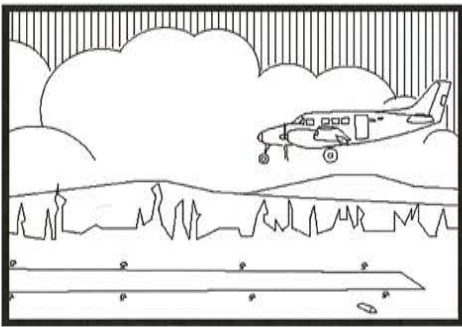


# DESIGN STUDY REPORT

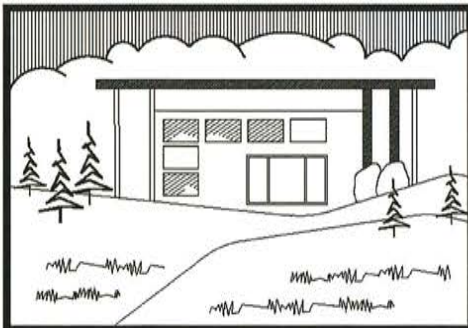
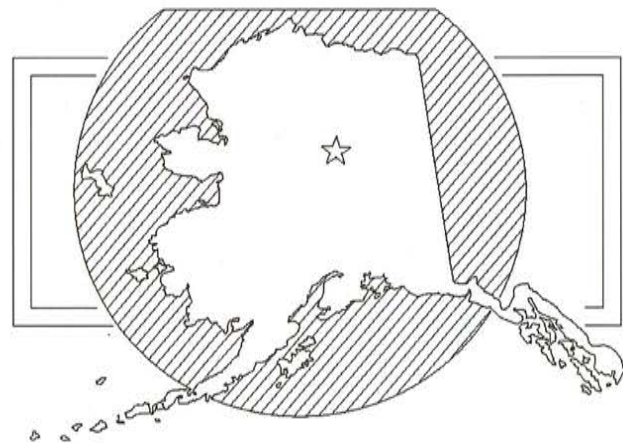
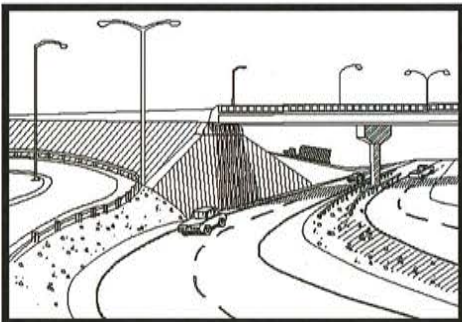
## Gold Mine Trail Road Upgrade

0002351/NFHwy00015



# STATE OF ALASKA

Department of Transportation  
and Public Facilities



*NORTHERN REGION*

*March 2017*

DESIGN APPROVAL  
GOLD MINE TRAIL ROAD UPGRADE  
PROJECT NO. 0002351/NFHWHY00015

Requested by: Jeffrey C. Organek 3-23-17  
Date  
Jeffrey C. Organek, P.E.  
Engineering Manager  
Northern Region

Design Approval  
Granted: Sarah E. Schacher 3/23/2017  
Date  
Sarah E. Schacher, P.E.  
Preconstruction Engineer  
Northern Region

Distribution: NR Design Directive 16-02 Distribution

DESIGN STUDY REPORT  
FOR

GOLD MINE TRAIL ROAD UPGRADE

PROJECT NO. 0002351/NFHWHY00015

PREPARED BY: Nathan J. Stephan

UNDER THE SUPERVISION OF: Jeffrey C. Orgonek, P.E.

ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES  
NORTHERN REGION DESIGN AND ENGINEERING SERVICES  
MARCH, 2017

GOLD MINE TRAIL ROAD UPGRADE  
PROJECT NO. 0002351/NFHwy00015

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<b>TYPICAL SECTIONS .....</b>	<b>Appendix J</b>

## **INTRODUCTION/HISTORY**

The State of Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), proposes to upgrade approximately 4,000 feet of Gold Mine Trail Road with a new aggregate surface course and safety improvements including guardrail, recoverable slopes, and curve realignment.

Historically, the two lane roadway has exhibited issues attributed to settlement of roadbed material. Approximately 20 years ago, a reclaimed asphalt pavement (RAP) was installed on Gold Mine Trail. Settlement occurred during the first year, and a decision was made to remove it in the second year. Maintenance has observed the shoulders rolling off and sliding down the side slopes, and have had to lift and reset the guardrails 3 times over the past 25 years.

Movement of the roadbed has facilitated the need for maintenance crews to bring in 4-5 belly dumps to keep the crown on an annual basis. As a result, inconsistent and narrow shoulders, combined with non-recoverable slopes, provide little refuge area for drivers to use in an emergency.

## **PROJECT DESCRIPTION**

Gold Mine Trail is located at MP 9 of the Steese Highway. The project is located in Sections 07 & 08; T01N, R01E; Fairbanks Meridian; USGS Map Fairbanks D-2 NE Quadrangle at coordinates 64°56'8"N, 147°38'14"W. The area surrounding Gold Mine Trail Road can be described as a boreal taiga forest. The lower portion of Gold Mine Trail Road cuts through dredge tailings from an older placer mining operation.

The primary goals are to restore the structural integrity of the roadway, enhance safety, and extend useful service life by addressing the proposed improvements:

- Relocating approach to Steese will eliminate 910 feet of roadway, and 2 curves
- Provide clear zone widths to address recoverable side slopes
- Widen shoulders to 4 feet (due to loss of material over the years)
- Replace guardrails in areas of need
- Clear embankment foreslope and backslope
- Upgrade signing
- Rehabilitate drainage ditches
- Replace, repair, or clean existing culverts

## **DESIGN STANDARDS**

This project will be designed in accordance with the following standards:

- American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 2011
- American Association of State Highway and Transportation Officials, *Roadside Design Guide*, 2011

- State of Alaska Department of Transportation and Public Facilities, *Alaska Highway Preconstruction Manual*
- State of Alaska Department of Transportation and Public Facilities, *Alaska Highway Drainage Manual*, 2006

The design criteria for this project are in Appendix A. This highway is classified as a Rural Major Collector.

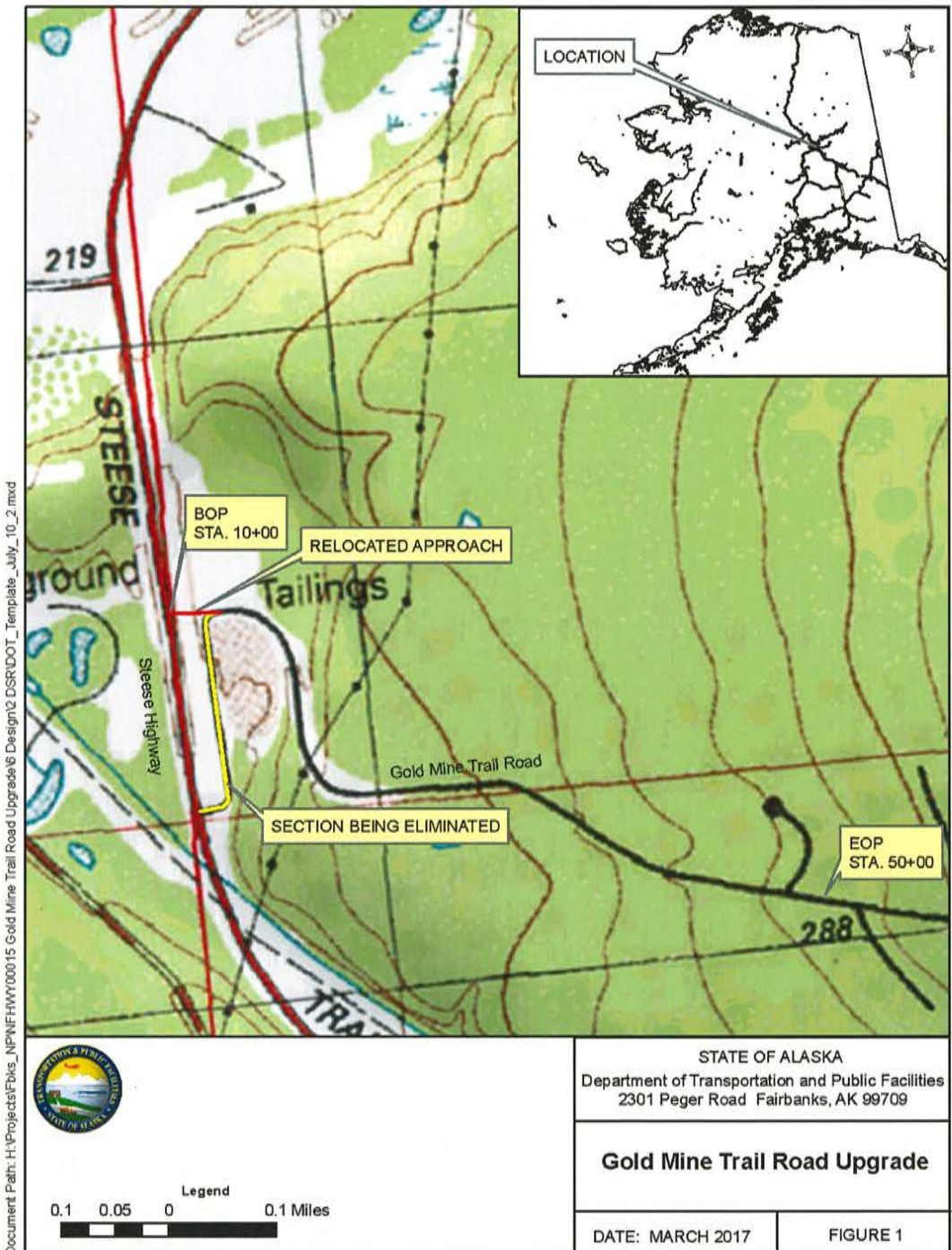


Figure 1- Location and Vicinity Map

## **DESIGN EXCEPTIONS AND DESIGN WAIVERS**

There are no design exceptions for this project.

## **DESIGN ALTERNATIVES**

- Upgrade road surface to an asphalt concrete surface.
- Regrade existing aggregate surface.

## **PREFERRED DESIGN ALTERNATIVE**

The preferred alternative for this project is to regrade the road surface with the addition of a new asphalt and gravel surface course. The first 500 feet (see Typical Section II) will be paved, which includes the new approach off of the Steese. The remaining alignment (see Typical Section I) will be an aggregate surface course.

Site visits and historical maintenance operations have shown the existing road to be susceptible to settling. The aggregate surface course option is preferred based on the likelihood of on-going road surface subsidence as a combination of thaw-settlement and consolidation of loose thawed silt (based on site visits and communications with the road maintenance supervisor and DOT Materials division). The 4-foot shoulders on both sides of the road will increase pedestrian and bike safety, as the existing shoulders have been shortened over the years through the loss of material sloughing off the shoulders.

## **3R ANALYSIS**

Not applicable. This is a reconstruction project.

## **TRAFFIC ANALYSIS**

A traffic analysis was not performed. See Appendix A (Design Designation) for anticipated traffic growth.

## **HORIZONTAL/VERTICAL ALIGNMENT**

A new horizontal alignment (Sta. 10+00 – 12+00) is proposed in order to eliminate the 90° curve and provide a safer approach to the Steese. The remaining horizontal alignment (Sta. 12+00 – 50+00) will be reestablished to the existing design drawings.

The proposed vertical alignment will reduce the number of existing vertical curves, aiding in flatter slopes, less 'plateaus', and increasing sight distance.

## **TYPICAL SECTION(S)**

There are 2 proposed typical sections for Gold Mine Trail Road (see Appendix J)

- Two 12 foot wide driving lanes
- 4 foot wide shoulders
- 3% crowned cross slope
  - TYPICAL SECTION I
    - 10" Aggregate Surface Course, Grading E-1
    - 24" Selected Material, Type A
    - Sta. 15+00 – 50+00
  - TYPICAL SECTION II
    - 3" Hot Mix Asphalt, Type II; Class B
    - 3" Asphalt Treated Base
    - 4" Aggregate Base Course, Grading D-1
    - 24" Selected Material, Type A
    - Sta. 10+00 – 15+00

Shoulders will be widened by 2 feet to accommodate sections that include guardrail.

## **PAVEMENT DESIGN**

Pavement design calculations for a 15-year design life were performed using the Alaska Flexible Pavement Design (AFPD) program and manual. Heavy vehicles consist of 6% of the total traffic volume with equivalent single-axle loads of 115,527. The pavement structure satisfies the requirements of the mechanistic design method and DOT&PF's stabilized base policy.

The proposed pavement structure will consist of 3 inches of hot mixed asphalt concrete, over 3 inches of an asphalt treated base, over 4 inches of aggregate base course grading D-1, over 24 inches of Selected Material Type A, over existing sub-grade material.

See Appendix E for pavement design analysis.

## **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. No temporary construction permits or easements are required.



## **MAINTENANCE CONSIDERATIONS**

Gold Mine Trail Road is maintained by FNSB Wildview Service Area. Maintenance efforts will be reduced by the following:

- Resurfacing will reduce the amount of leveling and regrading effort required to keep the surface driveable.
- Drainage improvements will help protect the embankment from water damage, reducing maintenance efforts.
- 10" E-1 layer provides a thicker layer of surfacing material, making maintenance and grading efforts easier.
- Reducing 0.34 lane miles of surfacing due to relocated approach.

## **MATERIAL SOURCES**

All materials will be furnished by the contractor.

## **UTILITY RELOCATION & COORDINATION**

The following above and below ground utilities exist within project limits:

- Golden Valley Electric Association
- MTAC Communications
- AT&T Fiber Optic Cable

The fiber optic cable is the only utility that will be affected, as it runs along the existing approach, parallel with the Steese, and will have to be relocated at a greater depth underneath Gold Mine Trail.

## **ACCESS CONTROL FEATURES**

The approach at the Steese will be relocated as part of the curve realignment. Existing driveways will retain their access to Gold Mine Trail.

## **PEDESTRIAN/BICYCLE (ADA) PROVISIONS**

Pedestrians and bicyclists will continue to be accommodated with roadway shoulders, newly widened with this project.

## **SAFETY IMPROVEMENTS**

- Signing and striping will be upgraded to current retroreflectivity standards thereby increasing visibility.

- Horizontal realignment will eliminate the existing substandard horizontal curves.
- Guardrail will be re-evaluated for length of need and replaced with compliant barrier and end terminals.
- Eliminating the number of vertical curves, resulting in less ‘plateaus’, flatter slopes, and increased sight distances.

## **INTELLIGENT TRANSPORTATION SYSTEM FEATURES**

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

## **DRAINAGE**

The 3% crowned cross slope will shed water to ditches on both sides of the road. The ditch along the North side was designed to convey water through cross culverts under the road to the ditch on the south side. Water then disperses through ground infiltration due to the heavily forested areas alongside the road. Over time, the ditches have become overgrown with vegetation and other materials. Drainage improvements include:

- Ditch reconditioning
- Clearing embankment slopes
- Replacing failed culverts
- Cleaning existing culverts

Post-construction of drainage improvements, “Best Management Practices (BMPs) will be implemented to reduce the potential for erosion of soil and other contaminants from storm water runoff from entering a “water of the United States”. BMPs will consist of:

- Temporary and permanent seeding
- Silt fence
- Ditch lining

## **SOIL CONDITIONS**

Gold Mine Trail Road is located in the Yukon-Tanana Upland physiographic section of Alaska. The terrain generally consists of low mountains, plateaus, and highlands. Historical geotechnical data shows upland in the project area generally consists of schist bedrock overlain by wind-blown silt, slope-washed organic silt, and colluvium. The most common natural foundation soils are re-deposited silts and organic silts generally located on the lower slopes of the hills, but layered and mixed with peat and massive ice in the valley bottoms. A portion of the road is founded on alluvial dredge tailings.

## **EROSION AND SEDIMENT CONTROL**

The project will include an Erosion and Sediment Control Plan (SCP). This plan will describe BMPs that may be used during construction and serve as a guide for SWPPP development.

The primary potential for erosion occurs where shoulders are widened, culverts are replaced, and reconditioned ditches. Embankment slopes will not be constructed steeper than 2:1. Slopes will be seeded to provide temporary and permanent erosion protection.

Temporary stockpiles of excavated material may represent secondary features with high erosion potential.

Perimeter control, inlet/outlet control at culverts, soil stabilization, construction scheduling and other measures as described in the ESCP will be used as appropriate to prevent or retain storm water runoff.

## **ENVIRONMENTAL COMMITMENTS**

The Environmental Document is attached (see Attachment B).

Our environmental document indicates that we will require an ADEC APDES permit. If new environmental issues or impacts are identified during design, proper steps will be taken to address those issues.

## **WORK ZONE TRAFFIC CONTROL**

Contract specifications will require the contractor to provide and follow a Traffic Control Plan. Advanced notice to area residents and businesses will be required by the contract.

## **VALUE ENGINEERING**

A value engineering study will not be prepared for this project. The roads in this project are not on the National Highway System and the total estimated project cost (all phases) is less than \$40 million. This is in compliance with P&P 05.01.030 dated April 12, 2013.

## **COST ESTIMATE**

The estimated costs for this project are as follows:

Design	\$495,000.00
Utilities	\$100,000.00
Right of Way	\$0.00
Construction (Includes 15.00% Engineering)	\$1,932,000.00
<hr/>	
Total Cost of Project	\$2,427,000.00

**APPENDIX A**

**DESIGN CRITERIA  
AND  
DESIGN DESIGNATION**

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

<b>Project Name:</b> Gold Mine Trail Road Upgrade					
<input checked="" type="checkbox"/> New Construction/Reconstruction <input type="checkbox"/> 3R <input type="checkbox"/> PM <input type="checkbox"/> Other:					
<b>Project Number:</b> NFHWY00015	<input type="checkbox"/> NHS <input checked="" type="checkbox"/> Non NHS				
<b>Functional Classification:</b>	Major Collector				
<b>Design Year:</b>	2045				
<b>Design Year ADT:</b>	1280				
<b>DHV:</b>	11.40%				
<b>Percent Trucks:</b>	6%				
<b>Pavement Design Year:</b>	N/A				
<b>Terrain:</b>	Mountainous				
<b>Design Speed:</b>	30 MPH (GB Table 6-1)				
<b>Width of Traveled Way:</b>	24 FT (Matching existing 12 FT lanes)				
<b>Width of Shoulders:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Outside:</b></td> <td style="border: none;">4 FT (Matching existing)</td> <td style="border: none;"><b>Inside:</b></td> <td style="border: none;">N/A</td> </tr> </table>	<b>Outside:</b>	4 FT (Matching existing)	<b>Inside:</b>	N/A
<b>Outside:</b>	4 FT (Matching existing)	<b>Inside:</b>	N/A		
<b>Cross Slope:</b>	3% (HPCM Figure 1130-1; Two-lane 2-way, unpaved)				
<b>Superelevation Rate:</b>	6% (GB 6.2-Superelevation: should not exceed 8%)				
<b>Minimum Radius of Curvature:</b>	275 FT (HPCM Figure 1120-1)				
<b>Min. K-Value for Vert. Curves:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Sag:</b></td> <td style="border: none;">37 (GB Table 6-3)</td> <td style="border: none;"><b>Crest:</b></td> <td style="border: none;">19 (GB Table 6-3)</td> </tr> </table>	<b>Sag:</b>	37 (GB Table 6-3)	<b>Crest:</b>	19 (GB Table 6-3)
<b>Sag:</b>	37 (GB Table 6-3)	<b>Crest:</b>	19 (GB Table 6-3)		
<b>Maximum Allowable Grade:</b>	10% (HPCM Figure 1120-1)				
<b>Minimum Allowable Grade:</b>	0.5% (GB Page 3-119)				
<b>Stopping Sight Distance:</b>	200 FT (HPCM Figure 1120-1)				
<b>Lateral Offset to Obstruction:</b>	N/A				
<b>Vertical Clearance:</b>	16FT 6 IN (HPCM Table 1130-1)				
<b>Bridge Width:</b>	N/A				
<b>Bridge Structural Capacity:</b>	N/A				
<b>Passing Sight Distance:</b>	1090 FT (HPCM Figure 1120-1)				
<b>Surface Treatment:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>T/W:</b></td> <td style="border: none;">Aggregate, Asphalt</td> <td style="border: none;"><b>Shoulders:</b></td> <td style="border: none;">Aggregate, Asphalt</td> </tr> </table>	<b>T/W:</b>	Aggregate, Asphalt	<b>Shoulders:</b>	Aggregate, Asphalt
<b>T/W:</b>	Aggregate, Asphalt	<b>Shoulders:</b>	Aggregate, Asphalt		
<b>Side Slope Ratios:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Foreshlopes:</b></td> <td style="border: none;">Varies 6:1 to 2:1</td> <td style="border: none;"><b>Backslopes:</b></td> <td style="border: none;">Varies 4:1 to 1.5:1</td> </tr> </table>	<b>Foreshlopes:</b>	Varies 6:1 to 2:1	<b>Backslopes:</b>	Varies 4:1 to 1.5:1
<b>Foreshlopes:</b>	Varies 6:1 to 2:1	<b>Backslopes:</b>	Varies 4:1 to 1.5:1		
<b>Degree of Access Control:</b>	N/A				
<b>Median Treatment:</b>	N/A				
<b>Illumination:</b>	N/A				
<b>Curb Usage and Type:</b>	N/A				
<b>Bicycle Provisions:</b>	4 FT Shoulder Provided				
<b>Pedestrian Provisions:</b>	4 FT Shoulder Provided				
<b>Misc. Criteria:</b>	N/A				

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

Date: 3/23/17  
 Date: 3-23-17  
 Date: 3/23/2017

Shaded criteria are commonly referred to as the *FWHA 13 controlling criteria*. For NHS routes only, these criteria must meet the minimums established in the Green Book (*AASHTO A Policy on Geometric Design of Highways and Streets*). For all other routes, these criteria must meet the minimums established in the *Alaska Highway Preconstruction Manual*. Otherwise a Design Exception must be 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.**

# MEMORANDUM

# State of Alaska

Department of Transportation & Public Facilities

**TO:** Sarah E. Schacher, P.E.,  
Preconstruction Engineer  
Northern Region

**DATE:** July 22, 2016

**FILE NO:** I:\Traffic  
Data\DESIGN\2015\GoldMineTr\_NFHWHY00015.doc

**TELEPHONE NO:** 451-5150

**FROM:** *JMC*  
Judy Chapman  
Planning Chief  
Northern Region

**SUBJECT:** Gold Mine Trail Road Upgrade  
NFHWHY00015/PENDING  
Design Designation Request

Please approve the attached design designation by signing the endorsement below which enables your staff to proceed.

Any questions should be directed to Scott Vockeroth at 451-2251.

*Timothy J. West*  
For Sarah E. Schacher, P.E., Preconstruction Engineer 7/25/16  
Date

RLM

cc: Jeffery C. Organek, P.E., Engineering Manager, Northern Region

Attachment

Please circulate and return Traffic Data & Forecasting Manager	
Planning Manager(outside FNSB)	
Planning Chief	<i>JMC</i>
Fairbanks Area Planner(FNSB)	<i>MJC</i>
Traffic & Safety	<i>PKJ</i>
Any changes, additions, or questions, Please write on this sheet	

**DESIGN DESIGNATION**  
**Northern Region Planning**  
 Traffic Data & Forecasting

**ROUTE NAME:** Gold Mine Trail Rd  
**STATE ROUTE NO:** 150060  
**CDS MILEAGE:** 0.0 – 4.0016  
**FUNCTIONAL CLASS:** Major Collector  
**URBAN/RURAL:** Rural

	YEAR	AADT	%	
<b>AADT</b>	2015	950		
	2030	1100		
	2045	1280		
<b>DHV</b>	2030		11.4	130
	2045			150
<b>D</b>				40-60
<b>T</b>			<b>6.00 %</b>	<b>Total</b>
			0.50	Class 4
			5.00	Class 5
			0.50	Class 6
			0.00	Class 8
			0.00	Class 9
			0.00	Class 10
		0.00	Class 13	
<b>ESAL'S (Design Lane)</b>	To Be Provided by Design			

# MEMORANDUM

State of Alaska  
Department of Transportation & Public Facilities  
Northern Region Design and Engineering Services

**TO:** Judy Chapman.  
Planning Chief  
Northern Region

**DATE:** July 13, 2016

**FILE NO:** H:\Projects\Fbks\_NP\NFHWY00015 Gold Mine Trail Road Upgrade\6  
Design\2 DSR\NFHWY00015-Design Designation Request memo 07-14.docx

**THRU:** Sarah E. Schacher, P.E. *SES*  
Preconstruction Engineer  
Northern Region

**PHONE NO:** 907-451-2274

**FAX NO:** 907-451-5126

**FROM:** Jeffrey C. Organek, P.E. *JCO*  
Engineering Manager  
Northern Region

**SUBJECT:** Gold Mine Trail Road Upgrade  
NFHWY00015/PENDING  
**Design Designation Request**

Please provide a Design Designation for the subject project.

- Present AADT
- Design Year AADT (2043) *2045 SS*
- Mid-Design Period AADT (2030)
- Design Hourly Volume
- Directional Split
- Percent Trucks
- Design Functional Classification
- Intersection Turning Movement Counts at:
- Other (*Specify*)

Upgrade approximately 4,750 feet of Gold Mine Trail Road with new pavement and safety improvements including guardrail and curve realignment. The project is scheduled for construction in FY2018.

Please complete the attached Traffic Data Request Form.

Attachment: as stated

*njs* njs/w *SES*



# Traffic Data Request Form

TDR Form-1-10/20/03

Alaska Department of Transportation & Public Facilities

<b>Requested By:</b> Jeff Organeck, P.E.		<b>Design Project Number:</b> NFHWY00015	<b>Date Requested:</b> 7/13/2016																		
<b>Base Year:</b> 2015 <b>Base Year Total AADT:</b> 950 <b>AADT Growth Rate</b> Forward (%/yr): 1.0%    End Year: Back Cast (%/yr):        Begin Year:		<b>Common Route Name:</b> Gold Mine Trail Road <b>Functional Class:</b> Major Collector Urban/Rural	<b>CDS Route Name:</b> Route 150060  <b>CDS M.P. Interval:</b> 0 - 4.0016																		
<table border="1"> <thead> <tr> <th>Truck Category</th> <th>Load Factor (ESALs per Truck)</th> <th>% of Total AADT in Truck Category</th> </tr> </thead> <tbody> <tr> <td>2-axle</td> <td>See</td> <td></td> </tr> <tr> <td>3-axle</td> <td>Attached</td> <td></td> </tr> <tr> <td>4-axle</td> <td></td> <td></td> </tr> <tr> <td>5-axle</td> <td></td> <td></td> </tr> <tr> <td>≥ 6-axle</td> <td></td> <td></td> </tr> </tbody> </table>	Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category	2-axle	See		3-axle	Attached		4-axle			5-axle			≥ 6-axle			<b>Lane Configuration Sketch:</b> (Designer: Provide sketch of lane layout. Number each lane and show directions.)  		
Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category																			
2-axle	See																				
3-axle	Attached																				
4-axle																					
5-axle																					
≥ 6-axle																					
<b>Percent of Base Year Total AADT for Each Numbered Lane in Configuration Sketch:</b>		<b>Comments:</b>																			
Lane # 1	% 60																				
Lane # 2	% 40																				
Lane #	%																				
Lane #	%																				
Lane #	%																				
Lane #	%																				
<b>Data Provided By:</b> Randi Molsko	<b>Provider's Signature:</b> R M Molsko	<b>Date Provided:</b> 7/22/16																			

Figure 6-1. Traffic Data Request (TDR) Form



**Report** Route Log  
**CDS Route** GOLD MINE TRAIL ROAD (150060)  
**From Milepoint** 0  
**To Milepoint** 4.0016  
**Filter** FacilityType INTERCHANGE RAMP;NON-INVENTORY;WYE;SECONDARY FERRY ACCESS;ROUNDBOUT;PRIMARY FERRY ACCESS;NON-INTERCHANGE RAMP;MAINLINE;CONNECTOR

Milepoint	Attribute	Side	Feature CDS	Description	Viewer
0	Functional Class	-	-	Start MAJOR COLLECTOR	
0	FHWA Urban Area	-	-	Start RURAL AREA (RURAL)	
0	Intersection	B	152000	STEESE EXPRESSWAY/HIGHWAY	
0.0709	Traffic Station	-	-	30118000	
4.0016	Functional Class	-	-	End MAJOR COLLECTOR	
4.0016	FHWA Urban Area	-	-	End RURAL AREA (RURAL)	
4.0016	Intersection	B	151210	GILMORE TRAIL	

**Computations and Historic Data**

Project: Gold Mine Trail Road Upgrade  
 Project # NFWY00015

**Historic AADT**

Route:	150060	Year	AADT
Station:	30118000	2000	0
	Gold Mine Tr East of Steese Hwy	2001	0
Milepoint	0.071	2002	713
		2003	669
		2004	1143
		2005	0
		2006	732
		2007	1071
		2008	939
		2009	994
		2010	990
		2011	934
		2012	1010
		2013	938
		2014	940
		2015	860

Growth rate for calculations was 1.00% due to historic traffic patterns

Growth Rate factors

2030	1.161
2045	1.3478

Future AADTs

Year	AADT
2015	950
2030	1100
2045	1280

K-factor 11.40%

DHV=	2030	130
	2045	150

Direction Spilt (D)= 40-60

**Class Data**

Route 151210

Station #	Description	CDS MP	Year	Percent By Class							Total Truck %
				4	5	6	8	9	10	13	
305060000	Gilmore Tr North of Maya	2.392	2015	0.50	5.00	0.50	0.00	0.00	0.00	0.00	6.00
	Load Factors			1	0.50	0.85	1.20	1.55	2.24	2.24	
	# Axles			2/3	2	3	4	5	6	7+	

**APPENDIX B**


**ENVIRONMENTAL DOCUMENT**  
**(only include the signature page of the FONSI or ROD)**

**VII. Environmental Documentation Approval**


N/A    YES    NO

2. Does this 6004 Program approval statement apply?  
 "The State has determined that this project has no significant impact(s) on the environment and that there are no unusual circumstances as described in 23 CFR 771.117(b). As such, the project is categorically excluded from the requirements to prepare an environmental assessment or environmental impact statement under the National Environmental Policy Act. The State has been assigned, and hereby certifies that it has carried out, the responsibility to make this determination pursuant to Chapter 3 of title 23, United States Code, Section 326 and a Memorandum of Understanding dated September 20, 2012, executed between the FHWA and the State." *If no, the CE must be approved by FHWA.*
3. **For 6004 projects:** The project meets the criteria of the DOT&PF Programmatic Approval 2 authorized in the March 4, 2015 "Chief Engineer Transmittal – 6004 Programmatic Categorical Exclusions". *If yes, the CE may be approved by the Regional Environmental Manager. If no, the CE must be approved by a Statewide NEPA Manager.*
4. **For non-assigned projects:** The project meets the criteria of the April 13, 2012 "Programmatic Categorical Exclusion for Use on Federal-Aid Highway Projects in Alaska" between FHWA and DOT&PF. *If yes, the CE may be approved by the Regional Environmental Manager. If no, the CE may be approved by the FHWA Area Engineer.*

**VIII. Environmental Documentation Approval Signatures**

Prepared by:     Date: 2-26-16  
 [Sign] Environmental Impact Analyst

Thomas Benjamin  
 [Print Name] Environmental Impact Analyst

Reviewed by:     Date: 2-26-16  
 [Sign] Engineering Manager

Jeffrey C. Organek  
 [Print Name] Engineering Manager

Approved by:     Date: 3-14-16  
 [Sign] Regional Environmental Manager

Brett Nelson  
 [Print Name] Regional Environmental Manager

**Assigned CE**

Approved by: \_\_\_\_\_    Date: \_\_\_\_\_  
 [Sign] DOT&PF Statewide NEPA Manager

\_\_\_\_\_  
 [Print Name] DOT&PF Statewide NEPA Manager

**APPENDIX E**

**PAVEMENT DESIGN**

Project: Good Mine Trail Road Upgrade Proj No.: NFRHW00015				New Construction by Nathan Stephens 3/2/2017 1:57:36 PM									
Layer	Critical Z Coordinate	Past Loadings	Future Loadings	Season	Modulus (ksi)	Poisson's Ratio	Tensile Critical Micro Strain	Critical Compressive Stress (ksi)	Million Cycles to Failure	XY Load Locations (in): Top Pressure = 80 (psi)	XY Evaluation Points (in):	Future Damage %	Total Damage %
AAOT = S50												0	135
10% Spring			11553	Spring	755	0.3	100		25.17			0	0.05%
40% Summer			48211	Summer	510	0.3	92.4		44.05			0	0.10%
30% Fall			34659	Fall	510	0.3	92.4		44.05			0	0.05%
20% Winter			23103	Winter	1200	0.3	71.1					0	0.05%
Total:			115,527						Total Damage:			0	0.25%
3"(n) Asphalt Concrete	2.00		4% Air 6.5% Asphalt 148 psi	Spring	200	0.35	44.80		62.57			6.75	0.02%
				Summer	200	0.35	51.00		33.95			0	0.14%
				Fall	200	0.35	51.00		33.95			0	0.10%
				Winter	200	0.35	40.10		74.35			0	0.03%
									Total Damage:			6.75	0.29%
3"(n) Agg. Base F200-0.5	0.01			Spring	45	0.35	17.00		9.83			0	0.12%
				Summer	50	0.35	20.30		7.46			0	0.10%
				Fall	50	0.35	20.30		7.46			0	0.10%
				Winter	100	0.35	21.20		61.09			0	0.04%
									Total Damage:			0	0.34%
24"(n) Solid A_F200-0.5	10.01			Spring	25	0.4	9.77		6.44			0	0.14%
				Summer	35	0.4	11.80		14.44			0	0.25%
				Fall	35	0.4	11.80		14.44			0	0.24%
				Winter	50	0.4	12.80		12.71			0	0.13%
									Total Damage:			0	0.54%
Subgrade	34.01			Spring	45	0.35	2.88		3.07% 32			0.00	0.00%
				Summer	50	0.35	2.88		3.88% 35			0.00	0.00%
				Fall	50	0.35	2.88		3.88% 35			0.00	0.00%
				Winter	100	0.35	2.82		39.72 47			0.00	0.00%
									Total Damage:			0.00	0.00%

OK  
  
 3-2-17.

**Project Information**  
 Project Name **Gold Mine Trail Road Upgrade** Project Number **NFHWWY00015**  
 Designer **Nathan Stephan** Date **3/2/2017 1:57:36 PM**  
 Overlay Design  English Units  Metric Units

**Traffic Loads**  
 AADT **950**  % Spring **10**  % Summer **40**  % Winter **20**  
 Load Repetitions **11553**  % Fall **30** **34658** **23105**  
 Future **11553** **46211** **34658** **23105**

**Asphaltic-Layer Properties**  
 %Air **4** %AC **5.5** Density **148**  
 Asphalt\_Concrete **4** **5.5** **148**

**Load Configuration**  
 Dual Tire - 110 psi  
 Tire Pressure **90** (psi) Tire Load **4500** (lbs)  
 Load Locations X **0** Y **13.5**  
 Evaluate at: X **0** Y **6.75**  
 X **0** Y **0**

**Pavement Structure**

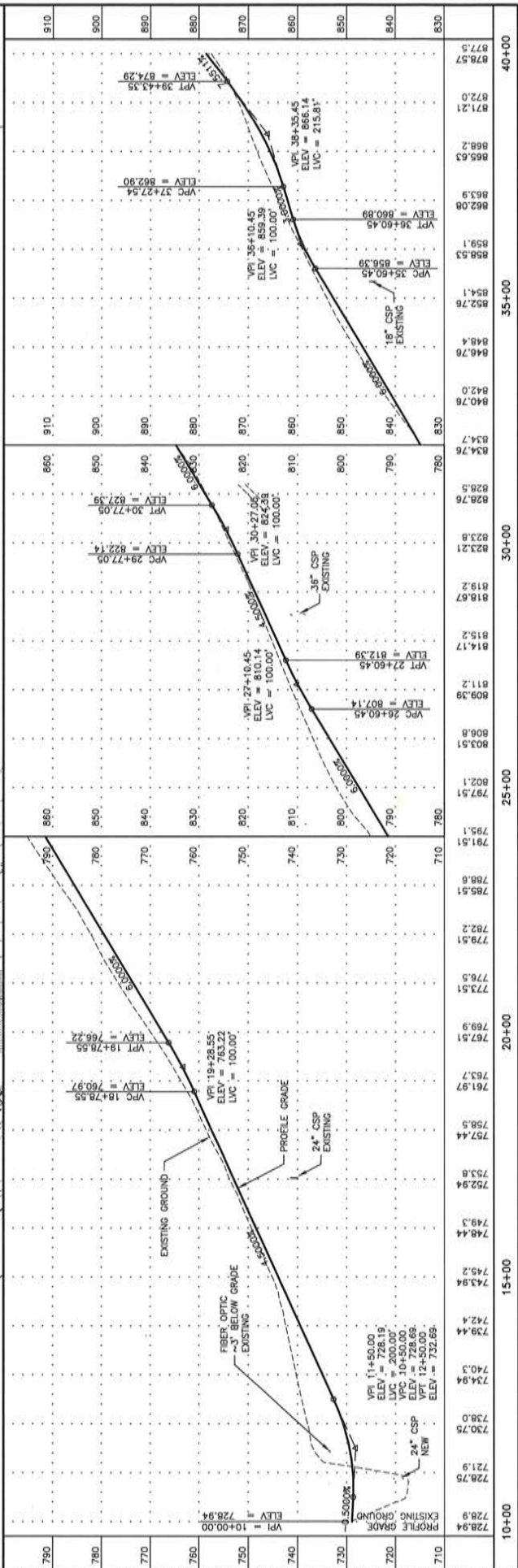
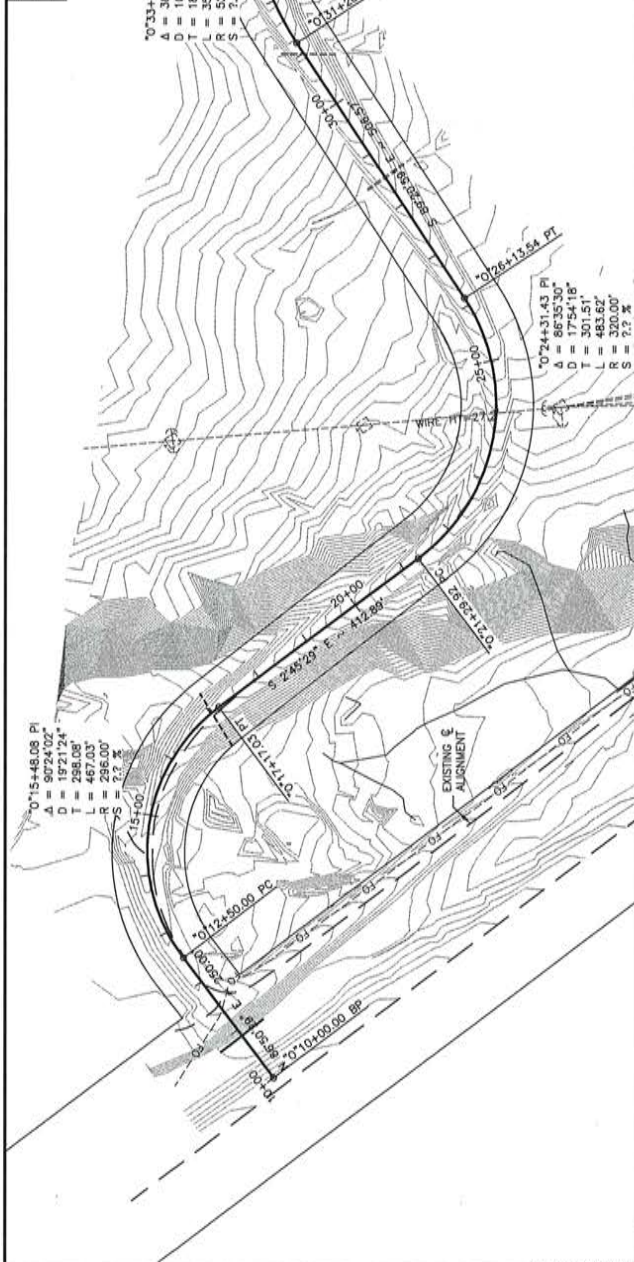
	Use TAI	Thickness (in)		Spring		Summer		Fall		Winter	
		Modulus (ksi)	Poisson Ratio	Modulus (ksi)	Poisson Ratio	Modulus (ksi)	Poisson Ratio	Modulus (ksi)	Poisson Ratio		
Asphalt_Concrete	<input checked="" type="checkbox"/>	755	0.3	510	0.3	510	0.3	510	0.3	1500	0.3
3-4% Asph. Tr.Base	<input checked="" type="checkbox"/>	200	0.35	200	0.35	200	0.35	200	0.35	200	0.35
Agg_Base_P200<6%	<input checked="" type="checkbox"/>	45	0.35	50	0.35	50	0.35	50	0.35	100	0.35
Select_A_P200<6%	<input checked="" type="checkbox"/>	25	0.4	35	0.4	35	0.4	35	0.4	90	0.4
Agg_Base_P200<6%	<input checked="" type="checkbox"/>	45	0.35	50	0.35	50	0.35	50	0.35	100	0.35



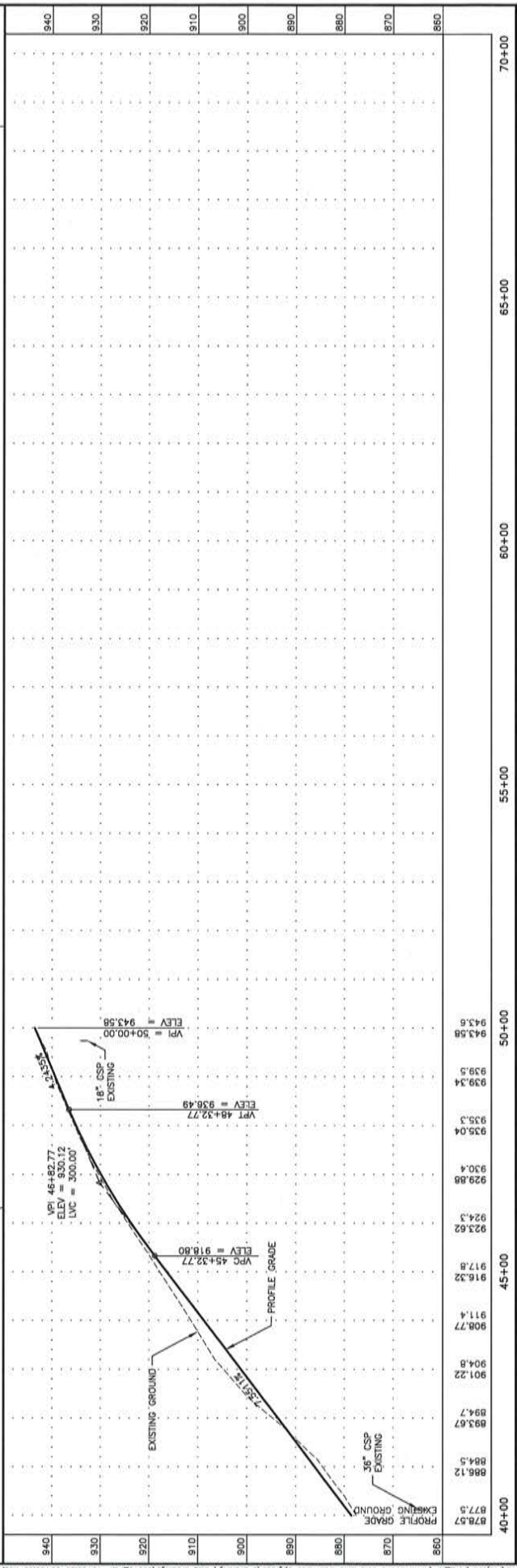
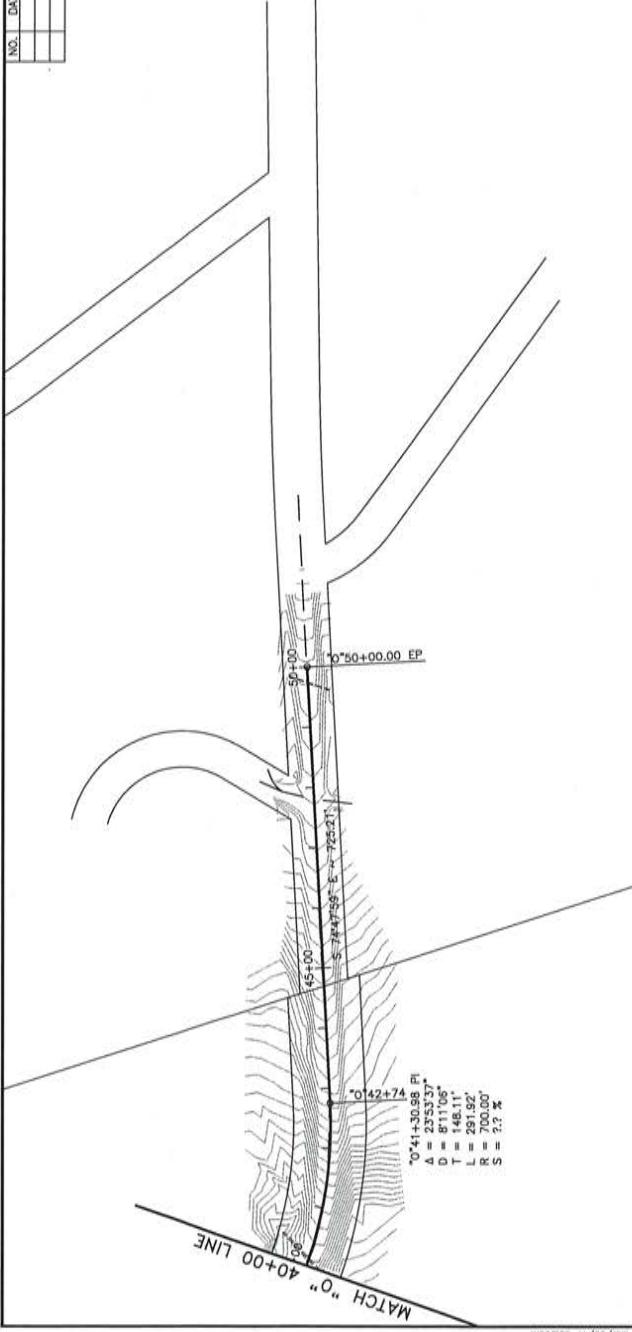
**APPENDIX F**

**PRELIMINARY PLAN AND PROFILE SHEETS**

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFRM00015	2017	1	###



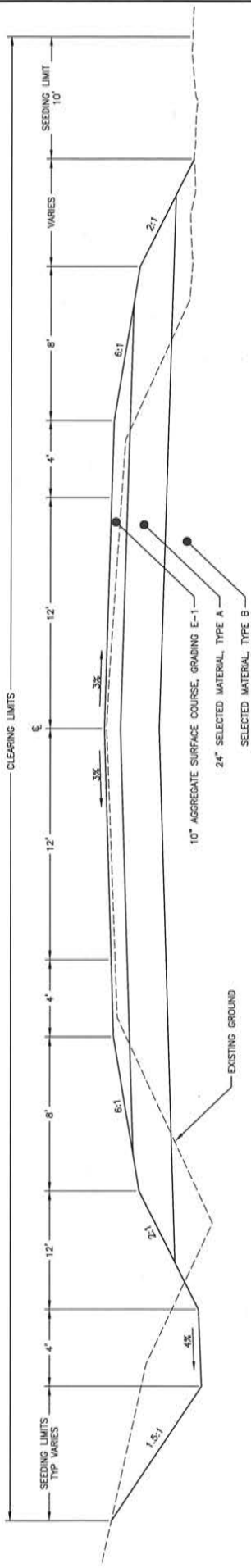
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NFRM00015	2017	2	###



**APPENDIX J**

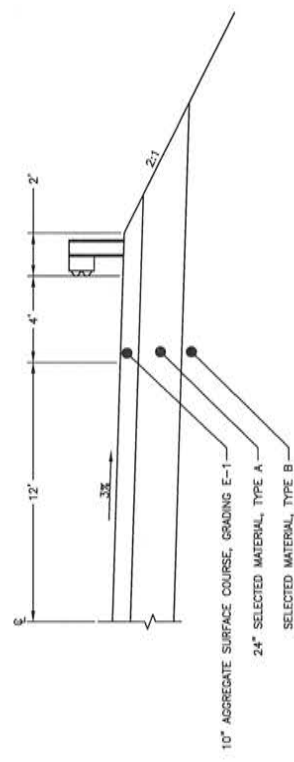
**TYPICAL SECTIONS**

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NHMY00015	2017	----	####



ELL.THE

TYPICAL SECTION I  
NO GUARDRAIL

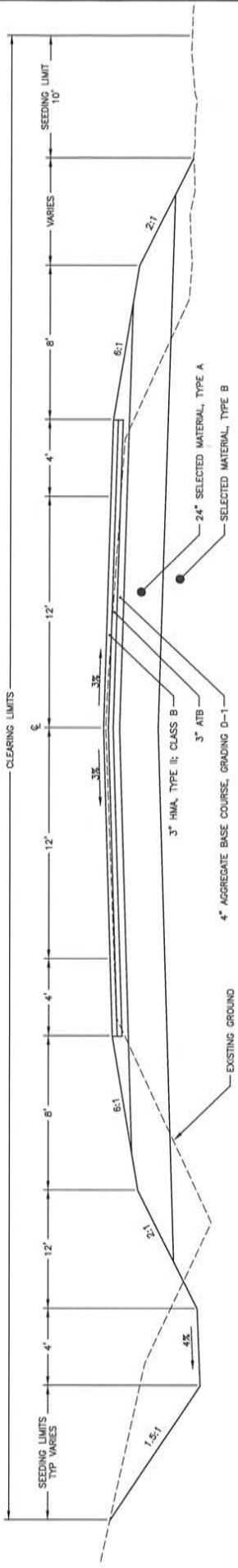


GUARDRAIL SHOULDER DETAIL  
TYPICAL SECTION I



00015\_DSR\_TYPICAL -  
ROAD TYPICAL AGG

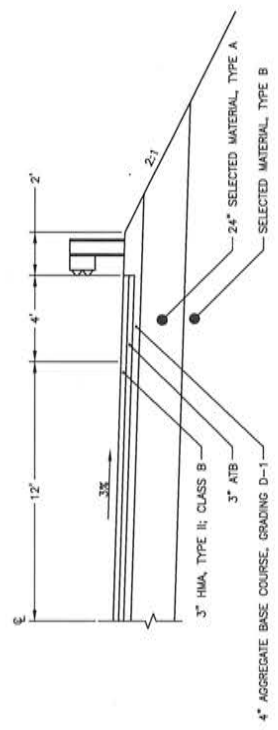
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	PENDING/NTHW00015	2017	----	####



ELL TOP

TYPICAL SECTION II  
NO GUARDRAIL

OUT TOP



GUARDRAIL SHOULDER DETAIL  
TYPICAL SECTION II



00015\_DSR\_TYPICAL -  
ROAD TYPICAL PAVE