130X000	Old Steese Hwy (Fairbanks)	0.0000)	Route Begin			
2581130X000	Old Steese Hwy (Fairbanks)	0.0000)	Report Begin			
2581130X000	Old Steese Hwy (Fairbanks)	0.0000) AHS	Begin	Alaska Highway System: Road is no	ot on the Alaska Highway S	System
2581130X000	Old Steese Hwy (Fairbanks)	0.0000) Functional Class	Begin	Functional Class: Major Collector		
2581130X000	Old Steese Hwy (Fairbanks)	0.0000) NHS	Begin	NHS: Not NHS		
2581130X000	Old Steese Hwy (Fairbanks)	0.000) Speed	Begin	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	0.1272	2 Speed	End	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	0.1272	2 Speed	Begin	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	2.259	Speed	End	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	2.259	Speed	Begin	Posted Speed Limit: 50		
2581130X000	Old Steese Hwy (Fairbanks)	4.461	7 FHWA Urban Area	Begin	Urbanized Area Type: Rural Area	Urbanized Area Name:	Rural
2581130X000	Old Steese Hwy (Fairbanks)	5.8652	2 Traffic Link	Begin	AADT: 560	AADT Year: 2020	Traffic Link ID: AL000910
2581130X000	Old Steese Hwy (Fairbanks)	6.5209	Traffic Link	End	AADT: 560	AADT Year: 2020	Traffic Link ID: AL000910
2581130X000	Old Steese Hwy (Fairbanks)	6.5209	Traffic Link	Begin	AADT: 910	AADT Year: 2020	Traffic Link ID: AL003167
2581130X000	Old Steese Hwy (Fairbanks)	6.5209	Intersections	Point	Intersection Name: OLD STEESE @	FOX & Beistline Lane	
2581130X000	Old Steese Hwy (Fairbanks)	6.9762	2 Traffic Link	End	AADT: 910	AADT Year: 2020	Traffic Link ID: AL003167
2581130X000	Old Steese Hwy (Fairbanks)	6.9762	2 Traffic Link	Begin	AADT: 800	AADT Year: 2020	Traffic Link ID: AL000911
2581130X000	Old Steese Hwy (Fairbanks)	6.9762	2 Intersections	Point	Intersection Name: OLD STEESE @) FOX & GOLDSTREAM F	ROAD
2581130X000	Old Steese Hwy (Fairbanks)	7.0398	3 Speed	End	Posted Speed Limit: 50		
2581130X000	Old Steese Hwy (Fairbanks)	7.0398	3 Speed	Begin	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	7.2883	3 Intersections	Point	Intersection Name: OLD STEESE @	FOX & Dredge Bucket R	oad
2581130X000	Old Steese Hwy (Fairbanks)	7.543	Intersections	Point	Intersection Name: OLD STEESE @	FOX & Conveyor Street	
2581130X000	Old Steese Hwy (Fairbanks)	7.7934	Intersections	Point	Intersection Name: OLD STEESE @) FOX & Beth Court	
2581130X000	Old Steese Hwy (Fairbanks)	8.0293	3 Intersections	Point	Intersection Name: OLD STEESE @) FOX & Kaylee Lane	
2581130X000	Old Steese Hwy (Fairbanks)	8.4153	3 Traffic Link	End	AADT: 800	AADT Year: 2020	Traffic Link ID: AL000911
2581130X000	Old Steese Hwy (Fairbanks)	8.4153	3 Traffic Link	Begin	AADT: 1200	AADT Year: 2020	Traffic Link ID: AL003168
2581130X000	Old Steese Hwy (Fairbanks)	8.500	5 Intersections	Point	Intersection Name: OLD STEESE @) FOX & Ramp	
2581130X000	Old Steese Hwy (Fairbanks)	8.5309) AHS	End	Alaska Highway System: Road is no	ot on the Alaska Highway S	System
2581130X000	Old Steese Hwy (Fairbanks)	8.5309	FHWA Urban Area	End	Urbanized Area Type: Rural Area	Urbanized Area Name:	Rural
2581130X000	Old Steese Hwy (Fairbanks)	8.5309	Functional Class	End	Functional Class: Major Collector		
2581130X000	Old Steese Hwy (Fairbanks)	8.5309) NHS	End	NHS: Not NHS		
2581130X000	Old Steese Hwy (Fairbanks)	8.5309	9 Speed	End	Posted Speed Limit: 40		
2581130X000	Old Steese Hwy (Fairbanks)	8.5309	Traffic Link	End	AADT: 1200	AADT Year: 2020	Traffic Link ID: AL003168
2581130X000	Old Steese Hwy (Fairbanks)	8.5309)	Report End			
2581130X000	Old Steese Hwy (Fairbanks)	8.5309)	Route End			

ATLAS report 6/22/22

Computations and Historical Data Project: Old Steese Shoulder Widening

Historical AADTs

Traffic												Ye	ear		
Link	Start M	IP Sta	rt Feat	ure	Ene	d MP	End Fe	eature		1980	1981	1982	1983	1984	1985
1	6.521	Bei	stline D)r	6.9	76	Goldst	ream R	d						
2	6.976	Go	ldstrea	n Rd	8.4	15	Turtle (Club En	trance						
3	8.415	Tur	tle Clul	o Entrai	nce 8.5	31	End of	Road							
									-						
								Year							
Link	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1		569	731	944	572	566			626		660			710	
2	800	814	790	674	751			748		752			814		
3	876				1180			1115		1361			1530		
	•														
								Year							
Link	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1		704	810	843		828	982	1015	855	968	849	863	1192	1041	745
2		958	1100	939	949		1381	1334	1185	1225	1180	1213	1380	1216	1060
3		1298	1429	1528	1364	1399	2149	2040	1598	1777	1795	1836	1717	1695	1446
	-														
			Ye	ar											
Link	2016	2017	2018	2019	2020	2021									
1	979	818	779	763	910	990	-								
2	1128	1154	1065	979	800	870									
3	1534	1530	1303	1451	1200	1300									
Grow	vth Rat	te	0.859	% Bas	sed on	previou	us desig	n	Gr	owth	Facto	rs	Year	Facto	or
				des	signatio	ns and	historic	al					2030	1.07	9
				trer	nds								2040	1.17	4
Futu	re AA[т													
			Voor						וח	Facto	r (30)	2	5 65		
			10004	4401						acio	(30)	3	5-05		
			2021	1400											
			2030	1510											
			2040	1640											
		.			.			-		_					
K-Fa	ctor (3	()	11.90	%	Obtain	ed fron	n Contir	ious Co	ount at	Farme	rs Loop	Rd We	est of Si	teese E	хру
Desig	gn Hoı	urly V	olume) (DH)	/)	2030	180								
						2040	200								
Class	s Data														
										P	ercent	by Cla	SS		Tot
Statio	n ID	Statior	n Desci	ription			Yea	ar 4	5	6	8	9	10	13	Truc
1392	20520	Farmer	s Loop	West c	of Stees	e Exp	/ 20	21 0.	10 3.4	40 0.	25 0.0	0. 00	00 0.0	0.0 0.0	00 3.7
						Load F	actor	1.0	0 0.5	0 0.8	5 1.2	0 1.5	5 2.2	4 2.2	4
						Numbe	er of Ax	les 2/3	2	3	4	5	6	7+	

APPENDIX B

ENVIRONMENTAL DOCUMENT SIGNATURE PAGE

Environmental Documentation Approval Signatures

Prepared by:

H Blain Fund

Date: 9/30/2021

Blair French Environmental Impact Analyst III

Reviewed by:

 $) \perp ($

Date: 9/30/2021

Carl F Heim Engineer/Architect III

Approved by:

Brett D Nelon

Date: 9/30/2021

Brett Nelson Environmental Impact Analysis Manager I

14 of 14

APPENDIX C

HIGHWAY SAFETY IMPROVEMENT PROGRAM NOMINATION

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES Northern Region Traffic & Safety Section

FFY20 Highway Safety Improvement Program Candidate Projects Project Description and Cost Estimate

Candidate Project Name:

20NR01 Old Steese @ Fox Shoulder Widening

Candidate Project Location:

This project is located on the Old Steese @ Fox between the Gold Dredge 8 property and the Steese/Old Steese/Elliott Highway intersection.

Safety Problem Description:

The north end of the Old Steese Highway at Fox currently has shoulders that vary from a few inches to 2-3 feet. Crashes in the area are generally from single vehicle run off the road events and have resulted in 1 fatal, 2 serious injury and 2 PDO crashes over the 4 year analysis period. An additional PDO crash was reported in this area from a sideswipe collision. Although not included in benefit cost computations, a SVROR fatal motorcycle crash occurred in spring 2019 within the proposed limits of this project.

Proposed Mitigation:

To mitigate these crashes, it is proposed to add 6' shoulders to the facility. This portion of the roadway is built on tailings and is stable. Because of the variation in shoulder width, the before condition is assumed to be an average of a 1' wide paved shoulder. The proposed width of the future paved shoulder of 6' provides a recovery area and as well as accommodate bicycles and pedestrians in this area.

Per the shoulder widening CRF worksheet, providing a 6' shoulder where there was once a 1' shoulder at an AADT of 1,446 is anticipated to provide a 23% crash reduction.

Conformance with the Strategic Traffic Safety Plan:

Reducing lane departure crashes is Strategy 1 of the Roadway Emphasis Area of the Strategic Highway Safety Plan.

Benefit/Cost Ratio:

This project has a benefit/cost ratio of **0.89:1**.

Cost Estimate:

Preliminary Engineering (Phase 2):	\$400,000	FFY 20
Right of Way (Phase 3):	\$0	
Utilities (Phase 7):	\$0	FFY 23
Construction (Phase 4):	\$3,625,000	FFY 23

TOTAL: \$4,025,000

HQ Reporting Information

	Old Steese @Fox
CDS Route	150105
Milepoint Range	6.3500-8.568
Ownership	State
Speed Limit	50 mph south of Goldstream Rd; 40 mph north of Goldstream Road
Functional Class	Major Collector
2015 ADT	1446

Attachments

Vicinity Map Shoulder Widening CMF Worksheet Project Ranking Worksheet Construction Cost Estimate Crash Data



	Road:	From:	То:	
	AADT (assumed constant across impro	ovement)		1446
N	BEFORE Improvement			
P	Existing Shoulder Width, in feet	select from pulldown list ==	->	1
U	Existing Shoulder Type	select from pulldown list ==>		Paved
Г	AFTER Improvement			
	Proposed Shoulder Width, in feet	select from pulldown list =	=>	6
	Proposed Shoulder Type	select from pulldown list ==	>	Paved
		AMF - Accident Predi	ction based on Shoulder Width (Figure 3.) 1.291	
;		AMF - Accident Pred	diction based on Shoulder Type (Table 3.) 1.000	
)		AMF Product - Accident Predic	ction for BEFORE Shoulder Width & Type	1.291
1		AMF - Accident Predi	ction based on Shoulder Width (Figure 3.) 1.000	
•		AMF - Accident Pred	diction based on Shoulder Type (Table 3.) 1.000	
		AMF Product - Accident Predic	ction for BEFORE Shoulder Width & Type	1.000
sh Re	eduction Factor (- is reduction. +	is increase)		-23%

Accidents susceptible to correction: Single Vehicle ROR, Same and Opposite Lane Sideswipe, Head-on

Source: FHWA -RD-99-207

"Prediction of the Expected Performance of Rural Two-Lane Highways"

The composite shoulders represent a shoulder for which 50 percent of the shoulder width is paved and 50 percent of the shoulder width is turf.

				P	roje	ighway ect	Alas y Safety Ran	et F	Red field Black fie ompute	<mark>ds are i</mark> elds are ed, or d	nput fiel fixed, erived.	ds.			
	HSIP Project Name:			20N	20NR01 - Old Steese @ Fox Shoulder Widening									6	
	Analysis Period:	1/1.	/13	to	1	2/31/	16	For	m Completed by	/:	Pam Golde	n	Date:	7/5	/19
	Miscellar	neous	Data	а		1					Crash	Cost	Data		
	Rate of Return:			39	%				Des	Cras	h Severity		Cı	rash C	ost
	No of years of crash analy	4	.	l			Min Ser Fat	perty Dan or Injury: ious Injury ality:	/:		\$	\$213,00 \$213,00 1,064,00 2,129,00) 0 00 00		
		Predi	cted	Chan	ige i	n Cra	ashes	s du	e to Impr	oveme	ent(s)				
lmprv Type	Improvement			Type of Crash Susceptible to Reduction or Increase						Reduction Factor	# of 0 to Re	Crashe eductio	s Suscon or Inc	eptible crease	
Num 301	widen shoulders from 1' to 6'				du RO	e to Im R, Head	on, Sides	nent swipe			(+ or -) -23%	PDO 3	Min	Ser 2	Fat 1
						Fotal C	Crashes	Susc	eptible to R Predicter	eduction	or Increase: in Crashes:	3		2 -0.5	-0.2
				Predicted Change in Crash Cos							ost (\$1,000): -15 -489 -490				
	Be	enefit	/Cos	t of Improvements (Safety and M&O Benefits Only)											
	Improvement	Total Proj Cost (K)	Ann M/O Cost (K)	Life of Impvt (vrs)	PDO	Pred Char Cra Min	licted nge in Ishes Ser	Fat	Predicted Change ir Crash Cost	Annu n Sa and Ber	alized Annu fety Co M&O and pefits Co	alized nstr. M&O	(Sa	Benefit Cost afety and enefits o	i M&O nlv)
	widen shoulders from 1' to 6'	4025	7.5	20	-0.7		-0.5	-0.2	-\$993,807	\$24	8,452 \$27	8,043		0.9 : 1	
	Subtotals:				-0.7		-0.5	-0.2		_					
	Totals/Averages:	4025	7.5	20.0	0.7	-	1.4	<u><u>v.</u></u>	-\$993,807	\$24	8,452 \$27	3,043		0.89 : 1	
	B/C Ratio =		Ben (Estima	e fit Co ted Annu Annualiz	o st Fo ual Red ced Con	uction i structio	n Crash	ety a Cost)+ (Increa	nd M&O B (Decrease in <i>F</i> ise in Ann Mai	S enefits Ann Mainteinteinteinance c	Only) nance Cost, 0 i ost, 0 if decrea	f increas se)	se)		
	Compute a combined Crash limitat	C n Reducti ions of th	C <i>RF_{com} on Factorial nis formu</i>	ombir _{bined} = or (CRF) ula as dis	$\begin{bmatrix} 1 - \\ 0 \end{bmatrix}$	$\begin{pmatrix} 1 - 0 \\ 1 1 \\ 1 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1$	s of M $\frac{CRF_1}{100}$ $\left(\begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	$ultiple 1 - \frac{C}{1}$ intly inf	$\left(\frac{RF_2}{.00}\right)\left(1-\frac{1}{.00}\right)$	$\frac{CRF_n}{100}$ similar imp	'es * 100 rovements at t pads, 1987, pg	he locati 253-25	ion of in 5.	terest. Co	onsider

PHASE 4 PLANNING LEVEL ESTIMATE

INSTRUCTION: Enter information into YELLOW fields. Insert new rows for additional/special items. Do not change print area.

Project Name: AKSAS #:

Estimated By: T.Tomasic Date: 6/27/2019

Г

Gen	eral Refei	rence									
Project Len		10,400									
Project Leng	th (mi):		1.97								
Data for Asphalt Cement Estimation											
% Oil for	AC:		6.0%								
% Oil for a	ATB:		4.5%								
Data for Aut	omatic CS	SP Es	timation								
Crossin	gs: 36" -	48" (CSP								
Approx No.	Avg Ler	ngth	Total (LF)								
			0								
Drivewa	ys: 18" -	24" (CSP								
Approx No.	Approx No. Avg Leng										
40	20		800								

	Standard Es	timating Fac	ctors
[Borrow	2.0	tons/cy
	Subbase	2.0	tons/cy
I	D-1	2.0	tons/cy
	ATB	2.0	tons/cy
	Asphalt Concrete	110	lb/sy-in
	Double AST Agg	60	lb/sy
ſ	High Float Agg	75	lb/sy
I	Prime/Tack	0.2	gallon/sy
	Asphalt Oil	8.2	lb/gallon
ſ	CRS2 Oil	0.80	gallon/sy
Г	HFMS Oil	0.75	gallon/sy

	Avg	Avg	Avg			<u>Unit</u>		
<u>Item</u>	Width	<u>Depth</u>	<u>Length</u>	<u>Quantity</u>	<u>Unit</u>	Price*	<u>Cost</u>	Design Comments
Remove Structures & Obstructions					LS	\$100,000	\$100,000	
Clearing & Grubbing	34 ft		10,400 ft	8.1	ACRE	\$9,500	\$77,117	
Excavation	28 ft	1.0 ft	10,400 ft	10,785	CY	\$9.00	\$97,067	
Borrow	12 ft	1.0 ft	10,400 ft	9,244	TON	\$11.00	\$101,689	
Geotextile	ft		ft	0	SY	\$3	\$0	
Reconditioning			ft	0	STA	\$700	\$0	
Aggregate Base Course Grading D-1	36 ft	4.0 in	10 400 ft	9 244	TON	\$30	\$277 333	
Aggregate Base Course, Shaang D T	36 ft	3.0 in	10,400 ft	6 933	TON	\$38	\$263.467	
Asphalt Com PG 52-28	00 10	0.0	10,400 11	312	TON	\$750	\$234,000	
Asphan Centr G 52-20				512	TON	<i>\$1</i> 50	φ 2 3 4 ,000	
Temporary Pavement					LS	\$0	\$0	
Prime/Tack Coat	ft		ft	0	TON	\$700	\$0	
Asphalt Concrete	36 ft	2.0 in	10,400 ft	4,576	TON	\$55	\$251,680	
Asphalt Cem PG 52-28				275	TON	\$750	\$205,920	
Acabalt Price Adjustment					<u></u>	¢ŋ	¢n	
Asphalt Frice Aujustinent					03	φU	ψŪ	
18" - 24" CSP				800	LF	\$100	\$80,000	
36" - 48" CSP				0	LF	\$200	\$0	
Fish CSP, Complete				1	EA	\$86,000	\$86,000	\$1000/lf 103"x71" arch from beaver loop imp
Stormdrain System, Complete					LS	\$0	\$0	
Oil/Sediment Separator				0	EA	\$70,000	\$0	
Bridge Complete	ft		ft	0	SF	\$260	\$0	
Bridge, Complete			n.	Ū	19	\$0	φ0 \$0	
Bhage Betour					20	ψŪ	ψŪ	
Guardrail				685	LF	\$35	\$23,975	
End Treatments				4	EA	\$3,400	\$13,600	
Concerto Sidowalk	54			•	ev	¢50	¢o	
Concrete Sidewark	n.		n	U	51	\$50	\$U	
Curb Ramps				U	EA	\$2,000	\$0	
Curb & Gutter				0	LF	\$25	\$0	
Concrete Barrier				0	LF	\$70	\$0	
Now Troffic Olivert				0		¢075 000	¢0	
New Traffic Signal				U	EA	\$375,000	\$U	
Modify I raffic Signal				0	EA	\$175,000	\$0	
Luminaires				0	EA	\$10,000	\$0	
Striping, Paint			10,400 ft	38,480	LF	\$1.00	\$38,480	
Striping, Methyl			ft	0	LF	\$1.75	\$0	
Special Urban Traffic Markings					LS	\$0	\$0	

PHASE 4 PLANNING LEVEL ESTIMATE

<u>ltem</u>	<u>Avg</u> Width	<u>Avg</u> Depth	<u>Avg</u> <u>Length</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit</u> <u>Price</u> *	<u>Cost</u>	Design Comments
Driveway Approach				40	EA	\$1,500	\$60,000	
Permanent Seeding	26 ft		10,400 ft	6.2	ACRE	\$5,000	\$31,038	
Landscaping					LS	\$0	\$0	
Erosion & Pollution Control Admin Temporary Erosion & Pollution Control SWPPP Manager					LS LS LS	\$5,000 \$15,000 \$10,000	\$5,000 \$15,000 \$10,000	
Utility Relocates (GVEA, ACS, GCI, etc.)					LS	\$0	\$0	
Construction Surveying				15	Crewday	\$2,500	\$37,500	
Camp Lodging / Perdiem					LS LS	\$0 \$0	\$0 \$0	
						Subtotal	\$2,008,865	
Traffic Maintenance & Traffic Control	(use 8% rural to 18	% urban)		12%	of Subtota	I	\$241,064	
Miscellaneous Items	(consider removal i	tems, inlets, fence,	signing, detours, etc.)	15%	of Subtota	I	\$301,330	
						Subtotal	\$2,551,258	
Mob/Demob				10%	of Subtota	I	\$255,126	
						Subtotal	\$2,806,384	
Construction Engineering (CENG)				20%	of Subtota	I	\$561,277	
						Subtotal	\$3,367,661	
				7.64%	of Subtota	I	\$257,289	

Total Phase 4 Cost \$3,625,000

Date Range Chosen:

01/01/2013 - 12/31/2016

Variable Filters: Route

OLD STEESE @ FOX (150105) From: 0 To: 8.53

Time of report run: 6/18/2019 8:02:51 AM

Crash Number	Reporting Agency	Route	Milepoint	AADT	DateTime	Street	Num	n Crash Severity	CU Driver Contributing Circumstance 1	CU Most Harmful Event
201469892	Alaska State Troopers	150105	6.8396	1041	10/19/2014 1:11:00 AM	OLD STEESE @ FOX	1	Suspected Serious Injury	Ran Off Roadway	Tree (Standing Only)
201639871	Driver Report	150105	7.0007	745	1/19/2016 10:15:00 AM	OLD STEESE @ FOX	2	No Apparent Injury	Failed to Keep in Proper Lane	Motor Vehicle In-Transport
201356829	Driver Report	150105	7.002	1041	10/27/2013 9:37:00 PM	OLD STEESE @ FOX (CDS ROUTE 150105)	1	No Apparent Injury	Null value	Null value
201589244	Alaska State Troopers	150105	7.2083	1060	8/2/2015 3:14:00 PM	OLD STEESE @ FOX	1	No Apparent Injury	Ran Off Roadway	Overturn/Rollover
201666826	Alaska State Troopers	150105	7.4123	1060	7/17/2016 1:41:00 AM	OLD STEESE @ FOX	1	Suspected Serious Injury	Ran Off Roadway	Overturn/Rollover
201666948	Alaska State Troopers	150105	7.4218	1060	10/22/2016 12:00:00 AM	OLD STEESE @ FOX	1	Fatal Injury (Killed)	Ran Off Roadway	Overturn/Rollover
201539087	Driver Report	150105	7.6652	1060	4/6/2015 3:20:00 PM	OLD STEESE @ FOX	1	Null value	Null value	Ditch
201666670	Alaska State Troopers	150105	7.9441	1060	4/24/2016 4:52:00 PM	OLD STEESE @ FOX	2	Suspected Serious Injury	Unknown	Motor Vehicle In-Transport
201366067	Driver Report	150105	7.9509	-2147483648	7/5/2013 6:51:00 PM	OLD STEESE @ FOX	2	No Apparent Injury	Null value	Motor Vehicle In-Transport
201645719	Driver Report	150105	8.4475	1060	6/22/2016 4:00:00 PM	OLD STEESE @ FOX	2	No Apparent Injury	Other Contributing Action/Circumstance	Motor Vehicle In-Transport

limits that may be mitigated with the proposed project

APPENDIX D

PAVEMENT DESIGN

Data Input	2023	20	2021	1,400	0.85
Design	Design Construction Year:	Design Length in Years:	Base Year:	Base Year Total AADT:	Growth Rate % per Year:

AADT for Each Lane	%	35	65	Ö	o	o	0	
% of Base Year	Lane		2	S	4	5	Q	

_				•		
	% AADT	3.4	0.25	0.1	0	0
	Load Factor	0.50	0.85	1.20	1.55	2.24
	Truck Category	2-Axle (Class 5)	3-Axle (Class 6,8)	4-Axle (Class 7,8)	5-Axle (Class 9,11)	>=6-Axle (Class 10,12,13)

Design Lane AADT:	926
Computed Design ESALs:	149.082
Constructio	n Year ESAL Calculations

ategory	% AADT	Load Factor for Truck Category	ESALs
(3.4	0.5	5,746
(8)	0.25	0.85	718
,8)	0.1	1:2	406
(,11)	0	1.55	0
s 10,12,13)	0	2.24	0
-	Total Constru	uction Year ESALs:	6,870

n an	ic Data Input		
nd Historic ESALs	Histori	Historic Construction Year:	
Traffic Data for Design a			

Backcast % per Year.

AADT for Each Lane	%						
% of Base Year	Lane	1	2	3	4	5	Q

% AADT						
Load Factor	0.50	0.85	1.20	1.55	2.24	
Truck Category	2-Axie (Class 5)	3-Axie (Class 5,8)	4-Axle (Class 7,8)	5-Axle (Class 9,11)	>=6-Axle (Class 10,12,13)	-

			ESALS		
		ESAL Calculations	Load Factor for Truck Category		
		nstruction Year	% AADT		
Historical Lane AADT:	Computed Historical ESALs:	Historical Co	Truck Category		

-					
		ESALS			
	ESAL Calculations	Load Factor for Truck Category			storic Year ESALs:
	nstruction Year	% AADT			Total His
	Historical Co	Truck Category			

Project Name: O	ld Steese Widening				Project Number:	NFHWY00527			Analysis Date:	10/11/2022		Project Status	
Design Type: N	ew Design				Designer:	tctomasic			Unit:	US Customary	All layer damag	es less than 100	~
- 14 - 14		201-201-201-		pre-station	Tire Load (Ibs)		Γo	ad Description:	ESAL				
Project Location:	CHENA HOT SPRINGS				4500	Load Loc (in)							
			Design		Tire Press. (psi)	×	0	13.5					
Design AADT:	1,400		Loading	s	110	Ÿ	0	0					
Spring%:	a		13,417			Eval Loc (in)							
Summer%:	33		49,197			×	0	6.75					
Fall%:	œ		11,927			Ÿ	0	0					
Winter%:	50		74,541								771075		
Total%:	100		149,082	2			*****						
		Critical Z		Asphalt			Poisson's	Tensile	Compressive	Million Cycles	Past	Future	Total
	Layer	Coordinate (in)	۵.	roperties	Season	Modulus (Ksi)	Ratio	Micro Strain	Stress (psi)	to Failure	Damage (%)	Damage (%)	Damage (%)
			Aîr%;	ъ	Spring	450	0:30	227		1.63		0.82	0.82
Thickness (in):	1.99	1.98	Asphait%:	5.5	Summer	400	0.30	188		3.40		1.45	1.45
Name: A:	sphalt Concrete (Modified Asph.)		Density (pcf)	148	Fall	400	0.30	188		3.40		0.35	0.35
Use TAI:	Yes				Winter	1200	0:30	134		4.03		1.85	1.85
										Total Damage:		4.47	4.47
			:%JI		Spring	80	0.35		70.4	0.60		2.24	224
Thickness (in):	4.01	2	Asphait%:		Summer	30	0.35		75.8	0.69		7.11	7.11
Name:	Crushed Asph. Base Course		Density (pcf)		Fall	. 06	0.35		75.8	0.69		1.72	1.72
Use TAI:					Winter	120	0.35		61.4	3.51		2.13	2.13
										Total Damage:		13.20	13.20
		-	Air%:		Spring	20	0.40		20.0	0.37		3.65	3.65
Thickness (in):	12.01	6.01	Asphait%:		Summer	30	0.40		23.1	0.93		5.31	5.31
Name:	Select A P200<10%		Density:		Fail	30	0.40		23.1	0.93		1.29	1.29
Use TAI:					Winter	50	0.40		21.0	6.69		1.11	1,11 1,11
										Total Damage:		11.36	11.36
			Air%:		Spring	10	0.45		5.3	2.04		0.66	0.66
Thickness (in):	Ö	18.02	Asphalt%:		Summer	10	0.45		4.8	2.85		1.73	1.73
Name:	Select C P200>30%		Density:	I	Fall	10	0.45		4.8	2.85		0.42	0.42
Use TAI:					Winter	10	0.45		3.5	7.64		0.98	0.98
										Total Damage:		3.79	3.79
					Spring								
Thickness (in):				<u> </u>	Summer								
Name:					Fall								
					Winter								
										Total Damage:			
C:\AKDOT&PF\Alaska	Flexible Pavement Design\My FPD P	rojects/Old Stee	se Widening.xml									ж.	

APPENDIX E

PRELIMINARY PLAN AND PROFILE SHEETS



REVISION	STATE	PROJECT	DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
	ALASKA	0002(472)/NFHWY00527	2022	1	7
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	the way	1072	WATCH	49 *: 49	OF AL	
						725
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		· · · · · · · · · · · · · · · · · · ·	: 			710
VPC 2		· · · · · · · · · · · · · · · · · · ·		· · · · · ·		705
		· · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			700
EXIST	ING GROU		· · · · · · · · · · · · · · · · · · ·		· · · · ·	695
· · · · · · · · · · · · · · · · · · ·		· · · · · ·				690
	· ·	· · ·		•		685
697.13 696.8	697.73	697.8	698.42 698.5		699.18 699.4	
					25+0	0



(907)451-2200 ¥ FAIR FOAD, PEGER NORTHERN REGION, 2301 -25+00.00-40+00.00 Tue. ITIES, FACI PUBLIC ສ່ TRANSPORTATION Design\2 C3D\ P S DEPARTMENT OF ALASKA BY: STATE NP\NFHWY00 OPED Ē PLANS



AK 99709 (907)451-2200 ROAD, FAIRBANKS, 5/22 01-59cm PEGER NORTHERN REGION, 2301 -40+00.00-55+00.00 Tue. DandP-FACII OF TRANSPORTATION & PUBLIC DEPARTMENT OF ALASKA DEVELOPED BY: STATE iects\Fbks_NP\NFHWY0 PLANS H:\Proj

REVISION	STATE	PROJECT	DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
	ALASKA	0002(472)/NFHWY00527	2022	3	7
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PROFILE GRADE		· · ·				
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		· · ·		•	•	715
EXISTING GROUND		· · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · ·		
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19.37 18.9	20.63	20.1	21.89 21.4		23.15	
	~				<u>55+0</u>	



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99709 (907)451-2200 ¥ FAIRBANKS, ROAD, € /22 (PEGER NORTHERN REGION, 2301 -70+00.00-85+00.00 Tue. ITIES, FACI PUBLIC ສ່ OF TRANSPORTATION DEPARTMENT of teese Widening OF ALASKA BY: STATE NP\NFHWY0 OPED DEVEL PLANS H:\Proj

REVISION	STATE	PROJECT	DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
	ALASKA	0002(472	2)/NFHWY00527	2022	5	7
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VPI 82+32 ELEV = 74	.26 3.46	· · · · · · · · · · · · · · · · · · ·				750
. LVC = 338	.61	 	· · · · · · · · · · · · · · · · · · ·	.4149%		745
		· · ·		• •		740
	· · · · · · ·	· · · · · · ·	1.16	· · · · ·	· · · · · · ·	735
	· · · · · ·	· · · · · · · ·	P <u>J_84+01.</u> LEV = 74.	· · · · ·	· · · · · ·	730
	· · · · · · ·	· · · · · · · ·	···• • • • • • • • • • • • • • • • • •	· · · · ·	· · · · · ·	725
	· · · · · · ·	· · · · · · · ·	· · · · · · · · · · ·	· · · · ·	· · · · · · ·	720
	· · · · · ·	· · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · ·	· · · · · ·	715
742.28	743.48	743.6	744.16 744.3		7 44.57 744.4	
					85+0	0



(907)451-2200 99709 ¥ TIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, andP-85+00.00-100+00.00 Tue. Oct/25/22 01:59em & PUBLIC FACI 1 Plots\00527_ OF TRANSPORTATION DEPARTMENT (OF ALASKA BY: STATE NP\NFHWY00 DED DEVE PLANS



¥ AIRB ROAD, PEGER 2301 6.84 ⁻ GION, HERN ES, FAC PUB ઝ RANSPORTATION 5 MENT DEPAF ALASKA P Жē OPED DEVE PLANS