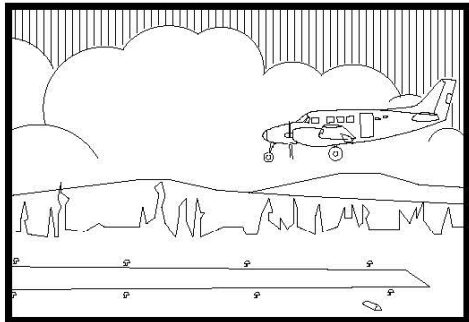


# DESIGN STUDY REPORT

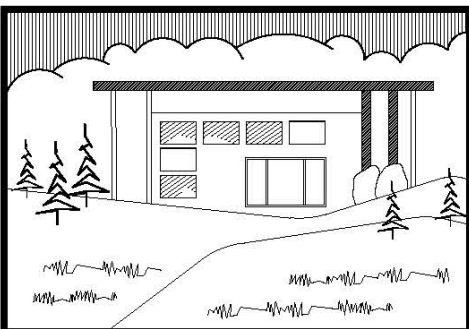
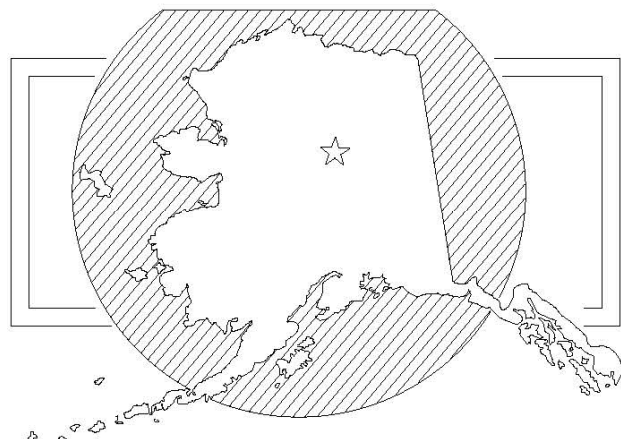
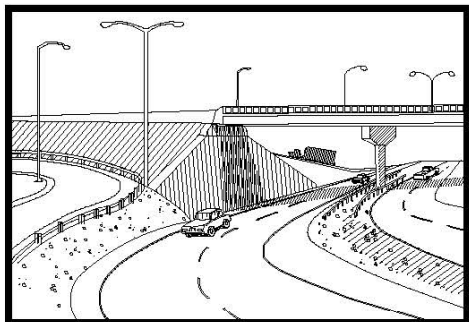
## HSIP: Badger Road Two Way Left Turn Lane

0602009/NFHWY00096



# STATE OF ALASKA

Department of Transportation  
and Public Facilities



*NORTHERN REGION*


*March 2018*

DESIGN APPROVAL

HSIP: BADGER ROAD TWO WAY LEFT TURN LANE

PROJECT NO. 0602009/NFHWY00096

Requested by:

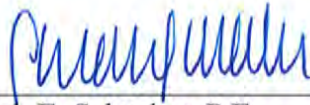


Lauren Little, P.E.  
Engineering Manager  
Northern Region

3/1/2018

Date

Design Approval  
Granted:



Sarah E. Schacher, P.E.  
Preconstruction Engineer  
Northern Region

4/16/2018

Date

Distribution: NR Design Directive 16-02 Distribution

DESIGN STUDY REPORT  
FOR

HSIP: BADGER ROAD TWO WAY LEFT TURN LANE

PROJECT NO. 0602009/NFHWY00096

PREPARED BY: Jadon Farleigh

UNDER THE SUPERVISION OF: Lauren Little, P.E.



ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES  
NORTHERN REGION DESIGN AND ENGINEERING SERVICES  
MARCH 2018

HSIP: BADGER ROAD TWO WAY LEFT TURN LANE  
PROJECT NO, 0602009/NFHWHY00096

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## **INTRODUCTION/HISTORY**

The Badger Road facility begins at milepost 349.2 of the Richardson Highway in North Pole, Alaska and rejoins the Richardson Highway at milepost 357.0. This road connects Ft. Wainwright to North Pole in the Fairbanks North Star Borough. Badger Road originally followed a winding alignment along the Chena River that first received pavement in 1962. The subsequent 1996 Badger Road Reconstruction Project realigned and straightened the facility to include a bike path. Continued population growth in this corridor upgraded the functional classification from Rural Major Collector to an Urban Minor Arterial in 2011.

Several high profile crashes on Badger Road in conjunction with a higher than average crash rate prompted the Northern Region Alaska Department of Transportation & Public Facilities (ADOT&PF) to request a Road Safety Audit (RSA) of Badger Road. Holmes and Peede intersects Badger Road on a curve with a 6% cross-slope due to superelevation (for comparison driveway standards require a 2% maximum for traction). The 2015 RSA team observed eastbound traffic slipping while climbing this steep grade, and recommended a cross-slope reduction to improve traction. The 2015 RSA also identified that the frequency of access points along Badger Road are contributing to the high crash rate. The primary objective of this project is to reduce the severity and frequency of crashes on Badger Road. National studies indicate a reduction of all crash types with the implementation of a Two Way Left Turn Lane (TWLTL).



Figure 1: Project Location Map

## **PROJECT DESCRIPTION**

The ADOT&PF, in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), proposes to upgrade Badger Road from Dennis Road to Hurst Road to reduce turning-related crashes. Upgrades will consist of the construction of a continuous TWLTL from Dennis Road to Hurst Road and intersection improvements of the Holmes and Peede Road intersection. This project is being developed under the Highway Safety Improvement Program (HSIP). The proposed project consists of:

- Constructing a continuous TWLTL to include road widening and repaving,
- Reconstructing ditches, replacing culverts, and installing new culverts,
- Curve improvements at the Holmes and Peede intersection,
- Updating signing and striping,
- Tree and brush clearing to provide sight distance at intersections, and
- Relocating utilities impacted by road improvements.

The total project length is 9.03 miles. See Figure 2, Project Extents.

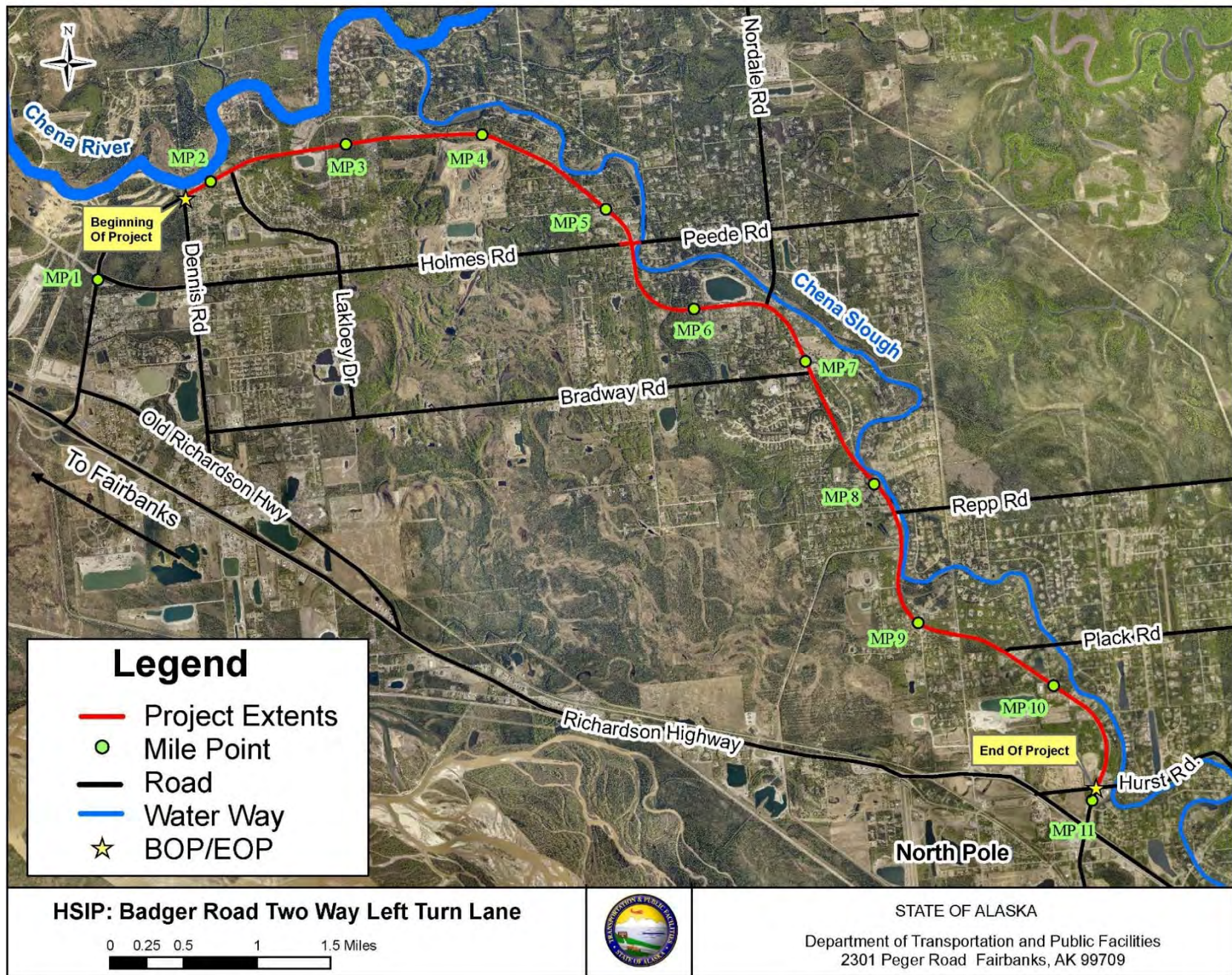


Figure 2: HSIP: Badger Road Two Way Left Turn Lane Project Extents

## DESIGN STANDARDS

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

## DESIGN EXCEPTIONS AND DESIGN WAIVERS

There are no design exceptions or waivers.

## DESIGN ALTERNATIVES

The following design alternatives were evaluated after the environmental document.

### Badger Road

To accommodate the continuous TWLTL, the existing 40-ft of top width will require expansion to 44 feet. The Categorical Exclusion Environmental Document contained in Appendix A assumes a uniform 2-ft widening to both sides of the road to achieve the desired 44-ft top width. Equal widening resulted in minor realignments to the bike path where it joins Badger Road at major intersections. Shifting the alignment such that the widening is entirely away from the bike path reduces construction costs, traffic impacts, and drainage impacts.

### Holmes and Peede Intersection

The intersection of Holmes and Peede is on a curve near the Badger Road gas station and has the highest intersection crash frequency on Badger Road within the project limits. To reduce the cross-slope at the intersection, as recommended in the RSA, the curve was adjusted from a radius of 1432.4-ft to 1320-ft and shifted to the north, away from the intersection. The resultant cross-slope at the intersection is 2.3% as compared to the existing 6.0% while still meeting the 55 mph design speed.

## PREFERRED DESIGN ALTERNATIVE

The preferred alternative consists of the following:

- A continuous 12-ft center turn lane,
- Two 12-ft through lanes,
- Two 4-ft shoulders,
- Conducting roadway widening predominantly away from the bike path,
- Realigning Badger Road at the Holmes/Peede intersection and reducing the cross-slope at the intersection,
- A paved safety edge.

## 3R ANALYSIS

Not applicable.

## TRAFFIC ANALYSIS

Badger Road is an Urban Minor Arterial that predominantly serves residential and commuter traffic between North Pole and Fairbanks. Average Annual Daily Traffic (AADT) for Badger Road within the proposed project limits are provided in Table 1.

Table 1: Current and projected AADT on Badger Road

Cross Street	Milepoint	2016 AADT (vpd)	2040 AADT (vpd)
Dennis Road to Nordale Road	1.88 to 6.52	4,900	7,440
Nordale Road to Hurst Road	6.52 to 10.91	7,750	11,750

Spot speed studies were performed on Badger Road that recorded measurements at 6 locations in the existing 55 mph zone. Over 100 samples were taken for speed at each location. The collected data in conjunction with the traffic recorder near Beulah Court indicates that 85<sup>th</sup> percentile speed matched the posted 55 mph speed limit.

## HORIZONTAL/VERTICAL ALIGNMENT

Grades along Badger Road are generally flat and remain similar to the existing vertical alignment. From Dennis Road to Old Badger Road and Star Court to Hertz Road, grades vary from 0.01% to 0.5%, and from Old Badger Road to Star Court, grades vary from 0.2% to 0.7%.

The horizontal alignment along Badger Road includes 14 curves. The degree of curvature varies from 0.5 degrees to 4.4 degrees. In places where the proposed alignment has been shifted to accommodate widening away from the bike path there is less than a 0.1-degree change from the existing alignment, except for the curve at Holmes and Peede, which resulted in a 0.4-degree curve change to reduce the rate of superelevation at the intersection.

## TYPICAL SECTION

The proposed typical section for Badger Road consists of two 12-foot through lanes, a continuous 12-foot center turn lane, dedicated right and left-turn pockets at existing locations, and two 4-foot shoulders. Up to 4:1 foreslopes or flatter will be utilized to best fit the existing ditch profiles. Clear zone will extend 26 feet beyond the edge of pavement, or to the existing ROW.

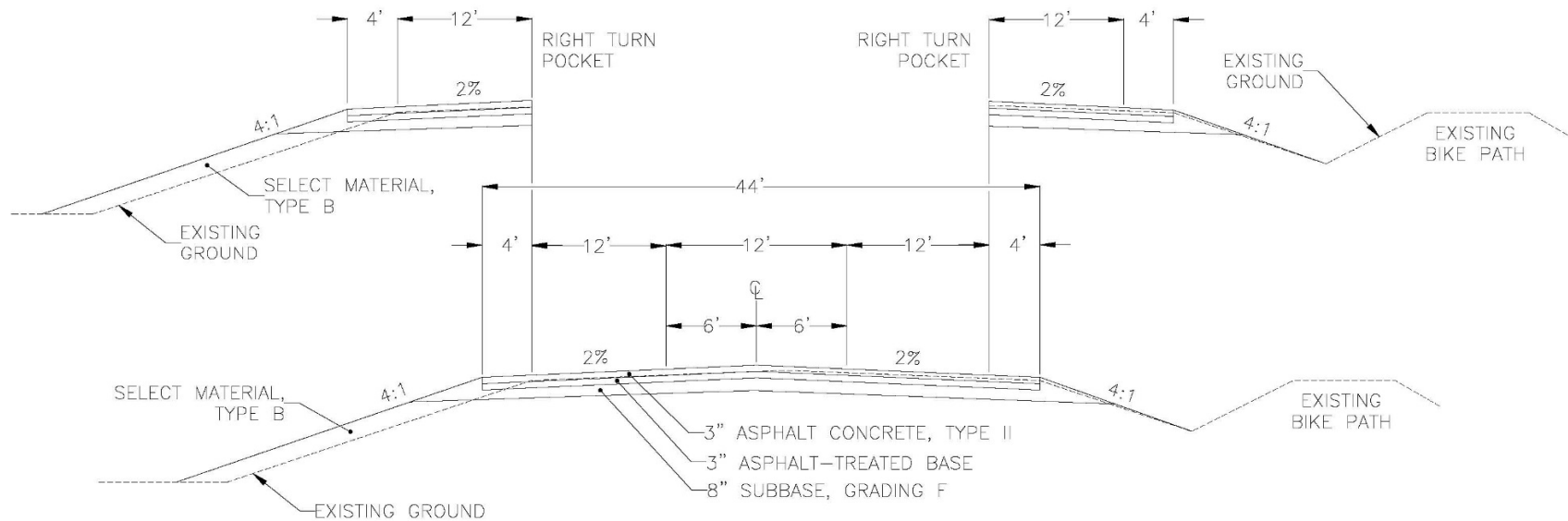


Figure 3: Badger Road Two Way Left Turn Lane Typical Section

## **PAVEMENT DESIGN**

Pavement design for this project utilized the Alaska Flexible Pavement Manual and associated software. The design life of the pavement is 15 years. The recommended pavement design is 3 inches of hot mix asphalt concrete, 3 inches of asphalt-treated base and 8 inches of Subbase, Grading F. See Appendix C for the approved pavement design.

## **PRELIMINARY BRIDGE LAYOUT**

Not applicable. This project does not include any bridges.

## **RIGHT-OF-WAY REQUIREMENTS**

All permanent improvements will occur within existing ROW limits. Temporary Construction Permits (TCPs) will be obtained for driveway reconstruction if needed.

## **MAINTENANCE CONSIDERATIONS**

A site visit was conducted in April of 2016 with Maintenance & Operations (M&O) personnel. M&O noted that the paved surface is in poor condition, requiring regular maintenance every spring.

There are 33.12 estimated lane miles from Dennis Road to Hurst Road. This project will increase the paved surface to 35.92 lane miles. The improved pavement surface will offset the increased maintenance costs incurred from the additional 2.8 lane miles.

## **MATERIAL SOURCES**

There are sufficient commercial sources for material that will be contractor-furnished.

## **UTILITY RELOCATION & COORDINATION**

Golden Valley Electric Association (GVEA) owns the existing overhead electrical utilities. Overhead power and communication lines cross the project 62 times. Many crossing have associated communication lines below the power lines. Of the 62 overhead crossings, two existing communication wire heights are identified as substandard per 17 ACC 15.201 and will require adjustment.

General Communications Inc. (GCI) and Alaska Communications (ACS) own an additional 27 subsurface crossings. These crossings include a buried fiber optic cable at station 373+53 near Bradway Road. Communication lines run parallel to the corridor project-wide, typically away from project limits and at the edge of the existing ROW. One instance of narrow ROW occurs project left from 217+41 to 220+94. The buried telecommunication line will be adjacent to the proposed toe of slope. This will increase the overall depth of the buried cable from 3 feet to 4 feet, and the owner will be notified during plan review and asked to provide comment. A Draft Utility Conflict Report is included in in Appendix E.

North Pole Water & Sewer Utility proposes to install water lines along Badger Road. Construction will commence as soon as 2019. A plan set will be sent to North Pole Water & Sewer Utility to coordinate construction timing and to reduce conflicts.

Interior Gas Utilities (IGU) has proposed a future gas line in the Badger Road corridor. The scope and schedule of gas line work is currently unknown and coordination efforts will continue. IGU will be sent plan sets to aid in early coordination efforts.

## **ACCESS CONTROL FEATURES**

Badger Road is not an access controlled facility. Driveway permits are required for new accesses. No change to access control features are proposed.

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

ADA features are not proposed with this project. The project does not include curb ramps or applicable ADA facilities. Any modifications to the multi-use path to accommodate the project will comply with applicable standards. The existing multi-use path will continue to accommodate pedestrians and bicycles.

## **SAFETY IMPROVEMENTS**

Badger Road is identified as having a higher than average crash rate. In 2015, an RSA was commissioned to assess the cause of these crashes and recommend solutions. The RSA team observed that Badger Road has an average of 22 driveways or minor side streets per mile, which are likely contributing to the high crash rate. The RSA team recommended a TWLTL to reduce these types of crashes.

TWLTL's provide the following benefits:

- Reduce turning-related crashes by about one-third as compared to undivided roads,
- Decrease the severity of crashes,
- Maintain similar access to residences and businesses, and
- Are recognized by the National Cooperative Highway Research Program (NCHRP) to reduce all crash types, including head-on collisions.

The RSA team also noted several traction-related concerns with the Holmes and Peede intersection. Historic crash data indicates this intersection has the highest crash rate on Badger Road and the cross-slope of Holmes and Peede with Badger Road is a contributing factor.

The HSIP nomination package contained in Appendix F further outlines the safety and cost effectiveness of this project.

## **INTELLIGENT TRANSPORTATION SYSTEM FEATURES**

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

## **DRAINAGE**

Badger Road and the surrounding area is generally flat, and this project will not change current drainage patterns. A site visit with M&O personnel indicated no problems with flooding or aufeis. The cross-slope of Badger Road sheds water to vegetated ditches where it infiltrates the ground or flows to natural low points. Surface drainage flows north towards the Chena River and the Chena Slough.

This project includes 6 culvert crossings that are larger than 36 inches. The two 60-in culverts at station O5 98+23 and O5 98+32 (Dennis Road) are in good shape and include a concrete headwall. The existing top-width of pavement is sufficient to accommodate the proposed design of 44 feet. There will be no change to the Dennis Road culverts. The 48-in culverts at O5 308+90 and O5 309+02 are also in good shape and will not be impacted by this project. The 72-in culverts at O5 444+72 and O5 445+85 in Flood Channel C show signs of failing joints and will be replaced by this project.

Table 2: Culverts larger than 36-in diameter crossing Badger Road

Station	Diameter (in)	Type	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Notes
O5 98+23	60	CMP	116.2	448.64	448.56	Good Condition, Near Dennis Rd.
O5 98+32	72	CMP	116.6	448.96	446.62	
O5 308+90	48	CMP	108.8	462.44	461.81	Good Condition, Near Sandusky St.
O5 309+02	48	CMP	108.7	462.83	461.86	
O5 444+72	72	CMP	113.6	467.53	467.08	Poor Condition, in Flood Channel C.
O5 445+85	72	CMP	114.0	467.54	467.11	

The following table provides the average total precipitation and snow depths for the project area. Data is from the Western Regional Climate Center website using the NOAA Cooperative Stations for North Pole, Alaska from October 1, 1968 to June 9, 2016.

Table 3: Mean Annual Precipitation and Snow Depths

Station	Mean Annual Precipitation (in)	Mean Annual Snow Depth (in)
North Pole, Alaska	11.2	8.0

## SOIL CONDITIONS

An Engineering Geology and Soils Report was prepared for the Badger Road Reconstruction and Bike Path Project in 1988. Badger Road is located upon alluvial deposits from the Chena and Tanana Rivers, underlain by Fairbanks Schist bedrock. Sand and gravel with sandy gravel overlay the bedrock up to 100-ft thick. The 1988 report indicates discontinuous areas of silt up to 10-ft thick overlaying the sandy gravel. Discontinuous areas of frozen soils were found from Dennis Road to Loose Moose Loop.

The subsequent 1996 Badger Road Reconstruction project sub-excavated known areas of undesirable material, replacing it with a minimum of 36-in of Select B fill within the road prism. M&O personnel attended a joint site visit in April of 2016 and noted no subsidence or heaving problems with the current road. Based on the 1988 Geology and Soils Report and the 1996 Badger Road Reconstruction project as-builts, additional geotechnical exploration is not warranted.

Freezing and thawing indices are calculated below in Table 4. Data is from the Western Regional Climate Center website using the NOAA cooperative stations for North Pole, Alaska from October 1, 1968 to June 9, 2016

Table 4: Freezing and Thawing Indices

Station	Freezing Index (Days-°F)	Thawing Index (Days-°F)
North Pole, Alaska	5,478.4	3,180.5

## **EROSION AND SEDIMENT CONTROL**

The area of ground disturbance for this project will be approximately 75 acres, not including contractor-furnished material sites. A Storm Water Pollution Prevention Plan (SWPPP) will be required. The project will be constructed primarily in uplands. Vegetation in the project area generally consists of blue joint grass, swamp horsetail, muskeg sedge, green alder, willow, and fireweed.

Foundation soils in the project area primarily consist of poorly graded gravel with silt and sand, and silty sand with gravel.

Chena Slough is listed as a 303(d) Impaired Water body. This project will not disturb greater than 20 acres of land at one time that drains into the Chena Slough. Conformance to the existing APDES permit is required. A monitoring plan is not required.

The project will require temporary and permanent erosion and sediment control measures. Temporary erosion control measures may include perimeter control, track walking, and temporary seeding. The preferred perimeter control method in the project will be a vegetative buffer. All disturbed areas will be permanently stabilized.

## **ENVIRONMENTAL COMMITMENTS**

This project does not include unique environmental commitments or mitigation measures. Standard environmental commitments and mitigations are identified within the Categorical Exclusion document in Appendix B.

## **WORK ZONE TRAFFIC CONTROL**

This project is not considered significant for traffic control per Section 1400.2 of the PCM. Badger Road is not in a Transportation Management Area and the AADT is less than 30,000 vehicles per day. This project is not anticipated to require a greater than normal attention to traffic control or work zone impacts that would be considered unacceptable. Work will not fully close the road for more than an hour at a time, and local detours can be utilized to reasonably redirect traffic.

The North Star Volunteer Fire Department Station Two is located near the intersection of Bradway and Badger Road. Additional coordination with the fire department is required to ensure emergency services are maintained during construction.

During construction of the project, traffic will be maintained on the existing corridor. Culvert and embankment expansion may require intermittent lane closures, and lane width reduction. The construction contractor will develop Traffic Control Plans for the work that will be submitted to DOT&PF for approval prior to implementation.

## **VALUE ENGINEERING**

A value engineering study (VE) is required for projects on the National Highway System (NHS) receiving Federal funding with a total cost of \$50,000,000 or more, or a project that includes a bridge and costs greater than \$40,000,000. All major projects with an estimated cost greater than \$500,000,000 or any other Federal-aid projects the FHWA determines to be appropriate require a VE study.

A VE study is not required for this project.

## **COST ESTIMATE**

The estimated costs for this project are as follows:

Design	\$993,000
Utilities	\$150,000
Right-of-Way	\$0.00
Construction (Includes 19.0% Engineering, 4.4% ICAP)	\$19,031,000
	<hr/>
Total Cost of Project	\$20,174,000

## **APPENDIX A**

### **DESIGN CRITERIA AND DESIGN DESIGNATION**

## ALASKA DOT&amp;PF PRECONSTRUCTION MANUAL

Chapter 11 - Design  
PROJECT DESIGN CRITERIA

<b>Project Name:</b>		HISP: Badger Road Two Way Left Turn Lane	
<input checked="" type="checkbox"/> New Construction/Reconstruction	<input type="checkbox"/> 3R	<input type="checkbox"/> PM	<input type="checkbox"/> Other:
<b>Project Number:</b>	NFHWY00096	<input type="checkbox"/> NHS	<input checked="" type="checkbox"/> Non NHS
<b>Functional Classification:</b>	Urban Arterial		
<b>Design Year:</b>	2040	<b>Present ADT:</b>	7750 (2017)
<b>Design Year ADT:</b>	11750	<b>Mid Design Period ADT:</b>	9890 (2030)
<b>DHV:</b>	11.50%	<b>Directional Split:</b>	40/60
<b>Percent Trucks:</b>	6.25	<b>Equivalent Axle Loading:</b>	1,102,698
<b>Pavement Design Year:</b>	2034 (15-year life)	<b>Design Vehicle:</b>	WB-40
<b>Terrain:</b>	Level	<b>Number of Roadways:</b>	1
<b>Design Speed:</b>	55 mph		
<b>Width of Traveled Way:</b>	36-ft		
<b>Width of Shoulders:</b>	<b>Outside:</b>	4-ft	<b>Inside:</b> N/A
<b>Cross Slope:</b>	2.00%		
<b>Superelevation Rate:</b>	$e_{max} = 6\%$		
<b>Minimum Radius of Curvature:</b>	1065-ft		
<b>Min. K-Value for Vert. Curves:</b>	<b>Sag:</b>	115	<b>Crest:</b> 114
<b>Maximum Allowable Grade:</b>	4.0%		
<b>Minimum Allowable Grade:</b>	0.0%		
<b>Stopping Sight Distance:</b>	495-ft		
<b>Lateral Offset to Obstruction:</b>	1.5-ft		
<b>Vertical Clearance:</b>	18-ft		
<b>Bridge Width:</b>	N/A		
<b>Bridge Structural Capacity:</b>	N/A		
<b>Passing Sight Distance:</b>	1985-ft		
<b>Surface Treatment:</b>	<b>T/W:</b>	Asphalt Concrete	<b>Shoulders:</b> Asphalt Concrete
<b>Side Slope Ratios:</b>	<b>Foreslopes:</b>	4H:1V Max	<b>Backslopes:</b> 1.5H:1V Max
<b>Degree of Access Control:</b>	Driveway/entrance regulations		
<b>Median Treatment:</b>	Not applicable.		
<b>Illumination:</b>	Upgrade to LED at existing illuminated intersections.		
<b>Curb Usage and Type:</b>	Not applicable.		
<b>Bicycle Provisions:</b>	Bicycle path, 4-ft shoulders		
<b>Pedestrian Provisions:</b>	Bicycle path, 4-ft shoulders		
<b>Misc. Criteria:</b>	None.		

Proposed - Designer/Consultant:

Endorsed - Engineering Manager:

Approved - Preconstruction Engineer:

Date:

Date:

Date:

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:** October 27, 2017

**FILE NO:** I:\Traffic  
Data\DESIGN\2017\BadgerRd\_NFHWY00096

**TELEPHONE NO:** 451-5150

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

**SUBJECT:** HSIP: Badger Road Two Way Left Turn Lane  
NFHWY00096/0602009  
Design Designation

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

Due to the length of the proposed project scope, multiple volume counts exist on the Badger Road corridor. The traffic volume reported in this design designation was broken down into two links with a separate AADT for each link. Link 1 is Dennis Rd to Nordale Rd, and Link 2 is from Nordale Rd to Hurst Rd.

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

*Sarah E. Schacher*

Sarah E. Schacher, P.E., Preconstruction Engineer

*11/13/2017*

Date

SGV

cc: Jadon Farleigh, Engineering Assistant, Northern Region

Attachment

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

---

**DESIGN DESIGNATION**  
**Fairbanks Field Office Planning**  
**Highway Data & Forecasting**

---

**ROUTE NAME:** Badger Rd  
**STATE ROUTE NO:** 188800  
**CDS MILEAGE:** 1.8825-10.9181  
**FUNCTIONAL CLASS:** Minor Arterial  
**URBAN/RURAL:** Urban

AADT	CDS Milepost	AADT by Year			DHV	
		2016	2030	2040	2030	2040
&	Link 1 1.8825-6.5206	4900	6250	7440	720	860
	Link 2 6.5206-10.9181	7750	9890	11750	1140	1350
DHV	11.50%, see above for values					
D	40-60					
Trucks		% Trucks				
	Class					
	4	0.00				
	5	5.50				
	6	0.50				
	8	0.00				
	9	0.15				
	10	0.10				
	13	0.00				
Total % Trucks		6.25				
ESAL'S (Design Lane)	To Be Provided by Design					

## Computations and Historic Data

Project: Badger Road Two Way Left Turn Lane  
Project # NFHWY00096

### Historic AADT: See attached

The project scope was broken down into two links to represent AADT values for this design designation. The breaks in the links indicate distinct changes in the AADT values.

Link 1: Dennis Rd (MP 1.8825) to Nordale Rd (MP 6.5206)  
Link 2: Nordale Rd (MP 6.5206) to Hurst Rd (MP 10.9181)

Growth rate for calculations was 1.75% due to historic traffic patterns and projected growth along the Badger Rd corridor

#### Growth Rate factors

2030	1.275
2040	1.516

#### Future AADTs

##### Link 1

Year	AADT
2016	4900
2030	6250
2040	7440

##### Link 2

Year	AADT
2016	7750
2030	9890
2040	11750

K-factor 11.50%

DHV=	2030	720
	2040	860

DHV=	2030	1140
	2040	1350

Direction Split (D)= 40-60

### Class Data

188800		CDS MP	Year	Percent By Class							Total Truck %
Station #	Description			4	5	6	8	9	10	13	
18880010	Badger Rd West Of Beulah Ct (CCS)	10.514	2016	0.00%	5.50%	0.50%	0.00%	0.15%	0.10%	0.00%	6.25%
Load Factors				1	0.50	0.85	1.20	1.55	2.24	2.24	
# Axles				2/3	2	3	4	5	6	7+	

# MEMORANDUM

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

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

**DATE:** September 25, 2017

**FILE NO:** \\dotfpgnas\precon\Projects\Fbks\_NP\90096\_Badger\_HSIP\Planning\90096\_design\_designation\_request

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

**PHONE NO:** 451-5371

**FAX NO:** 451-5487

**FROM:** Lauren Little, P.E. *u*  
Engineering Manager  
Northern Region

**SUBJECT:** HSIP: Badger Road Two Way  
Left Turn Lane  
NFHWY00096/0602009  
**Design Designation Request**

Please provide a Design Designation for the subject project.

- ☒ Present AADT
- ☒ Design Year AADT (2040)
- ☒ Mid-Design Period AADT (2030)
- ☒ Design Hourly Volume
- ☒ Directional Split
- ☒ Percent Trucks
- ☒ Design Functional Classification
- ☐ Intersection Turning Movement Counts at:
- ☐ Other (*Specify*)

This project is to reduce turning related crashes on Badger Road from Dennis Road to Hurst Road by constructing a continuous two-way left turn lane (TWLTL). The project is scheduled for construction in FY2019. Please complete the attached Traffic Data Request Form.

Attachment: as stated

*JMS*  
jmf/ms

<h1 style="margin: 0;">Traffic Data Request Form</h1>			TDR Form-1-10/20/03																								
Alaska Department of Transportation & Public Facilities																											
<b>Requested By:</b> Jadon Farleigh		<b>Design Project Number:</b> NFHWY00096/0602009	<b>Date Requested:</b> September 25, 2017																								
<b>Base Year:</b> 2016 <u>Link 1</u> <u>Link 2</u> <b>Base Year Total AADT:</b> 4900    7750 <b>AADT Growth Rate</b> <b>Forward (%/yr):</b> 1.75 <b>End Year:</b> <b>Back Cast (%/yr):</b> <b>Begin Year:</b>		<b>Common Route Name:</b> Badger Road <b>Functional Class:</b> Urban Arterial <b>Urban/Rural</b> <b>Historic M.P. Interval:</b> N/A <b>CDS Route Name:</b> Badger Road (188800) <b>CDS M.P. Interval:</b> From MP 1.8 to MP 10.9																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Truck Category</th> <th style="width: 20%;">Load Factor (ESALs per Truck)</th> <th style="width: 20%;">% of Total AADT in Truck Category</th> </tr> </thead> <tbody> <tr><td>2-axle</td><td></td><td></td></tr> <tr><td>3-axle</td><td>See</td><td></td></tr> <tr><td>4-axle</td><td>attached</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			3-axle	See		4-axle	attached		5-axle			≥ 6-axle			<b>Lane Configuration Sketch:</b> (Designer: Provide sketch of lane layout. Number each lane and show directions.) <div style="text-align: right; margin-top: 10px;"> </div> <div style="text-align: center; margin-top: 20px;"> </div>							
Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category																									
2-axle																											
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4-axle	attached																										
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≥ 6-axle																											
<b>Percent of Base Year Total AADT for Each Numbered Lane in Configuration Sketch:</b>		<b>Comments:</b>																									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 15%;">Lane #</td> <td style="width: 15%;">1</td> <td style="width: 15%;">%</td> <td style="width: 15%;">40</td> </tr> <tr> <td>Lane #</td> <td>2</td> <td>%</td> <td>60</td> </tr> <tr><td>Lane #</td><td></td><td>%</td><td></td></tr> <tr><td>Lane #</td><td></td><td>%</td><td></td></tr> <tr><td>Lane #</td><td></td><td>%</td><td></td></tr> <tr><td>Lane #</td><td></td><td>%</td><td></td></tr> </tbody> </table>		Lane #	1	%	40	Lane #	2	%	60	Lane #		%		Lane #		%		Lane #		%		Lane #		%			
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<b>Data Provided By:</b> 		<b>Provider's Signature:</b> 																									
		<b>Date Provided:</b> 10/27/17																									

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

# Historic AADT Values

Station ID	Description	FC	MP	City	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
31991000	Badger West of Old Badger	11	2.733	North Pole							2040	4237	4237	3578		3951	4251	4275
31993000	Badger North of Peede	11	5.264	North Pole	3401			2679			3079		3399			4475	4217	
31994000	Badger South of Peede	11	5.350	North Pole	2697		2183	2080	2036		2310		2764		3243		4326	
31996000	Badger East of Nordale	11	6.570	North Pole	3172		3309	2810	2995			3732		3917	4172	4700	5144	5103
32006000	Badger North of Plack	11	9.419	North Pole	3438	4501	4290	5006		4493		5547			5338		6120	5788
18880010	Badger West of Beulah	11	10.514	North Pole														
11600620	East End Badger Loop Rd	11	10.565	North Pole	5330	5815	5717	5877	6043	6260	6278	6766	6747	6711	6489	6755	6956	6753

Station ID	Description	FC	MP	City	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
31991000	Badger West of Old Badger	11	2.733		4297	4182	4297					7102	4393	4236	4429	4436	4927	4983	4747	4822	4827
31993000	Badger North of Peede	11	5.264		4344		4444					5626	4183	4068	4414	4255	4574		4784	4818	4909
31994000	Badger South of Peede	11	5.350		4105		4094					5625	3974	3691	4195	3821	3992	4066	3954	3910	4388
31996000	Badger East of Nordale	11	6.570		4814	4505	5022					6965	4841	4696	5058	4829	5094	4787	4985	5481	5625
32006000	Badger North of Plack	11	9.419		5649			6298	6305	6556	5921	7126		5611	5964	5901	5950	5529	5815	5814	6213
18880010	Badger West of Beulah	11	10.514																7280	7300	7788
11600620	East End Badger Loop Rd	11	10.565		6994	6869	7070	7291	7275	7614	7526	7821	7305	7354	7721	7590	7626	7484	7439	7534	8028

**Report**

Route Log

**CDS Route**

BADGER ROAD (188800)

**From Milepoint**

1.5












**To Milepoint**





















































11.2069

**Filter**

FacilityType

INTERCHANGE RAMP;NON-INVENTORY;WYE;SECONDARY FERRY ACCESS;ROUNDAABOUT;PRIMARY FERRY ACCESS;NON-INTERCHANGE RAMP;MAINLINE;CONNECTOR

Milepoint	Attribute	Side	Feature CDS	Description	Viewer
1.5	Functional Class	-	-	MINOR ARTERIAL (Start at Milepoint 0)	 
1.5	FHWA Urban Area	-	-	URBANIZED AREA (FAIRBANKS) (Start at Milepoint 0)	 
1.5	Speed	-	-	55 (Start at Milepoint 1.2103)	 
1.7971	Traffic Station	-	-	31989000	 
1.8825	 Intersection	R	188845	DENNIS ROAD	 
2.2614	 Intersection	R	188835	LAKLOEY DRIVE	 
2.733	Traffic Station	-	-	31991000	 
2.8117	 Intersection	L	188801	OLD BADGER LOOP ROAD	 
2.9442	 Intersection	B	-	LINCOLNWOOD DRIVE	 
3.245	 Intersection	B	-	JOY DRIVE	 
3.564	 Intersection	L	188801	OLD BADGER LOOP ROAD	 
4.1188	 Intersection	B	-	LOOSE MOOSE LOOP	 
5.2643	Traffic Station	-	-	31993000	 
5.3042	 Intersection	R	188850	HOLMES ROAD	 
5.3042	 Intersection	L	188370	PEEDE ROAD	 

Milepoint	Attribute	Side	Feature CDS	Description	Viewer
5.3505	Traffic Station	-	-	31994000	 
6.5206	 Intersection	L	188813	NORDALE ROAD	 
6.5703	Traffic Station	-	-	31996000	 
7.0893	 Intersection	B	188810	BRADWAY ROAD	 
8.213	 Intersection	L	188805	REPP ROAD	 
9.2995	 Intersection	B	188880	PERIDOT STREET	 
9.4192	Traffic Station	-	-	32006000	 
9.6451	 Intersection	L	188500	PLACK ROAD	 
10.1374	Traffic Station	R	-	18880010	 
10.5647	Traffic Station	-	-	11600620	 
10.5927	 Intersection	R	-	HORSESHOE WAY	 
10.7318	Speed	-	-	55 -> 40	 
10.9181	 Intersection	B	188860	HURST ROAD	 
11.0318	Speed	-	-	40 -> 25	 
11.0635	 Intersection	L	-	DOUGHCHEE AVENUE	 
11.1052	Traffic Station	-	-	32001000	 
11.1216	 Intersection	R	180016	BADGER SB - RICHARDSON NB WYE	 
11.1654	 Intersection	L	180018	BADGER LOOP ROUNDABOUT	 
11.1711	 Intersection	R	180011	BADGER - RICH WB RAMP	 
11.1788	 Intersection	L	180018	BADGER LOOP ROUNDABOUT	 

## **APPENDIX B**

### **ENVIRONMENTAL DOCUMENT**

**State of Alaska**  
**Department of Transportation & Public Facilities**

**CATEGORICAL EXCLUSION DOCUMENTATION FORM  
FOR FEDERAL HIGHWAY ADMINISTRATION PROJECTS**

---



Project Name: HSIP: Badger Road Two Way Left Turn Lane

Project Number (state/federal): 0602009/NFHWY00096

Date: 5/2/2017

CE Designation: 23 CFR 771.117(c)(26)

List of Attachments:

23 CFR 771.117(e) Form

Appendix A - Figures

Appendix B - Class of Action Consultation

Appendix C - Section 106 Consultation

Appendix D - Agency Scoping Letter and Replies

Appendix E - Section 4(f) Consultation

Appendix F - Public Involvement Documentation

Appendix G - Location Hydraulic Study (Public Notice of E.O. 11988 and E.O. 11990)

## **I. Project Purpose and Need**

Badger Road is approximately 10-mile long, two-way road between North Pole and Fairbanks, Alaska. The Badger Road facility begins at milepost 349.2 of the Richardson Highway in North Pole and ends at milepost 357.0. This project proposes to install a continuous Two Way Left Turn Lane (TWLTL) on Badger Road from the intersection with Hurst Road to the intersection with Dennis Road. Construction is planned for the summer of 2019. See Figure 1 for a project map.

**Purpose:** To improve safety on Badger Road.

**Need:** The Department of Transportation identified Badger Road as having a higher than average crash rate. A Road Safety Audit (RSA) was then commissioned to assess the cause of these crashes and recommend solutions. The RSA was conducted by public safety officials, maintenance and traffic engineering personnel. The RSA team observed that Badger Road has an average of 22 driveways or minor side streets per mile which is likely a contributing factor to the high crash rate. The team also identified the super elevation rate at the Peede/Holmes Road intersection as a potential contributor to wintertime crashes at that intersection. Construction of a continuous TWLTL and curve flattening at the intersection of Badger Road and Holmes/Peede Road can reduce the severity and frequency of crashes on Badger Road.

## **II. Project Description**

The Alaska Department of Transportation & Public Facilities (ADOT&PF), in cooperation with the Alaska Division of the Federal Highway Administration (FHWA), proposes to upgrade Badger Road from Dennis Road to Hurst Road to reduce turning related crashes and crashes at the Holmes/Peede Road intersection with Badger Road. Upgrades will consist of the construction of a continuous Two Way Left Turn Lane (TWLTL) from Dennis Road to Hurst Road, and curve improvements at the Holmes/Peede Road intersection. This project is being developed under the Highway Safety Improvement Program (HSIP). The proposed project consists of:

- Construction of a TWLTL, including road widening and repaving,
- Reconstructing ditches, replacing culverts, and installing new culverts,
- Curve improvements at the Peede/Holmes intersection,
- Updating signing and striping,
- Tree and brush clearing to provide sight distance at intersections,
- Upgrading the existing illumination to L.E.D., and
- Relocating buried and underground utilities impacted by road improvements.

The project is located in Sections 13,14, 15, 16, and 24, Township 1 S, Range 1 E, Fairbanks Meridian, Sections 19, 20, 29, 32, 33, of Township 1S, Range 2E of the Fairbanks Meridian and Section 4, Township 2S, Range 2E of the Fairbanks Meridian. The beginning of the project is at Dennis Road is located at Lat/Long: 64.8289 North, and 147.5442 West. The end of the project is at Hurst Road Lat/Long: 64.7624 North, and 147.3479 West.

On January 12, 2016 ADOT&PF Statewide Environmental NEPA Program Manager confirmed the project to be: 1) a categorical exclusion under Code of Federal Regulations 23 CFR 771.117(c)(26) and 2) a state-assignable project per the 6004 Memorandum of Understanding. A copy of the Class of Action statewide concurrence is in Appendix B.

### III. Environmental Consequences

- For each yes, summarize the activity evaluated and the magnitude of the impact.
- For any consequence category with an asterisk (\*), additional information must be attached such as an alternatives analysis, agency coordination or consultation, avoidance measures, public notices, or mitigation statement.
- Include direct and indirect impacts in each analysis.

<b>A. <u>Right-of-Way Impacts</u></b>	<u>N/A</u>	<u>YES</u>	<u>NO</u>
1. Additional right-of-way required.		<input type="checkbox"/>	<input checked="" type="checkbox"/>
• Permanent easements required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Estimated number of parcels: <u>0</u>			
• Full or partial property acquisition required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Estimated number of full parcels: <u>0</u>			
• Estimated number of partial parcels: <u>0</u>			
• Property transfer from state or federal agency required. <i>If yes, list agency in No. 4 below.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Business or residential relocations required. <i>If yes, summarize the findings of the conceptual stage relocation study in No. 4 below and attach the conceptual stage relocation study.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/>
• Number of relocations: <u>0</u>			
• Type of relocation: Residential: <input type="checkbox"/> Business: <input type="checkbox"/> Residential (Indicate number: <u>0</u> ) Business (Indicate number: <u>0</u> )			
• Last-resort housing required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Will the project or activity have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations as defined in <a href="#">E.O. 12898</a> (FHWA Order 6640.23A, June 2012)?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. The project will involve use of ANILCA land that requires an <a href="#">ANILCA Title XI</a> approval. <i>If yes, the project is not assigned to the State per the 6004 MOU and the CE</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

must be processed by FHWA.

4. Summarize the right-of-way impacts, if any:

The proposed improvements will be constructed within the existing right-of-way (ROW). Temporary construction permits and easements may be required to facilitate construction. Permanent ROW acquisition is not anticipated for this project.

**B. Social and Cultural Impacts**

N/A   YES   NO

1. The project will affect neighborhoods or community cohesion. ☐ YES ☒ NO
2. The project will affect travel patterns and accessibility (e.g. vehicular, commuter, bicycle, or pedestrian). ☐ YES ☒ NO
3. The project will affect school boundaries, recreation areas, churches, businesses, police and fire protection, etc. ☐ YES ☒ NO
4. The project will affect the elderly, handicapped, nondrivers, transit-dependent, minority and ethnic groups, or the economically disadvantaged. ☐ YES ☒ NO
5. There are unresolved project issues or concerns of a federally-recognized Indian Tribe [as defined in [36 CFR 800.16\(m\)](#)]. *If yes, the project is not assigned to the State per the 6004 MOU and the CE must be processed by FHWA.* ☐ YES ☒ NO
6. Summarize the social and cultural impacts, if any:

This project is not anticipated to have adverse social or cultural impacts. The project may temporarily influence travel patterns and accessibility during construction. Access to residences, businesses, community facilities, emergency services, and side streets will be maintained throughout the project. This project will not disproportionately affect minorities or disadvantaged persons. When complete, this project is anticipated to increase safety, accessibility and enhance travel in the corridor.

**C. Economic Impacts**

N/A   YES   NO

1. The project will have adverse economic impacts on the regional and/or local economy, such as effects on development, tax revenues and public expenditures, employment opportunities, accessibility, and retail sales. ☐ YES ☒ NO
2. The project will adversely affect established businesses or business districts. ☐ YES ☒ NO
3. Summarize the economic impacts, if any:
- 4.

Adverse economic impacts are not anticipated as a result of the proposed project. The proposed project will provide safer access to adjacent development.

**D. Land Use and Transportation Plans**

N/A   YES   NO

1. Project is consistent with land use plan(s). ☐ YES ☒ NO  
a. Identify the land use plan(s) and date. North Pole Land Use Plan, Jan. 2010 and Fairbanks North Star Borough Regional Comprehensive Plan, September 2005
2. Project is consistent with transportation plan(s). ☐ YES ☒ NO  
a. Identify the transportation plan(s) and date. Fairbanks North Star Borough Regional Comprehensive Plan, September 2005 and 2016-2019 Statewide transportation Improvement Program (STIP)
3. Project would induce adverse indirect and cumulative effects on land use or transportation. *If yes, attach analysis.* ☐ YES ☒ NO

4. Summarize how the project is consistent or inconsistent with the land use plan(s) and transportation plan(s):

The project is consistent with the *2005 FNSB Regional Comprehensive Plan* and *North Pole Land Use Plan, Jan 2010*. FNSB Planning has shared their agreement with this conclusion in their 10/10/2016 scoping reply in Appendix D. The project is consistent with Transportation and Infrastructure Goal #1: "To have a safe, efficient, multi-modal transportation system that anticipates community growth and Action C: Ensure that road designs improve safety and minimize adverse impacts, identify and correct problem intersections." This project is in the Statewide Transportation Improvement Plan (STIP) under the Highway Safety Improvement Program (HSIP).

**E. Impacts to Historic Properties**

N/A      YES      NO

1. Does the project involve a road that is included on the "[List of Roads Treated as Eligible](#)" in the Alaska Historic Roads PA? *If yes, follow the [Interim Guidance for Addressing Alaska Historic Roads](#).* ☐      ☒
2. Does the project qualify as a Programmatic Allowance under the Section 106 Programmatic Agreement? *If yes, attach the Section 106 PA Streamlined Project Review Screening Record approved by the Regional PQI.* ☒\*      ☐
3. Is a National Register of Historic Places listed or eligible property in the Area of Potential Effect? ☐      ☐      ☒
4. Date Consultation/Initiation letters sent: Not Applicable *Attach copies to this form.*
  - a. List consulting parties: Not Applicable
  - b. If no letters were sent, explain why not. *Attach "Section 106 Proceed Directly to Findings Worksheet", if applicable.*

The project qualifies as an allowance under the Section 106 Programmatic Agreement.
5. Date "Finding of Effect" letters sent: Not Applicable *Attach copies to this form*
  - a. State any changes to consulting parties: Not Applicable
6. List responding consulting parties, comment date, and summarize:  
Not Applicable
7. Are there any unresolved issues with consulting parties? ☒      ☐      ☐
  - a. If yes, list: Not Applicable
8. Date SHPO concurred with "Finding of Effect": Not Applicable *Attach copy to this form.*
9. Will there be an adverse effect on a historic property? *If yes, attach correspondence (including response from ACHP) and signed MOA. If yes, Programmatic Agreements (PCEs) do not apply.* ☒      ☐      ☐
10. Summarize any effects to historic properties. *List affected sites (by AHRS number only) and any commitments or mitigative measures. Include any commitments or mitigative measures in [Section VI](#).*

This project qualifies for processing under the 106 PA based on a review made by the DOT&PF Northern Region Cultural Resource Specialist. All project activities have been determined to be either a Tier I or Tier II allowance. Attached in Appendix C is the *106 PA Streamlined Project Review Screening Record* form signed 3/13/2017.

**F. Wetland Impacts**

- |   | <u>N/A</u>               | <u>YES</u>                            | <u>NO</u>                           |
|---|--------------------------|---------------------------------------|-------------------------------------|
| 1. Project affects wetlands as defined by the U.S. Army Corps of Engineers (USACE). <i>If yes, document public and agency coordination required per <a href="#">E.O. 11990</a>, Protection of Wetlands.</i>   |                          | <input checked="" type="checkbox"/> * | <input type="checkbox"/>            |
| 2. Are the wetlands delineated in accordance with the “ <a href="#">Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0) Sept. 2007</a> ”?   | <input type="checkbox"/> | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| 3. Estimated area of wetland involvement (acres): <u>0.5</u>  |                          |                                       |                                     |
| 4. Estimated fill quantities (cubic yards): <u>65</u>   |                          |                                       |                                     |
| 5. Estimated dredge quantities (cubic yards): <u>0</u>  |                          |                                       |                                     |
| 6. Is a USACE authorization anticipated?<br><i>If yes, identify type:</i> NWP <input checked="" type="checkbox"/> Individual <input type="checkbox"/> General Permit <input type="checkbox"/> Other <input type="checkbox"/>  | <input type="checkbox"/> | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| 7. Wetlands Finding <i>Attach the following supporting documentation as appropriate:</i> <ul style="list-style-type: none"><li>• <i>Avoidance and Minimization Checklist, and Mitigation Statement</i></li><li>• <i>Wetlands Delineation</i></li><li>• <i>Jurisdictional Determination</i></li><li>• <i>Copies of public and resource agency letters received in response to the request for comments</i></li></ul> |                          |                                       |                                     |
| a. Are there practicable alternatives to the proposed construction in wetlands? <i>If yes, the project cannot be approved as proposed.</i>  | <input type="checkbox"/> | <input type="checkbox"/>              | <input checked="" type="checkbox"/> |
| b. Does the project include all practicable measures to minimize harm to wetlands? <i>If no, the project cannot be approved as proposed.</i>  | <input type="checkbox"/> | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| c. Only practicable alternative: Based on the evaluation of avoidance and minimization alternatives, there are no practicable alternatives that would avoid the project’s impacts on wetlands. The project includes all practicable measures to minimize harm to the affected wetlands as a result of construction. <i>If no, the project cannot be approved as proposed.</i>                                       | <input type="checkbox"/> | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| 8. Summarize the wetlands impacts and mitigation, if any. <i>Include any commitments or mitigative measures in <a href="#">Section VI</a>.</i>  |                          |                                       |                                     |

A notice of wetland involvement was placed in the Fairbanks Daily News Miner on May 15, 20 and 22, June 10, 2016 and posted on the State of Alaska public notice website on June 8, 2016. A copy of the Newspaper Advertisement and online public notice are located in Appendix F.

The National Wetlands Inventory, accessed on March 21, 2017 lists low scrub and dwarf needle leaf forest in the vicinity of the project (Appendix A, Figure 2). The proposed improvements will not impact these wetlands.

Wetland impact avoidance and minimization measures have been incorporate into the project to mitigate wetland impacts.

- The project would follow the exiting horizontal roadway alignment.
- Unavoidable wetland impacts would be confined to narrow strips adjacent to the culverts at flood channel C and west of Sandusky Street.
- Impacts would be to the edge of wetlands and where previous roadway disturbance has occurred and would not bisect wetlands across their undisturbed interior.
- Natural drainage patterns associated with wetlands would be maintained.

Embankment side slopes adjacent to wetlands would be constructed at the maximum steepness to meet design standards while minimizing wetland impacts.

**G. Water Body Involvement**

- |  | <u>N/A</u>               | <u>YES</u>                            | <u>NO</u>                           |
|--|--------------------------|---------------------------------------|-------------------------------------|
| 1. Project affects a water body.   |                          | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| 2. Project affects a navigable water body as defined by USCG ( <i>i.e.</i> , Section 9).   | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| 3. Project affects Waters of the U.S. as defined by the USACE, Section 404.  | <input type="checkbox"/> | <input checked="" type="checkbox"/> * | <input type="checkbox"/>            |
| 4. Project affects Navigable Waters of the U.S. as defined by the USACE (Section 10).  | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| 5. Project affects fish passage across a stream frequented by salmon or other fish ( <i>i.e.</i> , <a href="#">Title 16.05.841</a> ).  | <input type="checkbox"/> | <input checked="" type="checkbox"/>   | <input type="checkbox"/>            |
| 6. Project affects a cataloged anadromous fish stream, river or lake ( <i>i.e.</i> , <a href="#">Title 16.05.871</a> ).  | <input type="checkbox"/> | <input checked="" type="checkbox"/> * | <input type="checkbox"/>            |
| 7. Project affects a designated Wild and Scenic River or land adjacent to a Wild and Scenic River. <i>If yes, the Regional Environmental Manager should consult with the Statewide NEPA Manager (assigned CEs) or FHWA Area Engineer and FHWA Environmental Program Manager (non-assigned CEs) to determine applicability of Section 4(f).</i>                           |                          | <input type="checkbox"/>              | <input checked="" type="checkbox"/> |
| 8. Proposed water body involvement: Bridge <input type="checkbox"/> Culvert <input checked="" type="checkbox"/> Embankment Fill <input checked="" type="checkbox"/><br>Relocation <input type="checkbox"/> Diversion <input checked="" type="checkbox"/> Temporary <input checked="" type="checkbox"/> Permanent <input type="checkbox"/> Other <input type="checkbox"/> | <input type="checkbox"/> |                                       |                                     |
| 9. Type of stream or river habitat impacted: Spawning <input type="checkbox"/> Rearing <input type="checkbox"/> Pool <input type="checkbox"/><br>Riffle <input type="checkbox"/> Undercut bank <input type="checkbox"/> Other <input checked="" type="checkbox"/>  | <input type="checkbox"/> |                                       |                                     |
| 10. Amount of fill below (cubic yards): OHW <u>58</u> MHW <u>n/a</u> HTL <u>n/a</u>  |                          |                                       |                                     |
| 11. Summarize the water body impacts and mitigation, if any. <i>Include any commitments or mitigative measures in <a href="#">Section VI</a>.</i>  |                          |                                       |                                     |

In response to the agency scoping letter contained in Appendix D on October 13, 2016 the Department received a letter from ADFG stating that Drainage Channel C is considered to be a resident fish water body in the project area. The other two areas containing culverts are considered to provide off-channel habitat during high water events but to not routinely provide fish habitat. Any modifications to these sites will not inhibit fish movement downstream to the adjacent fish bearing water bodies or trap fish as high waters recede. Chena Slough is indicated as anadromous water from Nordale Road downstream. Badger Road parallels Chena Slough for a portion of this project. Proper sediment control should provide for minimal impact from this project.

**H. Fish and Wildlife**

- |  | <u>N/A</u>               | <u>YES</u>                            | <u>NO</u>                           |
|--|--------------------------|---------------------------------------|-------------------------------------|
| 1. Anadromous and resident fish habitat. <i>Any activity or project that is conducted below the ordinary high water mark of an anadromous stream, river, or lake requires a Fish Habitat Permit.</i>   |                          |                                       |                                     |
| a. Database name(s) and date(s) queried: Alaska Department of Fish and Game (DFG) Correspondence of October 13, 2016 (see Appendix B, Agency Scoping)  |                          |                                       |                                     |
| b. Anadromous fish habitat present in project area.  |                          | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| c. Resident fish habitat present in project area.  |                          | <input checked="" type="checkbox"/> * | <input type="checkbox"/>            |
| d. Adverse effect on spawning habitat.   | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| e. Adverse effect on rearing habitat.  | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| f. Adverse effect on migration corridors.  | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| g. Adverse effect on subsistence species.  | <input type="checkbox"/> | <input type="checkbox"/> *            | <input checked="" type="checkbox"/> |
| 2. Essential Fish Habitat (EFH). <i>EFH includes any anadromous stream used by any of the five species of Pacific salmon for migration, spawning or rearing, as well as other coastal, nearshore and offshore areas as designated by NMFS.</i> |                          |                                       |                                     |
| a. Database name(s) and date(s) queried: ADF&G Correspondence of October 3, 2016 (see Appendix D, Agency Scoping)  |                          |                                       |                                     |
| b. EFH present in project area.  |                          | <input type="checkbox"/>              | <input checked="" type="checkbox"/> |
| c. Project proposes construction in EFH. <i>If yes, describe EFH impacts in H.6.</i>   | <input type="checkbox"/> | <input type="checkbox"/>              | <input checked="" type="checkbox"/> |

**H. Fish and Wildlife****N/A   YES   NO**

- d. Project may adversely affect EFH. *If yes, attach EFH Assessment.* ☐ ☐\* ☒
- e. Project includes conservation recommendations proposed by NMFS. *If NMFS conservation recommendations are not adopted, formal notification must be made to NMFS. Summarize the final conservation measures in H.6 and list in [Section VI](#).* ☐ ☐ ☒
3. Wildlife Resources:
- a. Project is in area of high wildlife/vehicle accidents. ☐ ☒
- b. Project would bisect migration corridors. ☐ ☒
- c. Project would segment habitat. ☐ ☒
4. [Bald and Golden Eagle Protection Act](#). *If yes to any below, consult with USFWS and attach documentation of consultation.*
- a. Eagle data source(s) and date(s) : USFWS correspondence of October 11, 2016 (see Appendix D, Agency Scoping)
- b. Project visible from an eagle nesting tree? ☐\* ☒
- c. Project within 330 feet of an eagle nesting tree? ☐\* ☒
- d. Project within 660 feet of an eagle nesting tree? ☐\* ☒
- e. Will the project require blasting, pile driving, guardrail post driving, or other activities that produce extreme loud noises within 1/2 a mile from an active nest? ☐\* ☒
- f. Is an [eagle permit](#) required? ☐\* ☒
5. Is the project consistent with the [Migratory Bird Treaty Act](#)? ☒ ☐
6. Summarize fish and wildlife impacts and mitigation, including timing windows, if any. *Include any commitments or mitigative measures in [Section VI](#).*
- In response to scoping letters sent on September 9, 2016, the Alaska Department of Fish and Game indicated that work below the OHW of the Chena Slough or Drainage Cannel C will require a Fish Permit. Additionally, any modifications to the other large off-channel culverts at Dennis Road or Sandusky Street will ensure no barriers to fish movement downstream as the water bodies recede. The USFW indicated that to mitigate impacts to migratory birds, land disturbing activity will be completed before May 1 or after July 15.

**I. Threatened and Endangered Species (T&E)****N/A   YES   NO**

1. Database name(s) and date(s) queried: USF&WS IPaC list as of 4/14/17 and USFWS scoping response.
2. Listed threatened or endangered species present in the project area. ☐\* ☒
3. Threatened or endangered species migrate through the project area. ☐\* ☒
4. Designated critical habitat in the project area. ☐\* ☒
5. Proposed species present in project area. ☐\* ☒
6. Candidate species present in project area. ☐\* ☒
7. What is the effect determination for the project? *Select one.*
1. Project has no effect on listed or proposed T&E species or designated critical habitat. ☒
2. Project is not likely to adversely affect a listed or proposed T&E species or designated critical habitat. *Informal Section 7 consultation is required. Attach consultation documentation, including concurrence from the Federal agency, to this form.* ☐
3. Project is likely to adversely affect a listed or proposed T&E species or designated critical habitat. *If yes, consult the FHWA Area Engineer (non-assigned projects) or Statewide NEPA Manager for 6004-assigned projects.* ☐

8. Summarize the findings of the consultation, conferencing, biological evaluation, or biological assessment and the opinion of the agency with jurisdiction, or state why no coordination was conducted. *Include any commitments or mitigative measures in [Section VI](#).*

No federally recognized threatened, endangered, proposed or candidate species or critical habitat exist in the vicinity of this project

**J. Invasive Species**

N/A   YES   NO

1. Database name(s) and date(s) queried: AKEPIC, March 23, 2017
2. Does the project include all practicable measures to minimize the introduction or spread invasive species, making the project consistent with [E.O. 13112](#) (Invasive Species)? *If yes, list measures in J.3.* ☒   ☐
3. Summarize invasive species impacts and minimization measures, if any. *Include any commitments or mitigative measures in [Section VI](#).*

Invasive species information is from AKEPIC, the Alaska Exotic Plants Information Clearinghouse provide by the University of Alaska Anchorage, Natural Heritage Program. Ten invasive species were found within the project limits:

Table 1:

Common name	Scientific name
Smooth Brome	Bromus inermis Leyss.
Narrowleaf Hawksbeard	Crepis tectorum L.
White Sweetclover	Melilotus albus Medik.
Yellow Sweetclover	Melilotus officinalis (L.) Lam.
Common Plantain	Plantago major L.
Common Dandelion	Taraxacum officinale F.H. Wigg.
Alsike Clover	Trifolium hybridum L.
Bird Vetch	Vicia cracca L. ssp. cracca
Foxtail Barley	Hordeum jubatum L.
Waterweed	Elodea Michx. sp.

Invasive species have been identified within the project area and BMPs will be utilized to avoid the establishment and spread of invasive species including:

- Establishing low maintenance plants, such as native perennial grasses, during road construction or rehabilitation.
- Using native soils for backfill, where possible.

Measures from ADOT&PF's Integrated Vegetation Management Plan (IVMP), possibly including Chemical Control (Section 6.3) to appropriately treat invasive species post construction.

**K. Hazardous Waste**

N/A   YES   NO

1. Database name(s) and date(s) queried: ADEC Contaminated Sites Database March 23, 2017
2. There are potentially contaminated sites within or adjacent to the existing and/or proposed ROW. ☐   ☒
3. There are identified contaminated sites within or adjacent to the existing and/or proposed ROW. ☒   ☐

**K. Hazardous Waste****N/A YES NO**

4. Extensive excavation is proposed adjacent to, or within, a known hazardous waste site, or the potential for encountering hazardous waste during construction is high. *If yes, attach the hazardous waste investigation report and approved ADEC Corrective Action Plan.*
5. Summarize the hazardous waste impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section VI](#).*

☐\*☒

**One active site was found to be in proximity to project near Dennis Road. Seven sites were found near the project and were labeled as Cleanup Complete. One site at the Tundra Tours Bus Barn was found to be in Cleanup Complete, Institutional Controls status. None of these sites are contained within the Badger Road right of way and will therefore not be affected.**

The following Table summarizes the findings of the contaminated site search:

Table 2:

Site name	Hazard Number	Longitude	Latitude	Status
Fort Wainwright Haines-Fairbanks Pipeline at Dennis Road FTW 199	25514	147.544263	64.829335	Active
Fort Wainwright (OU-1) (RFA D-8) Dennis Manor	1134	147.544132	64.829879	Cleanup Complete
Riverview Quick Stop	24457	147.514710	64.833240	Cleanup Complete
Joy Drive Meth Lab	3661	147.496194	64.832083	Cleanup Complete
Badger Fuel	3808	147.443167	64.820972	Cleanup Complete
Badger Mobile Home Park	542	147.409420	64.812013	Cleanup Complete
Former Arctic Acres	24890	147.402910	64.806580	Cleanup Complete
Telephone Utilities of Northland	24203	147.346200	64.770180	Cleanup Complete
Tundra Tours Bus Barn	4530	147.358490	64.772740	Cleanup Complete-Institutional Controls

**L. Air Quality (Conformity)****N/A YES NO**

1. The project is located in an air quality maintenance area or nonattainment area (CO or PM-10 or PM-2.5). *If yes, indicate CO ☐ or PM-10 ☐ or PM-2.5 ☒, and complete the remainder of this section.*
2. The project is included in a conforming Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).
- a. List dates of FHWA/FTA conformity determination: By FHWA on June 24, 2015 and FTA on July 8, 2015
3. The project is exempt from an air quality analysis per [40 CFR 93.126](#) (Table 2 and

☒☐☐☒☐☐☒☐

<b>L.      <u>Air Quality (Conformity)</u></b>	<b><u>N/A</u></b>	<b><u>YES</u></b>	<b><u>NO</u></b>
Exempt Projects). <i>If no, a project-level air quality conformity determination is required for CO nonattainment and maintenance areas, and a qualitative project-level analysis is required for both PM-2.5 and PM-10 nonattainment and maintenance areas.</i>			
4. Has there been a significant change in the scope or the design concept as described in the most recent conforming TIP and LRTP? <i>If yes, describe changes in L.8. In addition, the project must satisfy the conformity rule's requirements for projects not from a plan and TIP, or the plan and TIP must be modified to incorporate the revised project (including a new conformity analysis).</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. A CO project-level analysis was completed meeting the requirements of <a href="#">Section 93.123</a> of the conformity rule. The results satisfy the requirements of <a href="#">Section 93.116(a)</a> for all areas or <a href="#">93.116(b)</a> for nonattainment areas. <i>Attach a copy of the analysis.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/>
6. A PM-2.5 project-level air quality analysis was completed meeting the requirements of <a href="#">Section 93.123</a> of the conformity rule. The results satisfy the requirements of <a href="#">Section 93.116</a> . <i>Attach a copy of the analysis.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/>
7. A PM-10 project-level air quality analysis was completed meeting the requirements of <a href="#">Section 93.123</a> of the conformity rule. The results satisfy the requirements of <a href="#">Section 93.116</a> . <i>Attach a copy of the analysis.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/>
8. Summarize air quality impacts, mitigation, and agency coordination, if any. <i>Include any commitments or mitigative measures in <a href="#">Section VI</a>.</i>			
An air quality conformity analysis for the FMATS TIP was approved by FHWA on June 24, 2015 and FTA on July 8, 2015. This project was included for that analysis therefore no additional analysis is required. This project is part of an approved Highway Safety Improvement Program plan as well.			
<b>M.      <u>Floodplain Impacts (23 CFR 650, Subpart A)</u></b>	<b><u>N/A</u></b>	<b><u>YES</u></b>	<b><u>NO</u></b>
1. Project encroaches into the base (100 year) flood plain in fresh or marine waters. Identify floodplain map source and date : <u>FEMA flood map panel numbers 02090C4410J, 02090C4430J, 02090C4434J, 02090C4445J, and 02090C4465J effective on 03/17/2014</u>		<input checked="" type="checkbox"/> *	<input type="checkbox"/>
<i>If yes, attach documentation of public involvement conducted per <a href="#">E.O. 11988</a> and <a href="#">23 CFR 650.109</a>. Consult with the regional or Statewide Hydraulics/Hydrology expert. Attach the required location hydraulic study developed per <a href="#">23 CFR 650.111</a>. Answer questions M.1.a through d.</i>			
<i>If no, skip to M.2.</i>			
a. Is there a longitudinal encroachment into the 100-year floodplain?	<input type="checkbox"/>	<input checked="" type="checkbox"/> *	<input type="checkbox"/>
b. Is there significant encroachment as defined by <a href="#">23 CFR 650.105(q)</a> ? <i>If yes, the project cannot be approved as proposed without a finding that the proposed action is the "Only Practicable Alternative" as defined in <a href="#">23 CFR 650.113</a>. Attach the finding for approval.</i>	<input type="checkbox"/>	<input type="checkbox"/> *	<input checked="" type="checkbox"/>
c. Project encroaches into a regulatory floodway.	<input type="checkbox"/>	<input type="checkbox"/> *	<input checked="" type="checkbox"/>
d. The proposed action would increase the base flood elevation one-foot or greater.	<input type="checkbox"/>	<input type="checkbox"/> *	<input checked="" type="checkbox"/>
2. Project conforms to local flood hazard requirements.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Project is consistent with <a href="#">E.O. 11988</a> (Floodplain Protection). <i>If no, the project cannot be approved as proposed.</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

4. Summarize floodplain impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section VI](#).*

This Project is predominantly located in Flood Zone X according to the FEMA flood map panel numbers 02090C4410J, 02090C4430J, 02090C4434J, 02090C4445J, and 02090C4465J effective on 03/17/2014. Zone X is defined in two different ways, depending on location within the project. Most areas are "Other Flood Areas: areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood." Some areas are "Areas determined to be outside the 0.2% annual chance floodplain." Between approximately Greimann Lane and Repp Road, Badger Road is within the Chena Slough floodplain, although base flood elevations have not been determined for this zone. From the Agency Scoping Response from the Fairbanks North Star Borough on September 13, 2016 parts of Badger Road are located in the Special Flood Hazard Area around Holmes and Peede intersection; the project will therefore require a Flood Plain Permit. Public Notice published May 5, May 20, May 22, all in 2016 included notice of E. O. 11988.

**N. Noise Impacts (23 CFR 772)**

N/A    YES    NO

1. Does the project involve any of the following? *If yes, complete N.1.a.*

☐    ☒

*If no, a noise analysis is not required. Skip to section O.*

- Construction of highway on a new location.
- Substantial alteration in vertical or horizontal alignment as defined in [23 CFR 772.5](#).
- An increase in the number of through lanes.
- Addition of an auxiliary lane (except a turn lane).
- Addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange.
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane.
- Addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

- a. Identify below which category of land uses are adjacent: *A noise analysis is required if any lands in Categories A through E are identified, and the response to N.1 is 'yes'.*

*Category A:* Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.

☐    ☐    ☐

*Category B:* Residential. *This includes undeveloped lands permitted for this category.*

☐    ☐    ☐

*Category C (exterior):* Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings. *This includes undeveloped lands permitted for this category.*

☐    ☐    ☐

*Category D (interior):* Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television

☐    ☐    ☐

<p><b>N.     <u>Noise Impacts (23 CFR 772)</u></b></p> <p>studios.</p> <p><i>Category E: Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not listed above. This includes undeveloped lands permitted for this category.</i></p> <p>2. Does the noise analysis identify a noise impact? <i>If yes, explain in N.3.</i></p> <p>3. Summarize the findings of the attached noise analysis and noise abatement worksheet, if applicable:</p>	<p>N/A    <u>YES</u>    <u>NO</u></p> <p><input type="checkbox"/>    <input type="checkbox"/>    <input type="checkbox"/></p> <p><input type="checkbox"/>    <input type="checkbox"/></p>
<p><b>O.     <u>Water Quality Impacts</u></b></p> <p>1. Project would involve a public or private drinking water source. <i>If yes, explain in O.7.</i></p> <p>2. Project would result in a discharge of storm water to a Water of the U.S. (per <a href="#">40 CFR 230.3(s)</a>).</p> <p>3. Project would discharge storm water into or affect an ADEC designated Impaired Waterbody. <i>If any of the Impaired Waterbodies have an approved or established Total Maximum Daily Load, describe project impacts in O.7</i></p> <p style="padding-left: 20px;">a. List name(s), location(s), and pollutant(s) causing impairment: <u>Chena Slough, numerous locations along Badger Road, sediment.</u></p> <p>4. Estimate the acreage of ground-disturbing activities that will result from the project? <u>25 (new embankment and lane widening)</u> acres</p> <p>5. Is there a municipal separate storm sewer system (MS4) APDES permit, or will runoff be mixed with discharges from an APDES permitted industrial facility?</p> <p style="padding-left: 20px;">a. If yes, list APDES permit number and type: <u>AKS-053406-Fairbanks and North Pole, AKS-053414 Fairbanks North Star Borough.</u></p> <p>6. Would the project discharge storm water to a water body within a national park or state park; a national or state wildlife refuge? <i>If yes and Alaska Construction General Permit applies to the project, consultation with ADEC is required at least 30 days prior to planned start of construction activities.</i></p> <p>7. Summarize the water quality impacts and mitigation, if any. Include any commitments or mitigative measures in Section VI.</p> <p style="padding-left: 20px;">The project traverses five Drinking Water Protection Areas (DWPAs). They are all ground water sourced. The supplies are Fort Wainwright / DU Golf Club Well, Riverview RV Park, Badger Den, Badger Gas, New Hope Church - NP, Buetow Dental Clinic. Project sediment runoff should not affect the groundwater quality. The SWPPP will require a hazardous material control plan.</p> <p style="padding-left: 20px;">The DEC website (<a href="https://dec.alaska.gov/water/wqsar/Docs/impairedwaters.pdf">https://dec.alaska.gov/water/wqsar/Docs/impairedwaters.pdf</a>, accessed July 18, 2016) indicates that Chena Slough is a Category 5 impaired water body. The pollutant parameters were found to be sediment and the source is urban runoff. Project stormwater will discharge to the Chena Slough for portions of the project. Sedimentation is expected to be minimal and best management practices (BMPs) will be implemented for the purpose of meeting state and federal water quality standards. A project-specific Erosion and Sediment Control Plan (ESCP) will be developed prior to construction initiation. A Storm Water Pollution Prevention Plan (SWPPP) will be developed and implemented by the construction contractor. The SWPPP will comply with the Alaska Pollution Discharge Elimination System (APDES) General Permit for Construction Activities.</p>	<p>N/A    <u>YES</u>    <u>NO</u></p> <p><input checked="" type="checkbox"/>    <input type="checkbox"/></p> <p><input checked="" type="checkbox"/>    <input type="checkbox"/></p> <p><input checked="" type="checkbox"/>    <input type="checkbox"/></p> <p><input type="checkbox"/>    <input type="checkbox"/></p> <p><input type="checkbox"/>    <input checked="" type="checkbox"/></p>

**P. Construction Impacts**

N/A    YES    NO

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| 1. There will be temporary degradation of water quality.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. There will be a temporary stream diversion.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. There will be temporary degradation of air quality.  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. There will be temporary delays and detours of traffic.   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. There will be temporary impacts on businesses.   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 6. There will be temporary noise impacts.   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 7. There will be other construction impacts.  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. Summarize construction impacts and mitigation for each 'yes' above. <i>Include any commitments or mitigative measures in <a href="#">Section VI</a>.</i> |                                     |                                     |

**1) Water Quality** - There would be temporary impacts to water quality during construction. Work within streams is required to extend or replace the culverts.

*Mitigation:* In order to minimize water quality impacts, temporary erosion control and stabilization measures (BMPs) would be used during construction to minimize erosion of soils and transportation of sediment beyond the immediate construction site.

*Mitigation:* The contractor would be required to develop a Hazardous Materials Control Plan to address containment, cleanup, and disposal of all construction related discharges of petroleum fuels, oils, and/or other hazardous substances. Wastes generated during construction would be properly handled, contained, and disposed of at an appropriately permitted disposal facility, in accordance with State and Federal laws.

**2) Temporary Stream Diversion** - Replacing or extending the culverts may require temporary stream diversions during the installation. The contractor would use cofferdams and dewatering systems to accomplish this work or utilize existing drainage structures to maintain flow if feasible.

*Mitigation:* Permit provisions related to any necessary diversion/dewatering would be complied with.

**3) Air Quality** - Temporary degradation of air quality may occur from the increased airborne particulate levels and emissions from heavy equipment and dust during construction activities.

*Mitigation:* Watering of dust prone areas during construction would be implemented as needed to minimize air quality impacts.

**4) Traffic** - Temporary detours and delays would occur during construction.

*Mitigation:* Sufficient notice would be provided to highway users of temporary detours and delays.

**5) Businesses** - Business road users relying on transportation along the project routes may be temporarily impacted during construction due to temporary traffic detours and lane closures.

*Mitigation:* Sufficient notice would be provided to highway users of temporary detours and delays.

**6) Noise** - There would be a temporary increase in noise during construction due to the use of heavy equipment.

*Mitigation:* The project would comply with any local noise ordinance or a variance obtained.

**Q. Section 4(f)/6(f)**

N/A    YES    NO

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Section 4(f) ( <a href="#">23 CFR 774</a> )   |                                     |                          |
| a. Was detailed Section 4(f) resource identification conducted for this project, other | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

<b>Q.     Section 4(f)/6(f)</b>	<u>N/A</u>	<u>YES</u>	<u>NO</u>
than that required for Section 106 compliance? <i>If no, attach consultation with the Statewide NEPA Manager (assigned CEs) or FHWA Environmental Program Manager (non-assigned CEs) stating further Section 4(f) resource identification was not required.</i>			
b. Does a Section 4(f) resource exist within the project area; or is the project adjacent to a Section 4(f) resource? <i>If yes, attach consultation with the Statewide NEPA Manager (assigned CEs) or FHWA Environmental Program Manager (non-assigned CEs) to determine applicability of Section 4(f).</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does an exception listed in <a href="#">23 CFR 774.13</a> apply to this project? <i>If yes, attach consultation with the Statewide NEPA Manager (assigned CEs) or FHWA Environmental Program Manager (non-assigned CEs), and documentation from the official with jurisdiction, if required.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Does the project result in the “use” of a Section 4(f) property? <i>“Use” includes a permanent incorporation of land, adverse temporary occupancy, or constructive use.</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Has a <i>de minimis</i> impact finding been prepared for the project? <i>If yes, attach the finding.</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Has a Programmatic Section 4(f) Evaluation been prepared for the project? <i>If yes, attach the evaluation.</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Does the project require an Individual Section 4(f) Evaluation? <i>If yes, the project is not assigned to the State per the 6004 MOU and the CE must be processed by FHWA. Attach the evaluation.</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Section 6(f) ( <a href="#">36 CFR 59</a> )			
a. Were funds from the Land and Water Conservation Fund Act (LWCFA) used for improvement to a property that will be affected by this project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Is the use of the property receiving LWCFA funds a “conversion of use” per Section 6(f) of the LWCFA? <i>Attach the correspondence received from the ADNR 6(f) Grants Administrator.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Summarize Section 4(f)/6(f) involvement, if any:  
On April 10, 2017, the ADOT&PF's National Environmental Policy Act (NEPA) manager determined that the proposed project will not result in use of Morning Star Park, a Section 4(f) resource (Appendix E).

It was also determined that the project meets the conditions for the exception to 4(f) approval stated in 23 CFR 774.13 (f)(3) with respect to the pedestrian/bicycle path.

Northern Lights Badger Lions Club Park is privately owned and is therefore not a 4(f) resource.

Documents in Appendix E.

<b>IV.     Permits and Authorizations</b>	<u>N/A</u>	<u>YES</u>	<u>NO</u>
1. USACE, Section 404/10 <i>Includes Abbreviated Permit Process, Nationwide Permit, and General Permit</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Coast Guard, Section 9		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. ADF&G Fish Habitat Permit ( <a href="#">Title 16.05.871</a> and <a href="#">Title 16.05.841</a> )		<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Flood Hazard		<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. ADEC Non-domestic Wastewater Plan Approval		<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. ADEC 401		<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### IV. Permits and Authorizations

N/A      YES      NO

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| 7. ADEC APDES   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 8. Noise  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 9. Eagle Permit                                       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10. Other, <i>If applicable, list below:</i><br>None. |                                     |                                     |

#### V. Comments and Coordination

N/A      YES      NO

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| 1. Public/agency involvement for project. <i>Required if protected resources are involved.</i>  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Public Meetings. Date(s): <u>May 25, 2016</u>  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Newspaper ads. <i>Attach certified affidavit of publication as an appendix.</i><br>Name of newspaper and date: <u>Fairbanks Daily News Miner, May 15, 2016</u>   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. Agency scoping letters. Date sent: <u>September 9, 2016</u>  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. Agency scoping meeting. Date of meeting: <u>n/a</u>  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 6. Field review. Date: <u>numerous visits over summer of 2016</u>   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 7. Summarize comments and coordination efforts for this project. Discuss pertinent issues raised.<br><i>Attach correspondence that demonstrates coordination and that there are no unresolved issues.</i> |                                     |                                     |

##### Agency Scoping

A request for early coordination and comments from agencies was distributed via email on September 9, 2016, with written comments requested by October 15, 2016. The USFW had no objection to the proposed project and recommended that consideration be given to migratory birds, eagles, and invasive species (Appendix D).

On October 13, 2016 ADFG responded with no objection and any work below the OHW of the Chena Slough or Drainage Cannel C will require a Fish Permit. Additionally, any modifications to the other large off-channel culverts at Dennis Road or Sandusky Street need to ensure that there are no barriers to fish movement downstream as the water bodies recede (Appendix D).

The Department received correspondence from the FNSB in support of the project on October 10, 2016. They Concurred that the project is merited based on their data (Appendix D). They also notified the Department that a Flood Plain Permit is required.

##### Public Scoping

A variety of public outreach documents have been drafted to aid in the public scoping process. These documents include a project specific website (<http://dot.alaska.gov/nreg/badger/>), Online Public Open House (OPN), fact sheet, Badger Road TWLTL design considerations white paper and comment response summary.

A public open house was held on May 25, 2016, with 31 participants signing in. The majority of comments received pertained to the project's impacts to safety on Badger Road. The Department addressed these safety issues and summarized the finding in Appendix F. Copies of all public comments and the Department's response are located in Appendix F.

#### VI. Environmental Commitments and Mitigation Measures

List all environmental commitments and mitigation measures included in the project:

Standard environmental commitments and mitigation measures are outlined with each section above. Additionally, there are no environmental commitments or mitigation measure that are unique

to this project.

## VII. Environmental Documentation Approval

- |  | <u>N/A</u>                          | <u>YES</u>                          | <u>NO</u>                           |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Do any unusual circumstances exist, as described in <a href="#">23 C.F.R. 771.117 (b)</a> ? <i>If yes, the CE Documentation form cannot be approved.</i>  |                                     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 2. Does this 6004 Program approval statement apply?<br>“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 <a href="#">23 CFR 771.117(b)</a> . 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 18, 2015, executed between the FHWA and the State.” <i>If no, the CE must be approved by FHWA.</i> |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. <b>For 6004 projects:</b> The project meets the criteria of the <a href="#">DOT&amp;PF Programmatic Approval 2</a> authorized in the December 8, 2015 “ <a href="#">Chief Engineer Directive – 6004 Programmatic Categorical Exclusions</a> ”. <i>If yes, the CE may be approved by the Regional Environmental Manager. If no, the CE must be approved by a Statewide NEPA Manager.</i>   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. <b>For non-assigned projects:</b> 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. <i>If yes, the CE may be approved by the Regional Environmental Manager. If no, the CE may be approved by the FHWA Area Engineer.</i>  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |

**VIII. Environmental Documentation Approval Signatures**

Prepared by: Thomas Benjamin  
[Sign] Environmental Impact Analyst

Date: 5/11/17

Thomas Benjamin  
[Print Name] Environmental Impact Analyst

Reviewed by: Lauren Little  
[Sign] Engineering Manager

Date: 5/11/2017

Lauren Little  
[Print Name] Engineering Manager

Approved by: Brett Nelson  
[Sign] Regional Environmental Manager

Date: 5-11-17

Brett Nelson  
[Print Name] Regional Environmental Manager

**Assigned CE**

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

Date: \_\_\_\_\_

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

**Non-Assigned CE**

Approved by: \_\_\_\_\_  
[Sign] FHWA Area Engineer



Date: \_\_\_\_\_

\_\_\_\_\_  
[Print Name] FHWA Area Engineer

## **APPENDIX C**

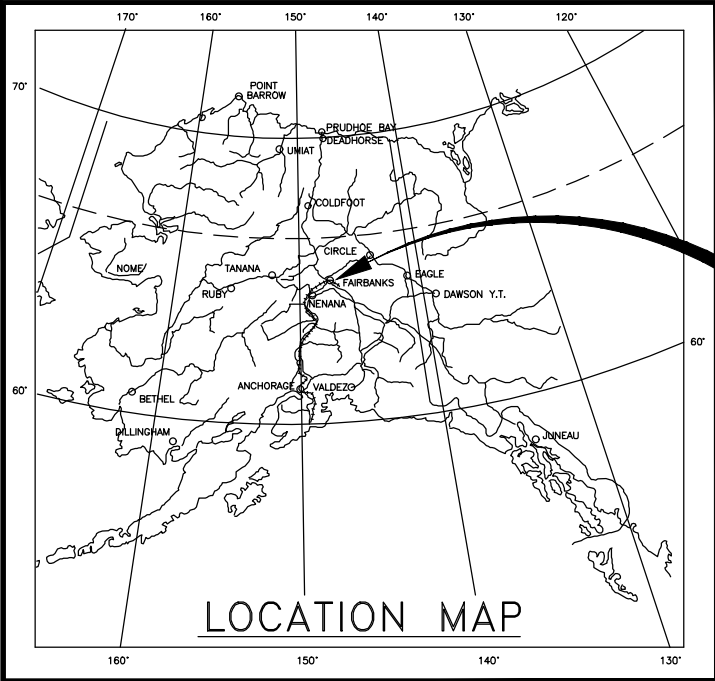
### **PAVEMENT DESIGN**

Project: HSIP: Badger Road Two Way Left Turn Lane Proj No.: NFHWY00096						New Construction by:Jadon Farleigh 1/26/2018 2:43:07 PM					
AADT = 7,750	Past Loadings	Future Loadings						X/Y Load Locations (in): Load = 4500 (lbs) Tire Pressure = 110 (psi)	0 0	13.5 0	
10% Spring 30% Summer 20% Fall 40% Winter  Total:		110270 330809 220540 441079  1,102,698						X/Y Evaluation Points (in):	6.75 0	0 0	
Layer	Critical Z Coordinate	Asphalt Properties	Season	Modulus (ksi)	Poisson's Ratio	Tensile Critical Micro Strain	Critical Compressive Stress (psi)	Million Cycles to Failure		Future Damage %	Total Damage %
3(in) Asphalt_Concrete	2.99	4% Air 5.5% Asph 148 pcf	Spring	755	0.3	201		2.53		4.36	4.36%
			Summer	510	0.3	209		3.11		10.64	10.64%
			Fall	510	0.3	209		3.11		7.09	7.09%
			Winter	1,500	0.3	87.1		22.07		2.00	2.00%
Total Damage:										24.08	24.08
3(in) 3-4% Asph.Tr.Base	3.01		Spring	80	0.35		37.90	4.51		2.45	2.45%
			Summer	90	0.35		46.30	3.45		9.60	9.60%
			Fall	90	0.35		46.30	3.45		6.40	6.40%
			Winter	200	0.35		41.90	64.43		0.68	0.68%
Total Damage:										19.13	19.13
8(in) Select_A_P200<6%	6.01		Spring	25	0.4		18.70	1.02		10.84	10.84%
			Summer	35	0.4		19.70	2.57		12.87	12.87%
			Fall	35	0.4		19.70	2.57		8.58	8.58%
			Winter	90	0.4		18.00	74.96		0.59	0.59%
Total Damage:										32.89	32.89
S-Infinite Subgrade_P200<30%	14.01		Spring	50	0.45		10.70	60.12		0.18	0.18%
			Summer	10	0.45		5.80	1.50		22.02	22.02%
			Fall	10	0.45		5.80	1.50		14.68	14.68%
			Winter	10	0.45		3.46	8.09		5.45	5.45%
Total Damage:										42.33	42.33

 OK  
  
 Jeff Curry, P.E.,  
 NR Matt's Brg.

## **APPENDIX D**

### **BADGER ROAD PRELIMINARY PLAN AND PROFILE SHEETS**



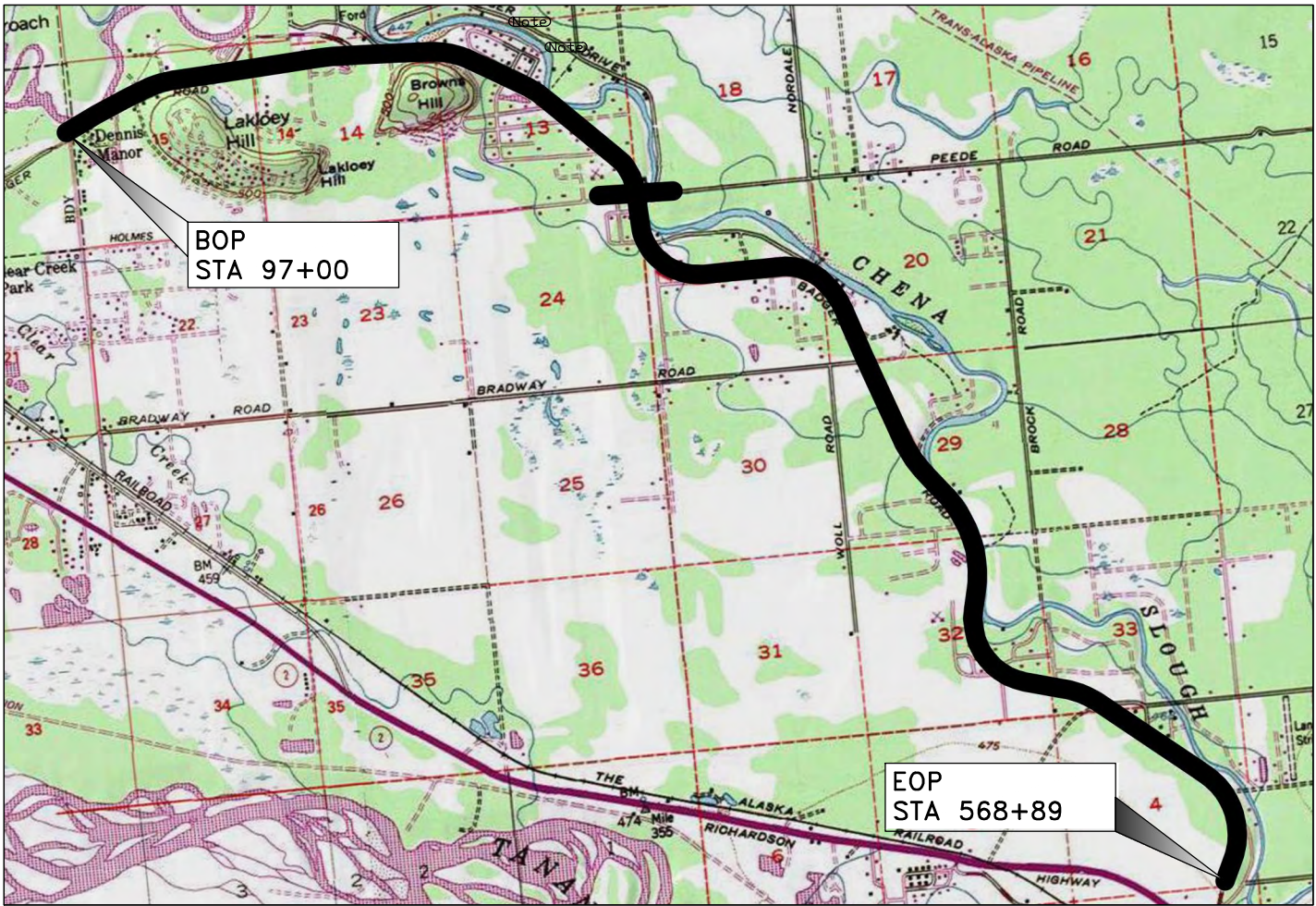
STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
&  
PUBLIC FACILITIES

PROPOSED HIGHWAY PROJECT  
0602009/NFHWY00096  
HISP: BADGER ROAD TWO WAY LEFT TURN LANE  
GRADING, DRAINAGE, PAVING, & ILLUMINATION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0602009/NFHWY00096	2018	A1	----
CDS ROUTE: 18810		MILEPOINT: 1.88 TO 10.92		

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
A1	TITLE SHEET
A2-A?	LEGEND & SHEET LAYOUT INDEX
B1-B?	TYPICAL SECTIONS
C1-C?	ESTIMATE OF QUANTITIES & GENERAL NOTES
D1-D?	SUMMARIES
E1-E?	CULVERT/DRAINAGE DETAILS & SUMMARY
E?-E?	MISCELLANEOUS DETAILS
F1-F?	PLAN & PROFILE
G1-G?	APPROACH SUMMARY & DETAILS
G?-G?	INTERSECTION LAYOUT & GRADING SHEETS
H1-H?	SIGNING & STRIPING
H?-H?	ILLUMINATION & TRAFFIC SIGNAL PLANS
K1-K?	AUTOMATED TRAFFIC RECORDER (ATR)
L1-L?	LANDSCAPING
M1-M?	RETAINING WALLS
Q1-Q?	EROSION SEDIMENT CONTROL PLANS
S1-S?	CONSTRUCTION PHASING PLANS
T1-T?	TRAFFIC CONTROL PLANS
U1-U?	UTILITIES PLANS

THE FOLLOWING STANDARD DRAWINGS APPLY TO THIS PROJECT:  
C-00.00,  
D-00.00,



DESIGN DESIGNATIONS	
ADT (2016)	7,750
ADT (2040)	1,350
DHV (12%)	162
PERCENT TRUCKS (T)	6.25
DIRECTIONAL SPLIT (D)	40/60
DESIGN SPEED (V)	55 MPH
DESIGN EAL'S (2040)	1,102,698

PROJECT SUMMARY	
WIDTH OF PAVEMENT	44 FT
LENGTH OF GRADING	9.02 MILES
LENGTH OF PAVING	9.02 MILES
LENGTH OF PROJECT	9.02 MILES

LAUREN LITTLE, P.E., PROJECT MANAGER  
JADON FARLEIGH DESIGNER

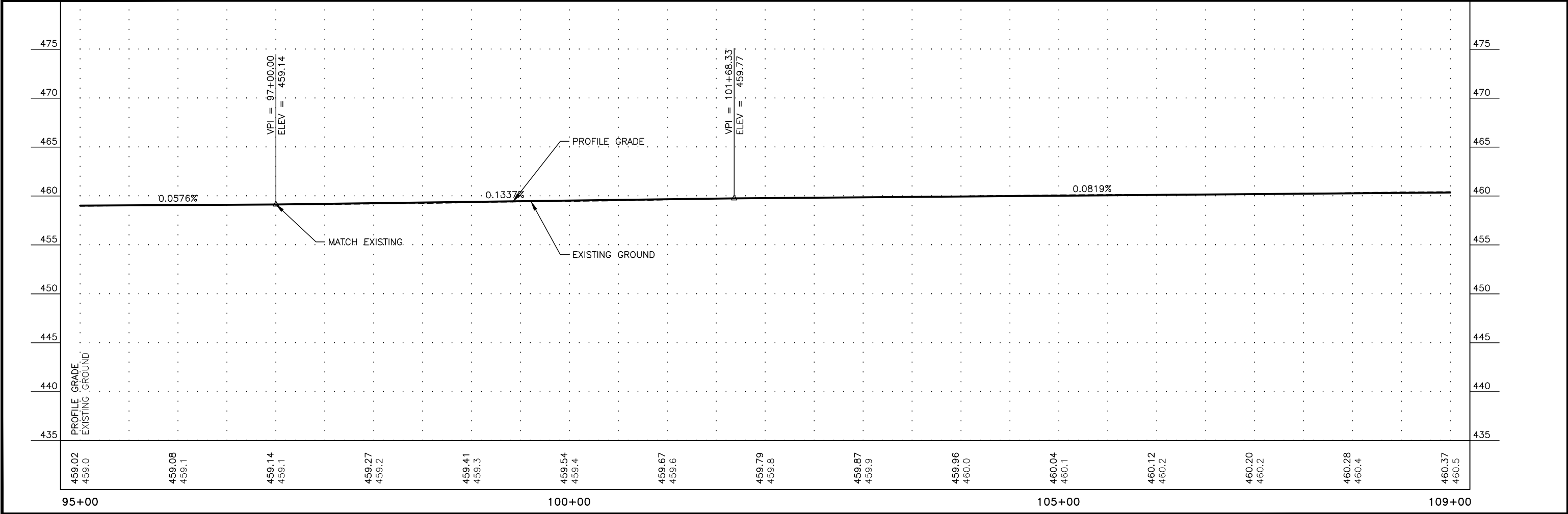
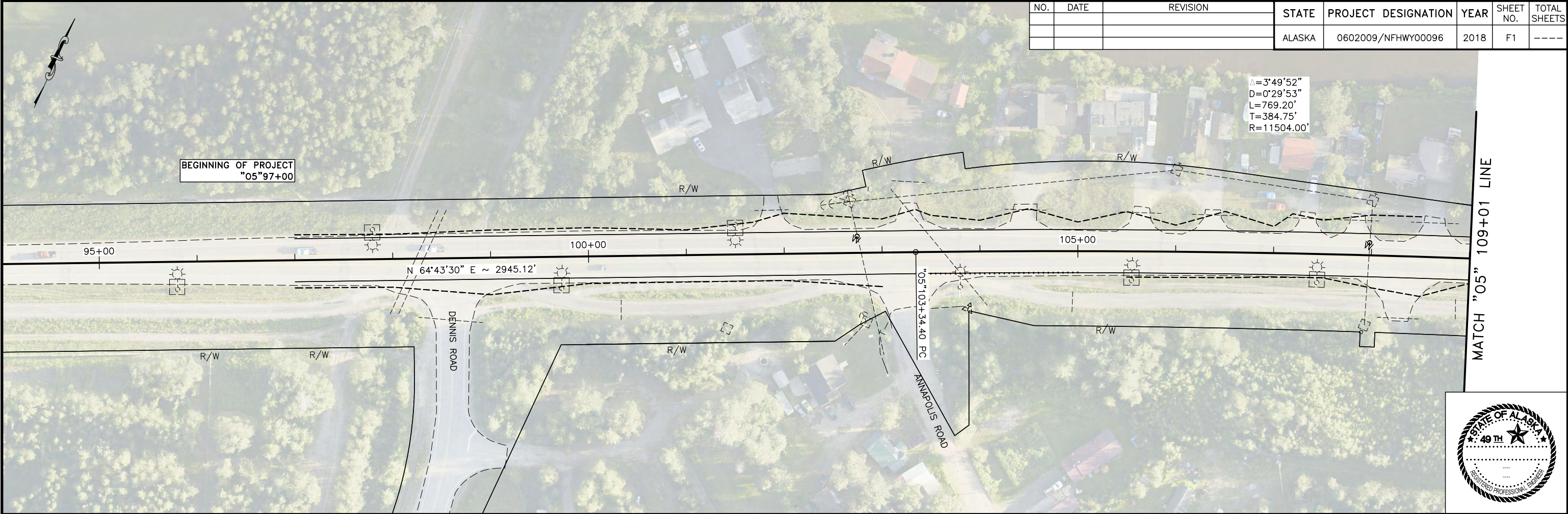
STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
&  
PUBLIC FACILITIES  
APPROVED BY:

Sarah E. Schacher, P.E.  
Preconstruction Engineer, Northern Region  
ACCEPTED FOR CONSTRUCTION:  
Ryan F. Anderson, P.E.  
Regional Director, Northern Region

		NO.		DATE		REVISION		STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
								ALASKA	0602009/NFHWY00096	2018	----	----

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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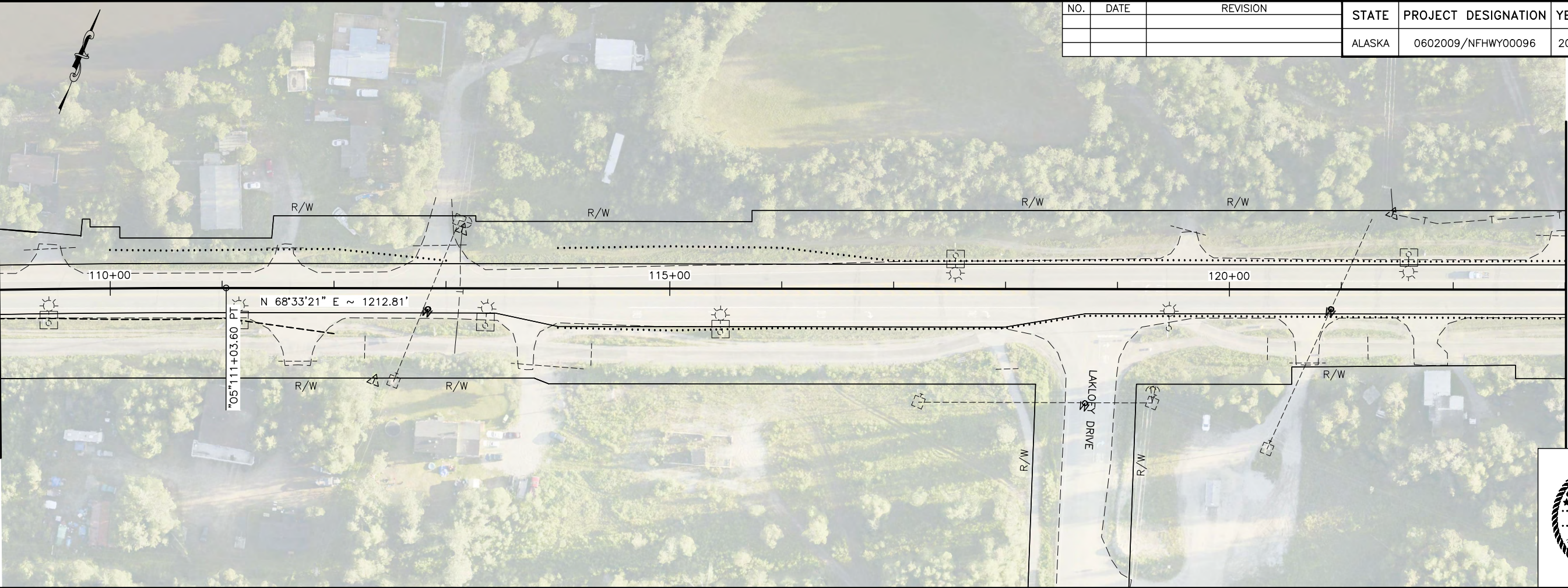
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			ALASKA	0602009/NFHWHY00096	2018	F1	----



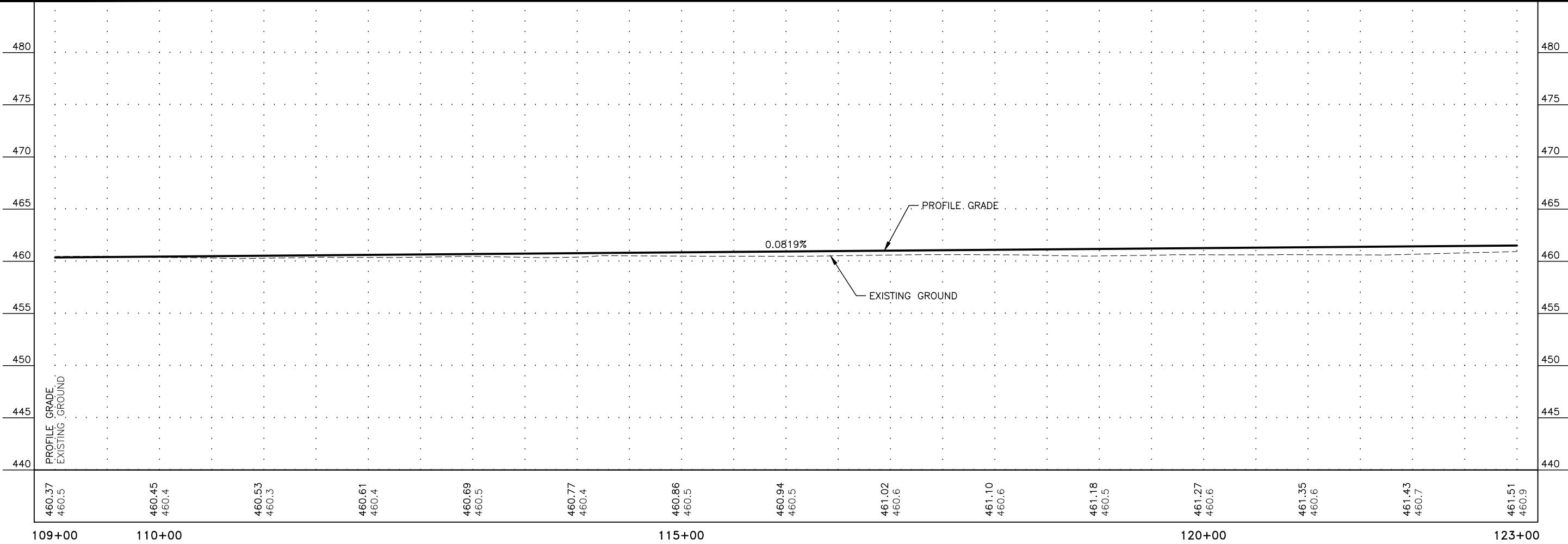
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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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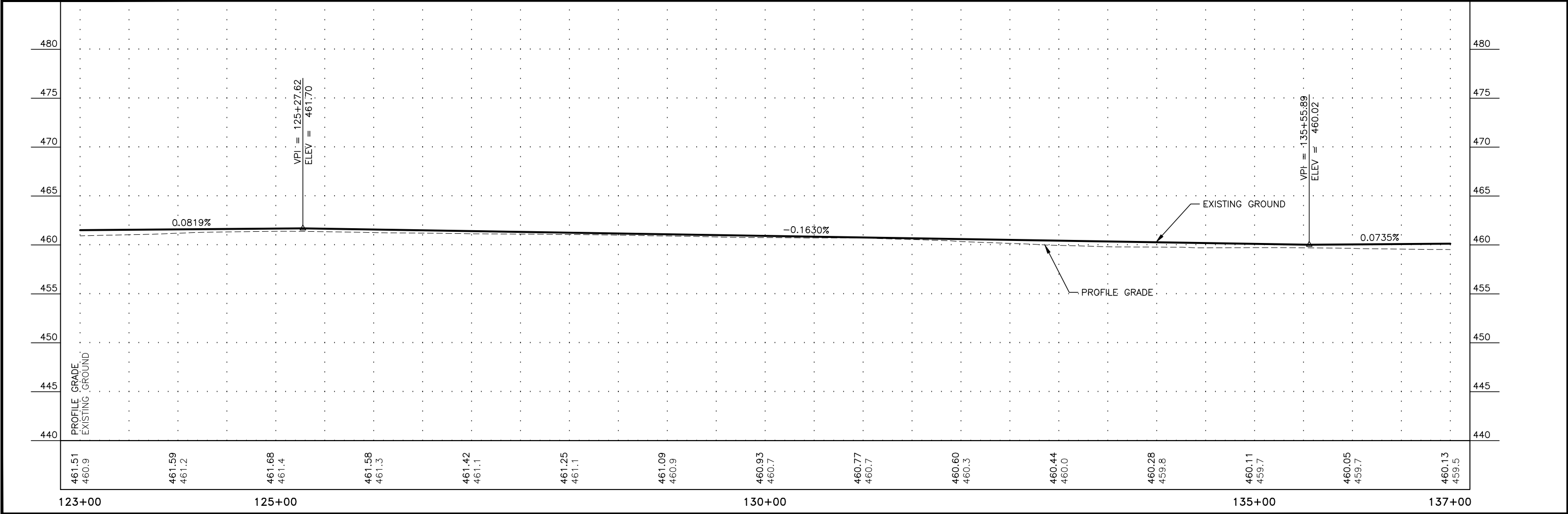
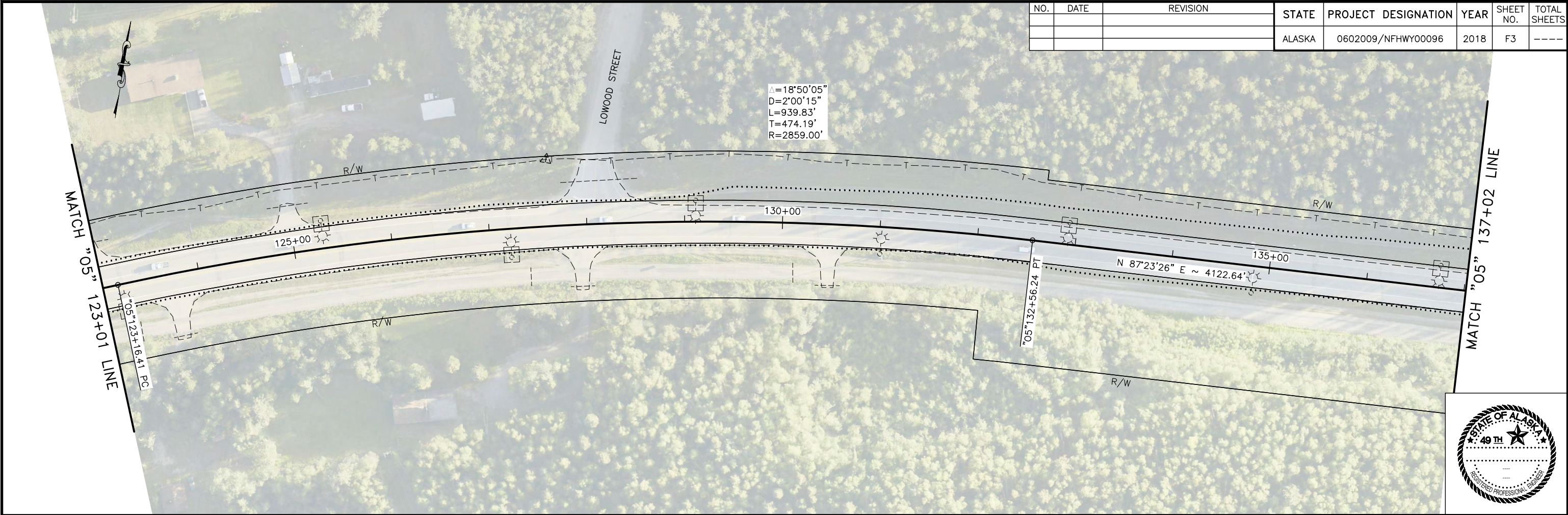


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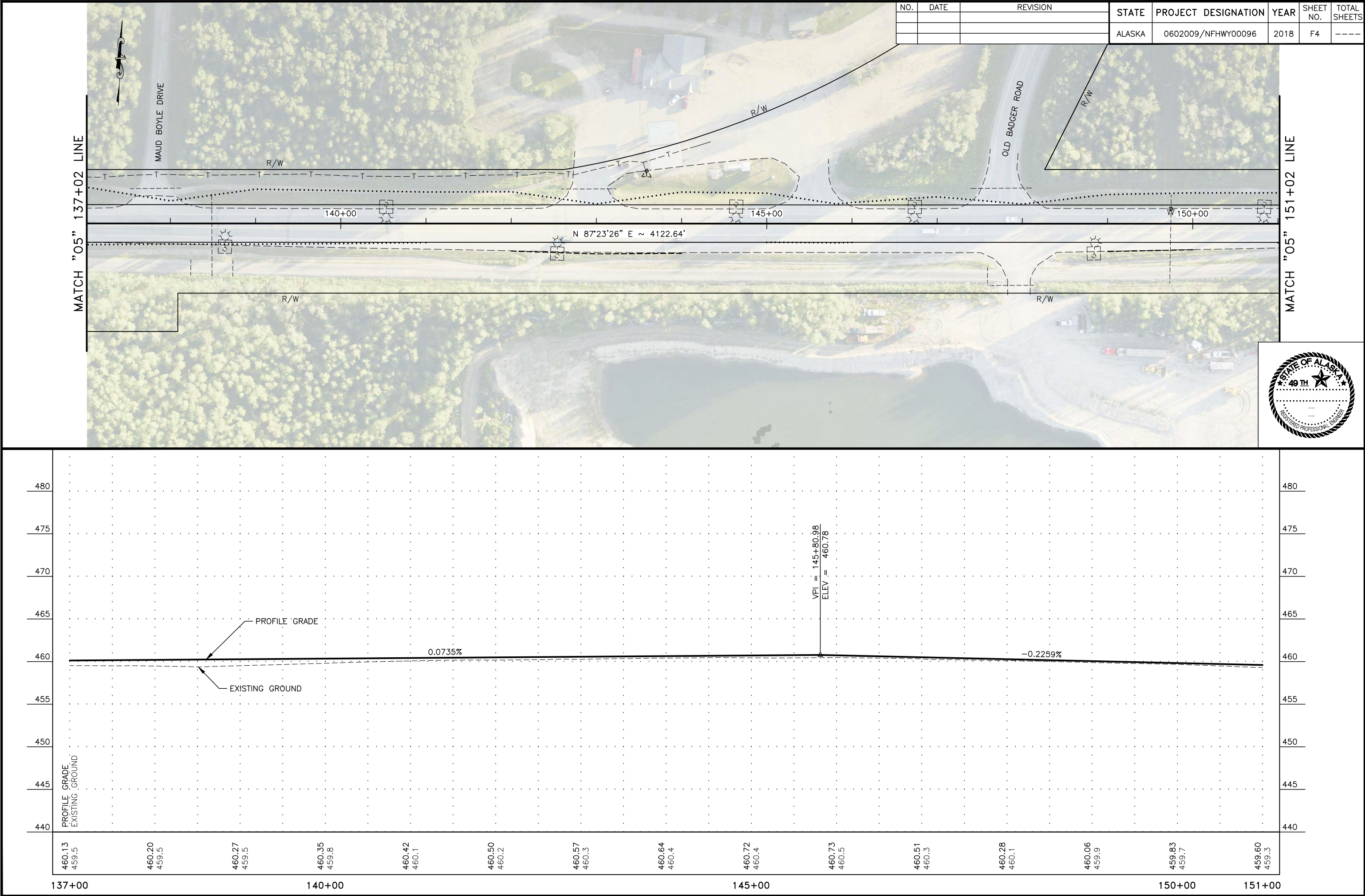


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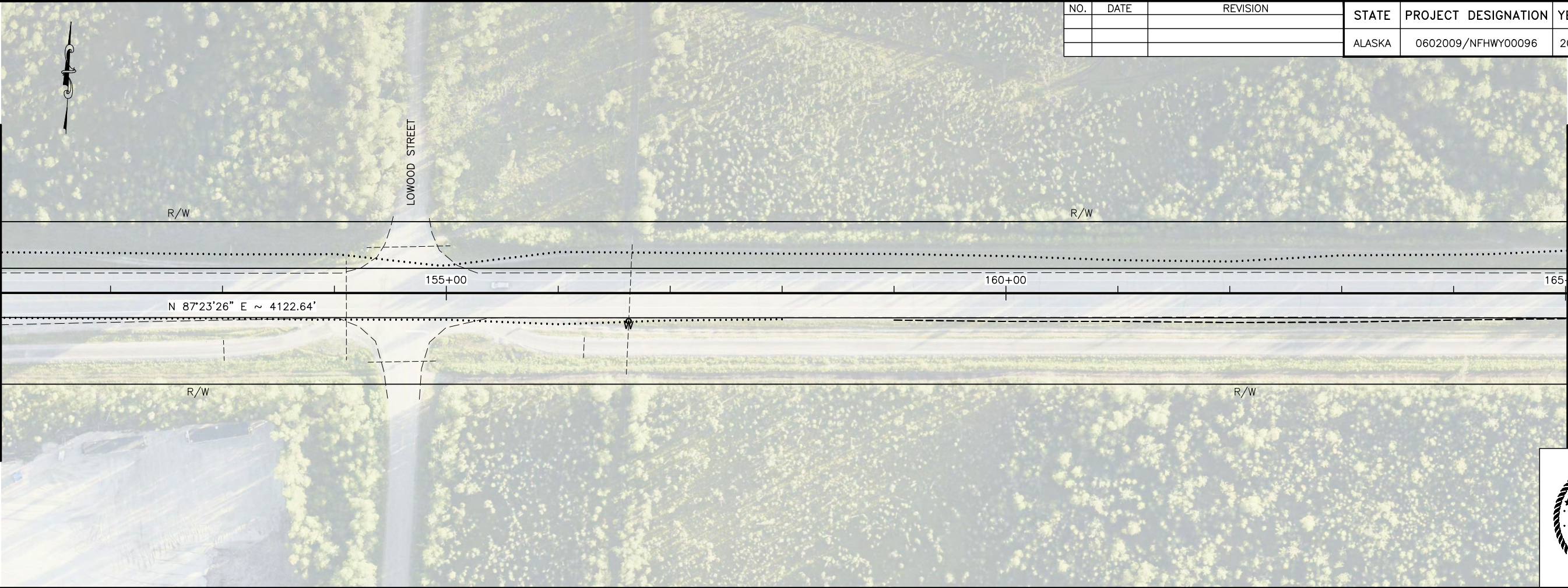
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Badger\_HSIP\Design\C3D\90096\_P&P-137+00.00-151+00.00 Mon, Jan/29/18 08:25am



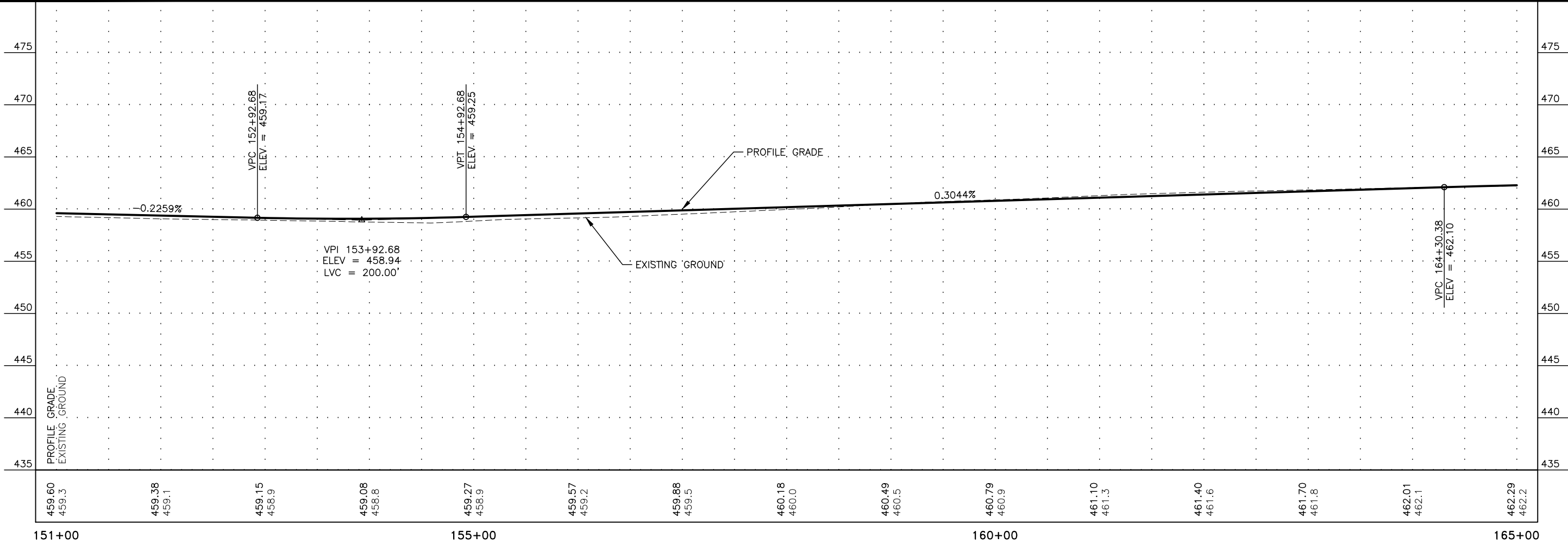
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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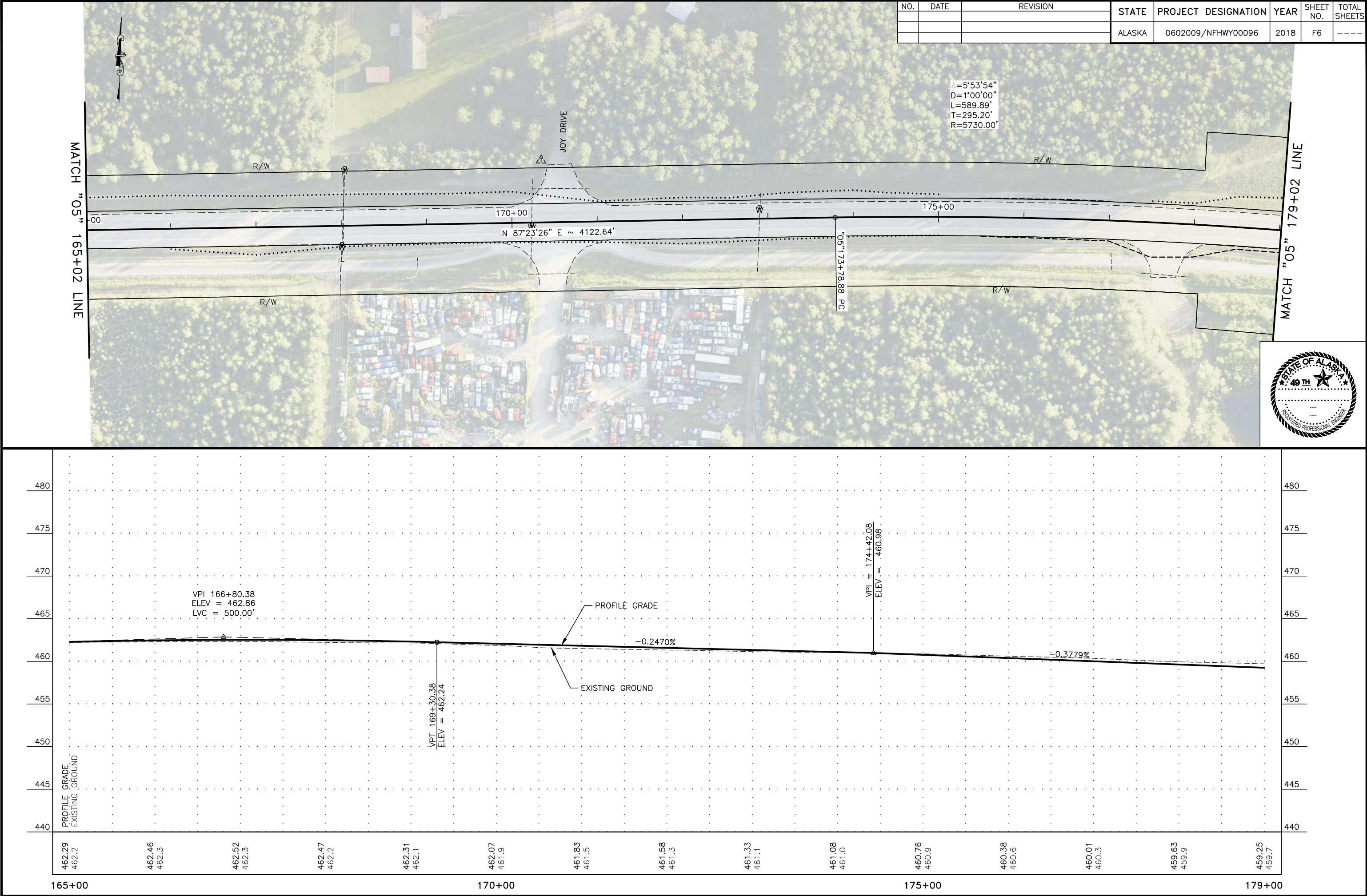


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PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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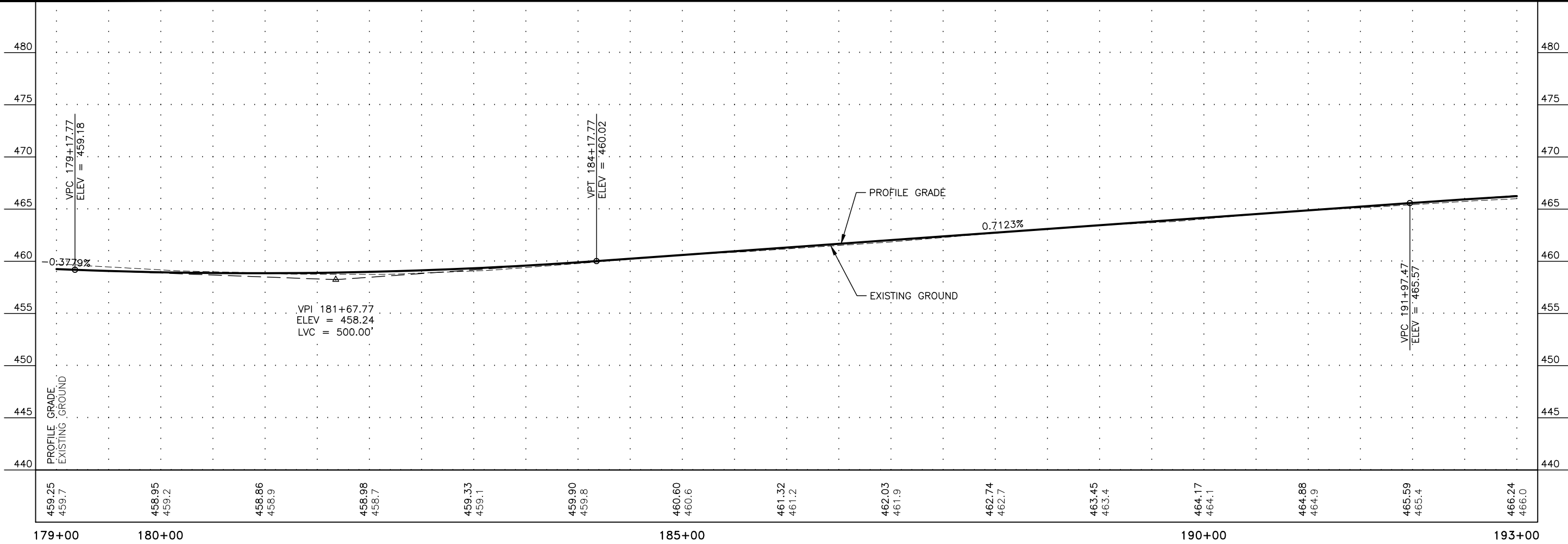


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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F7	----

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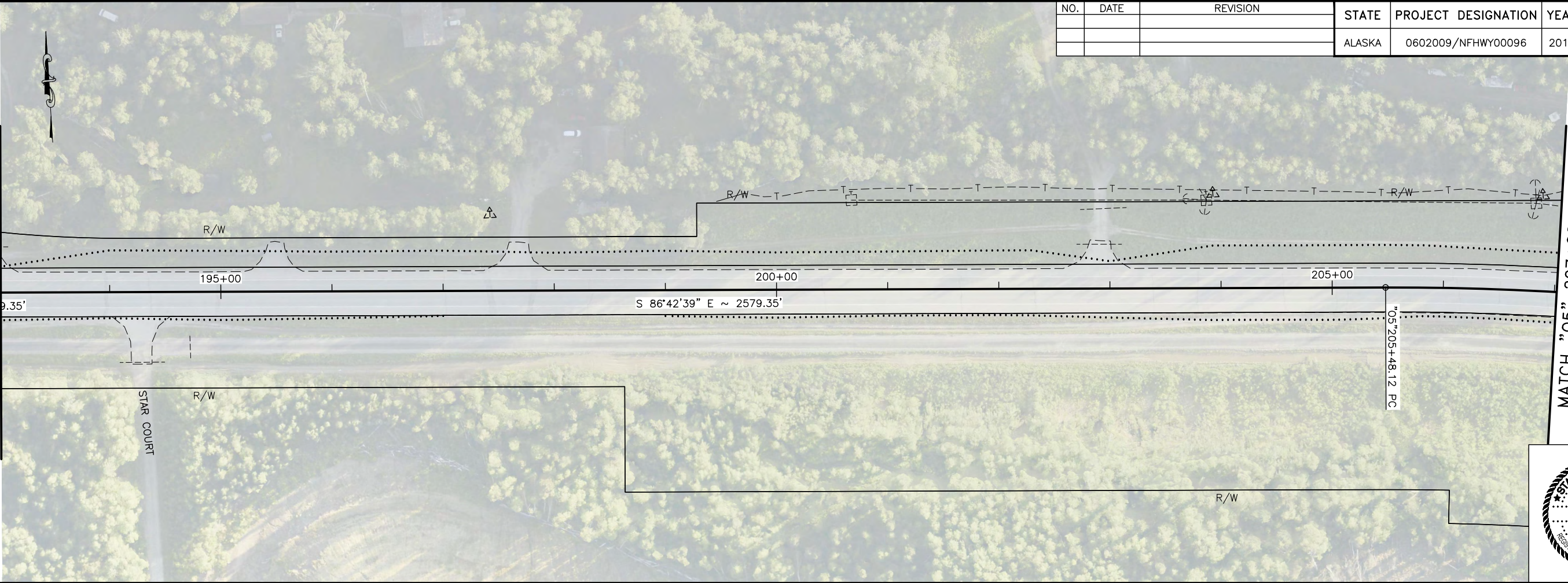
MATCH "05" 193+02 LINE



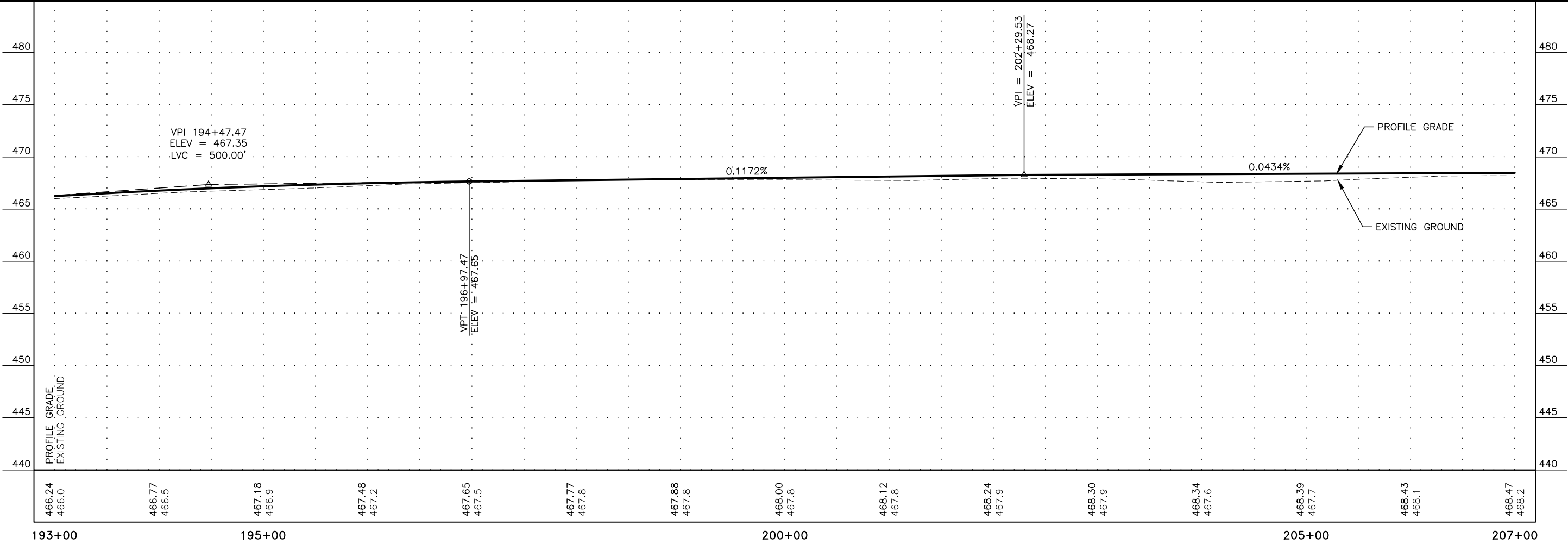
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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			ALASKA	0602009/NFHWY00096	2018	F8	----

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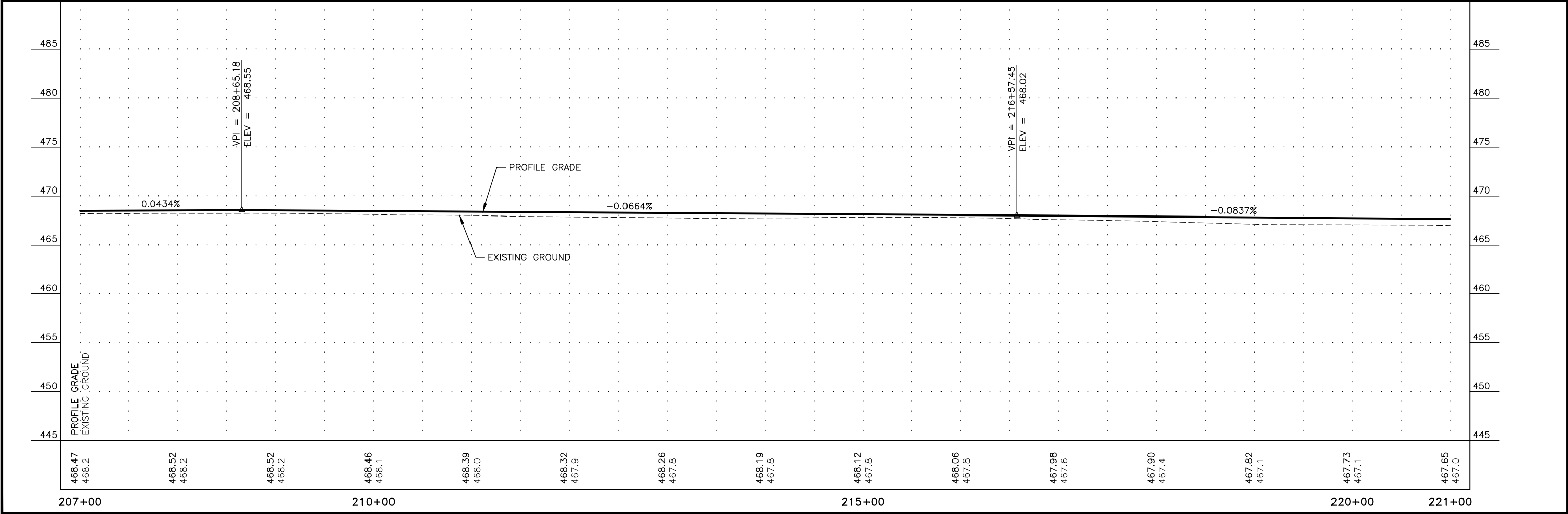
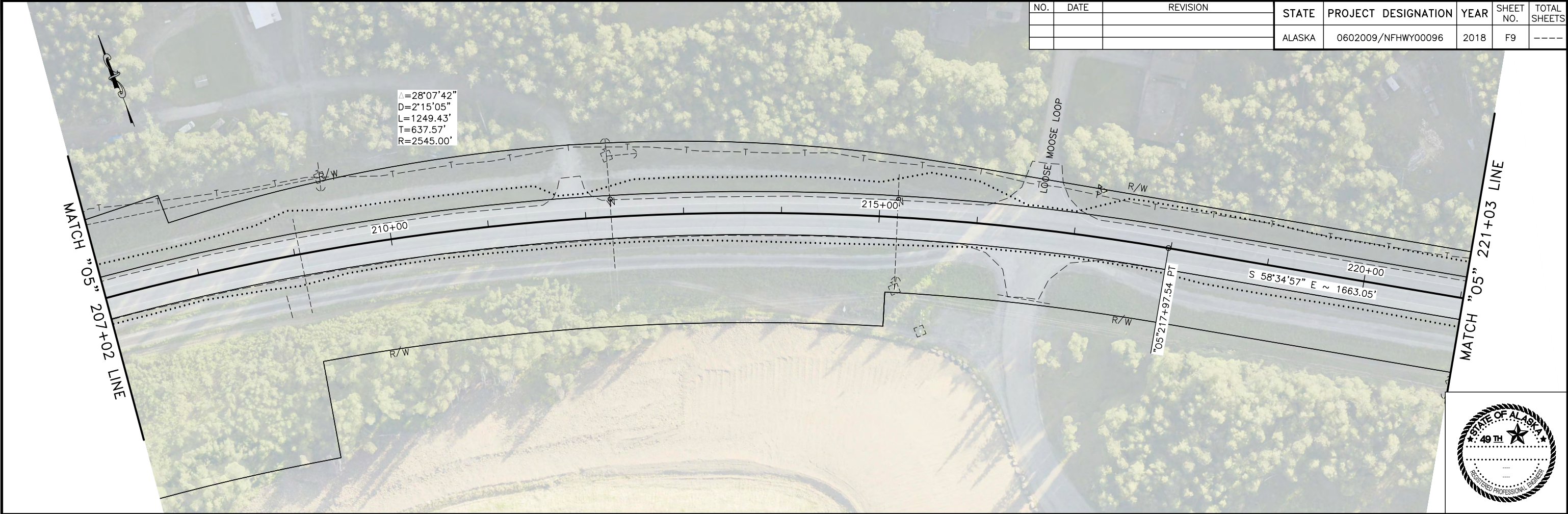


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PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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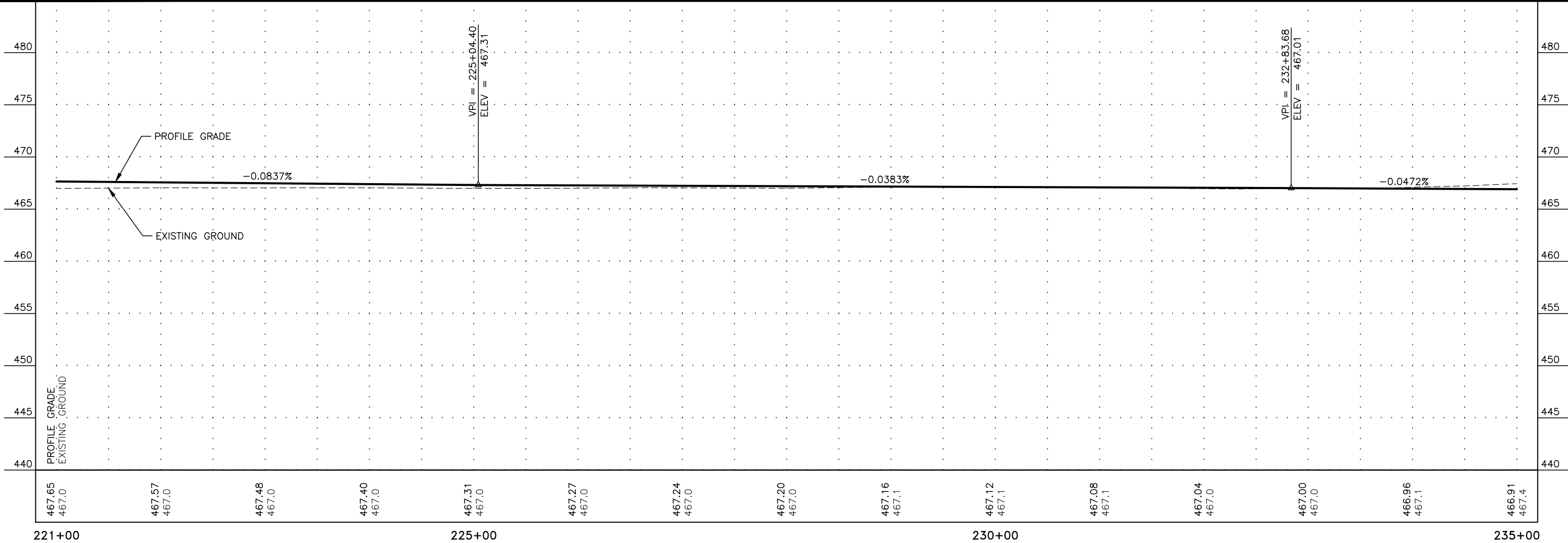


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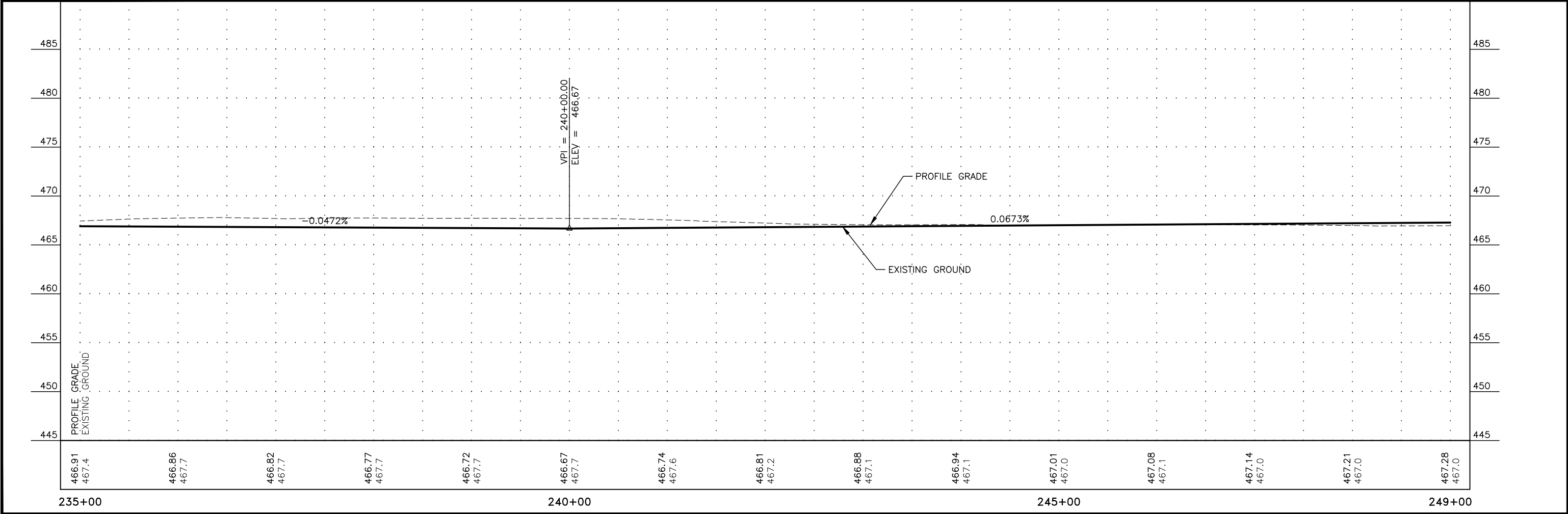
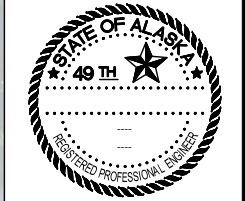
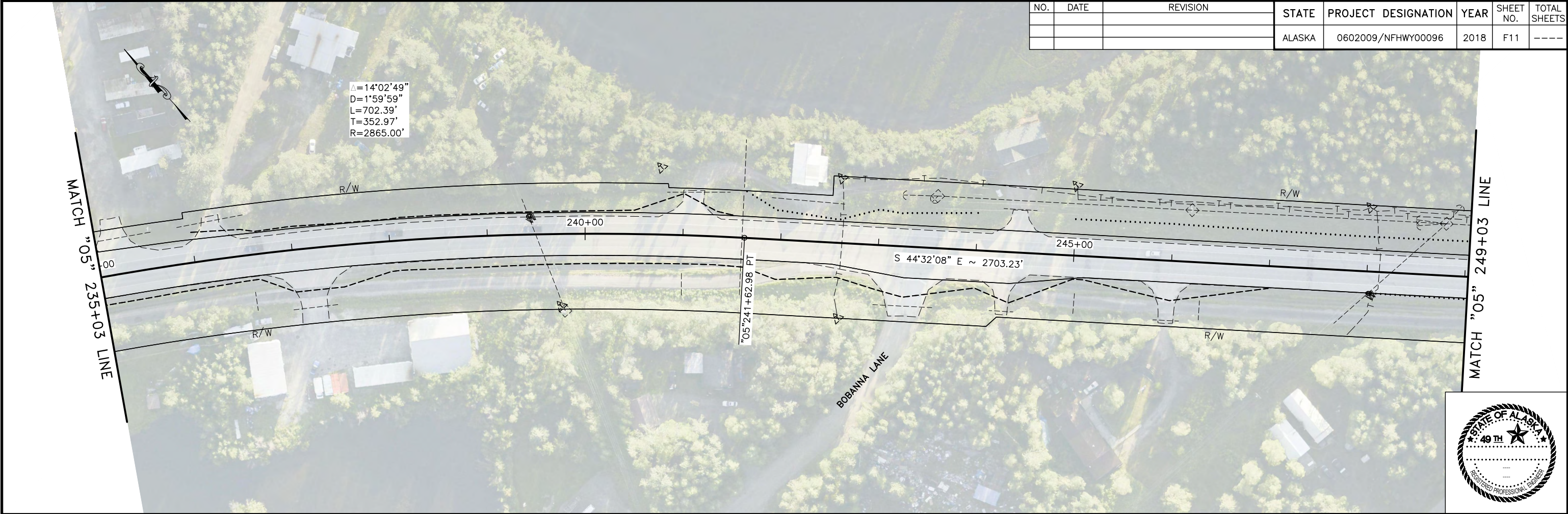
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MATCH "05" 235+03 LINE



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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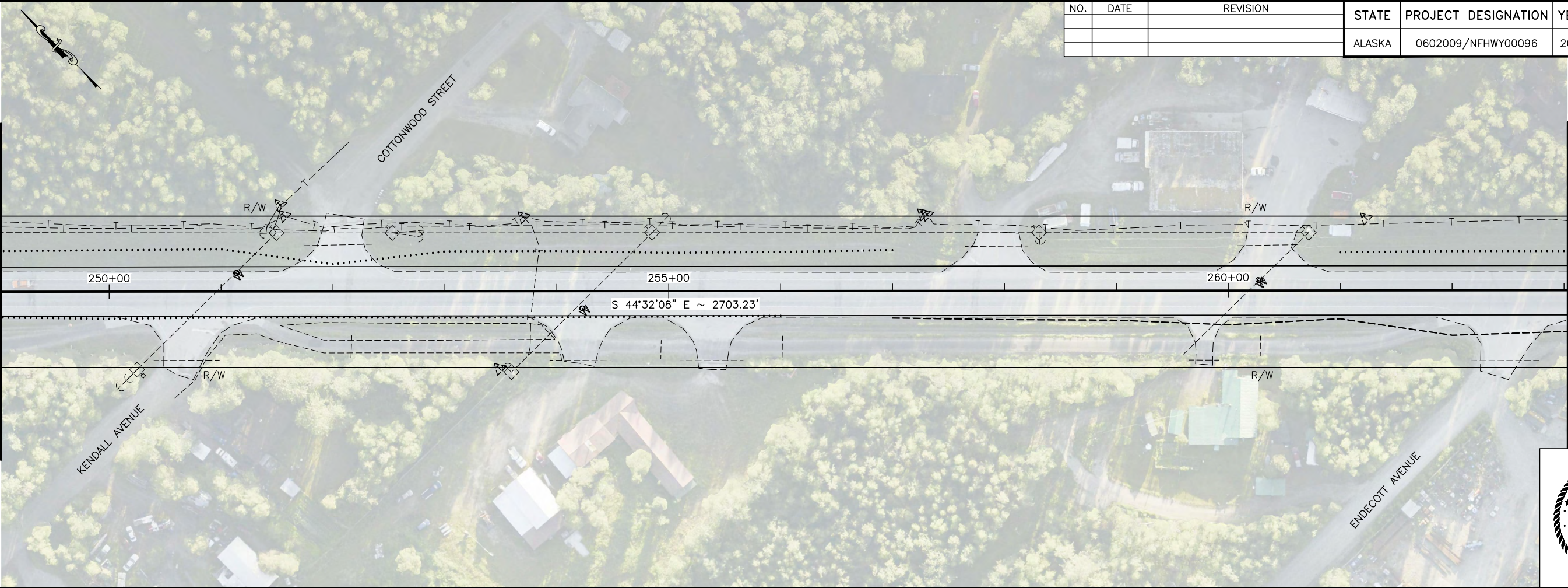
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			ALASKA	0602009/NFHWY00096	2018	F11	----



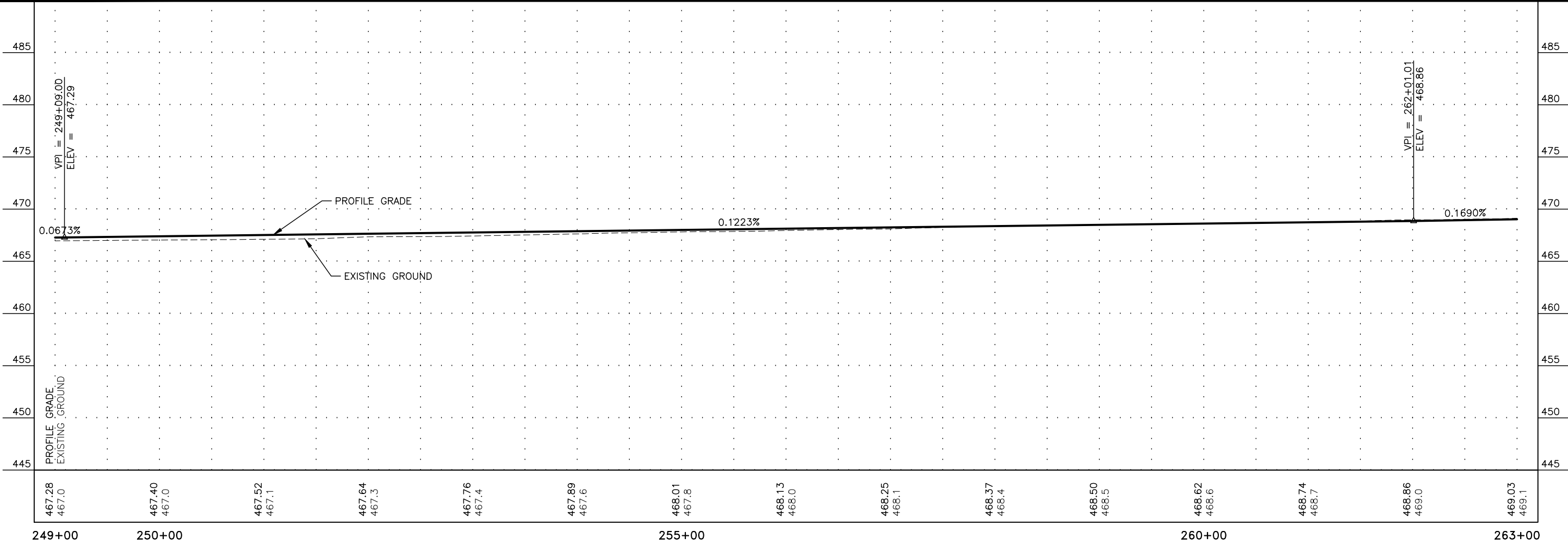
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-249+00.00-263+00.00 Mon, Jan/29/18 08:33am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F12	----

MATCH "05" 249+03 LINE



MATCH "05" 263+03 LINE



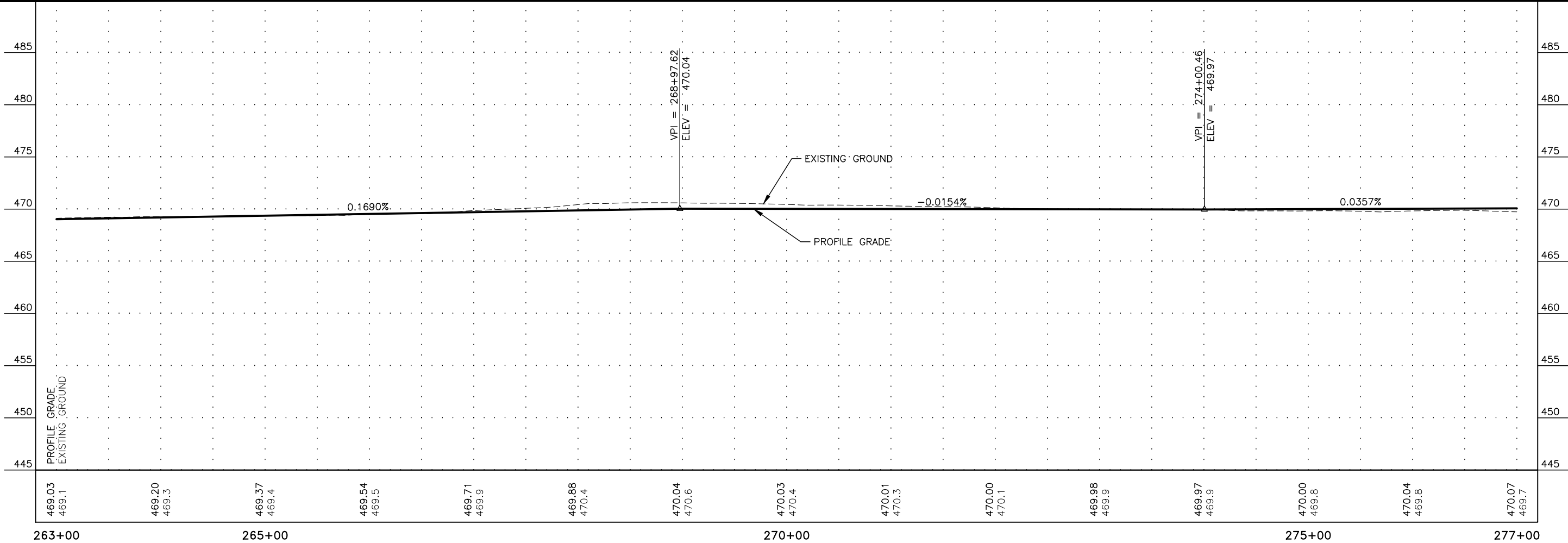
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-263+00.00-277+00.00 Mon, Jan/29/18 08:34am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F13	----

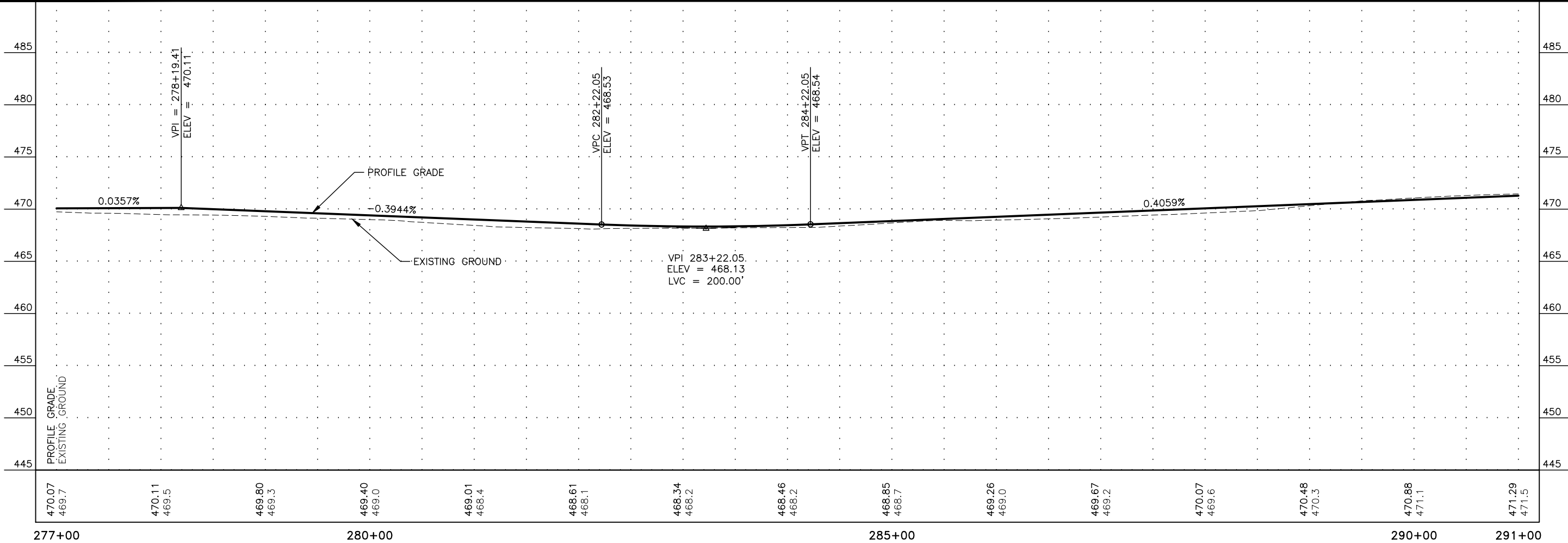
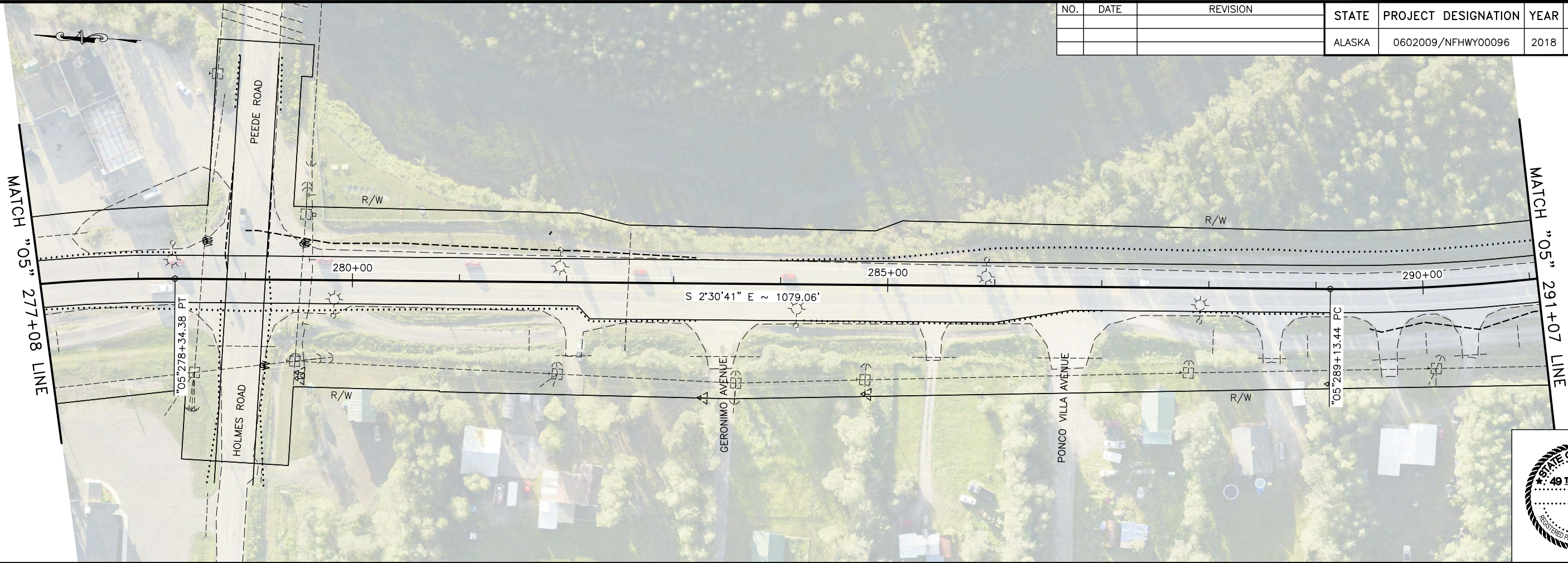
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 $D=4^{\circ}20'26''$   
 $L=968.17'$   
 $T=507.02'$   
 $R=1320.00'$

MATCH "05" 263+03 LINE

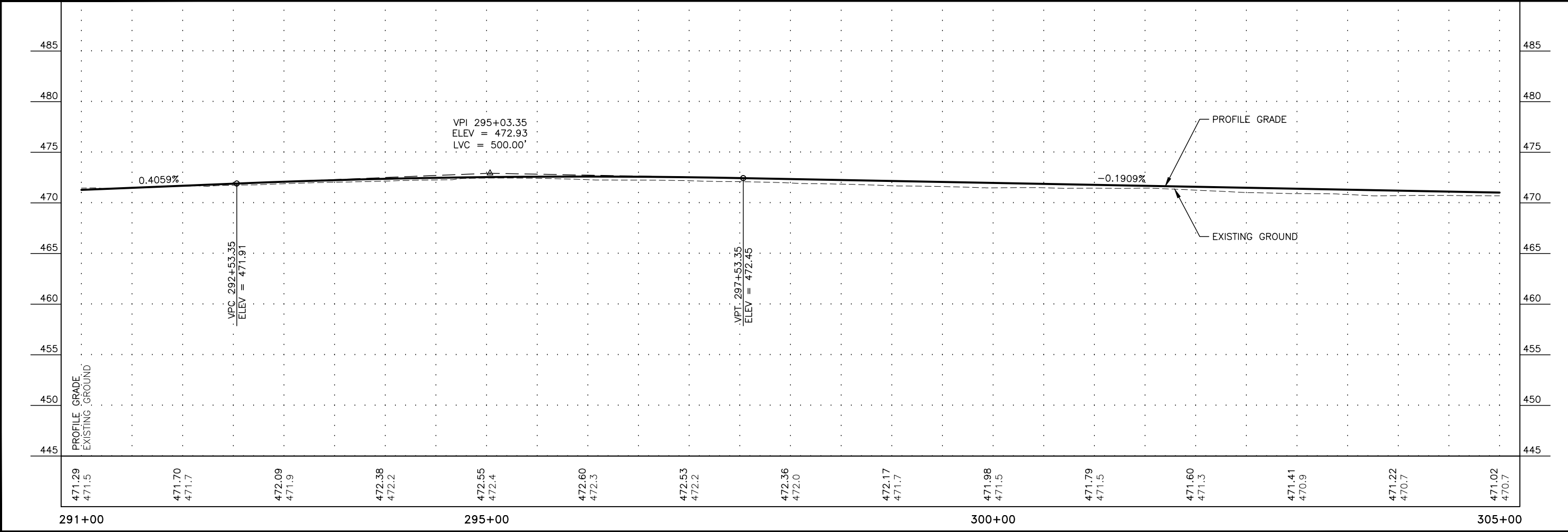
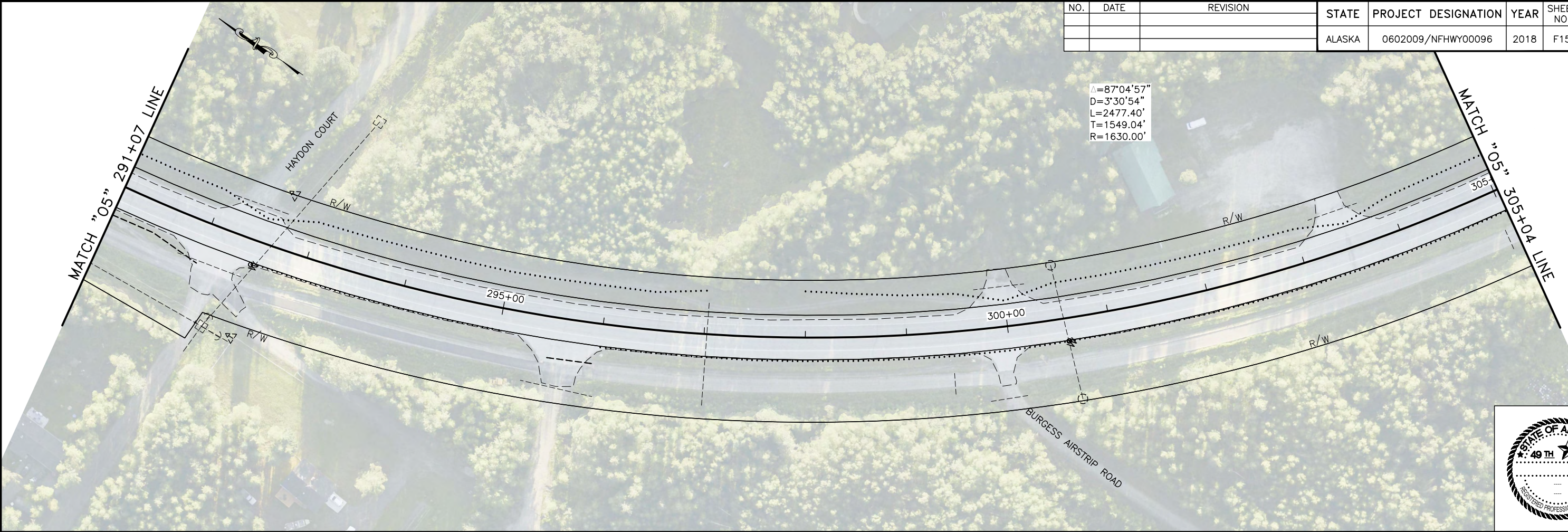
MATCH "05" 277+08 LINE



NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWHY00096	2018	F14	----

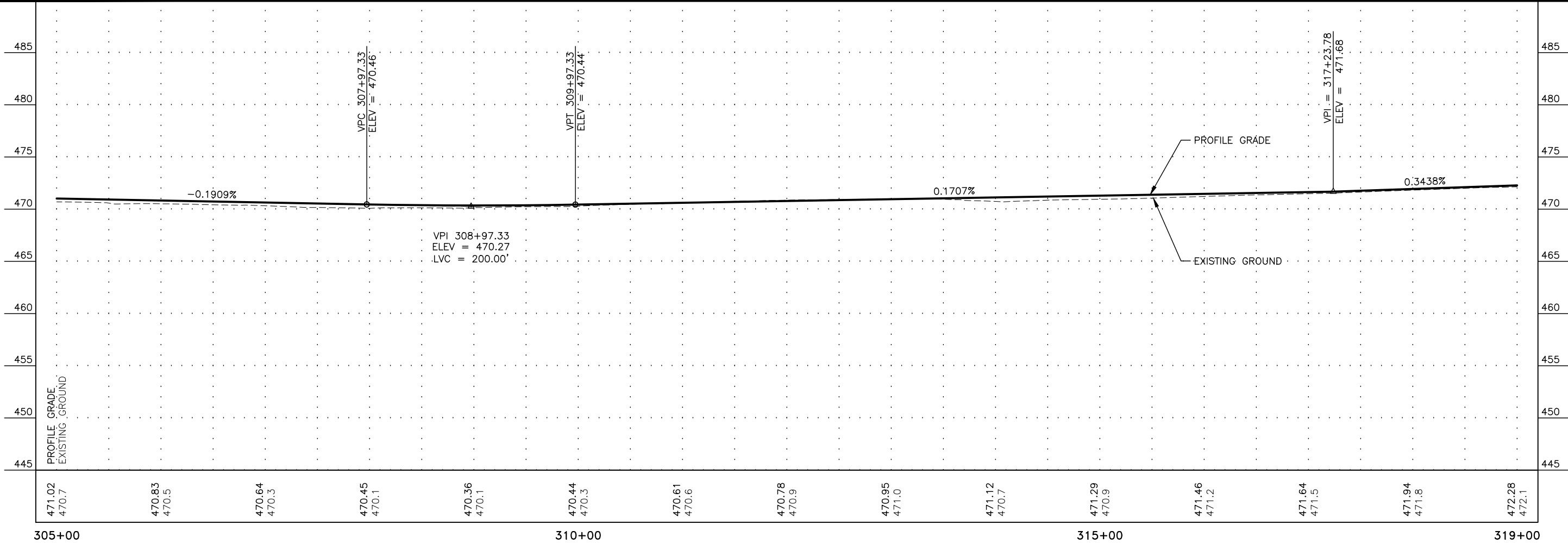


NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F15	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-305+00.00-319+00.00 Mon, Jan/29/18 08:37am

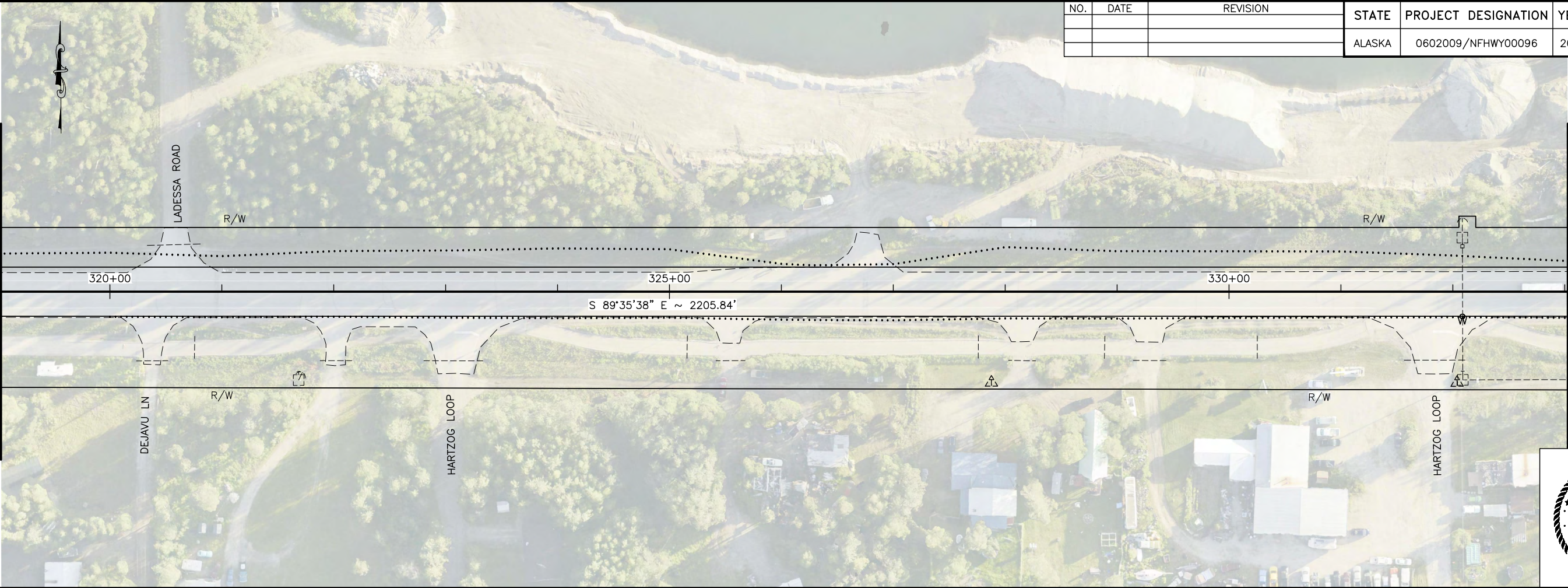
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F16	----



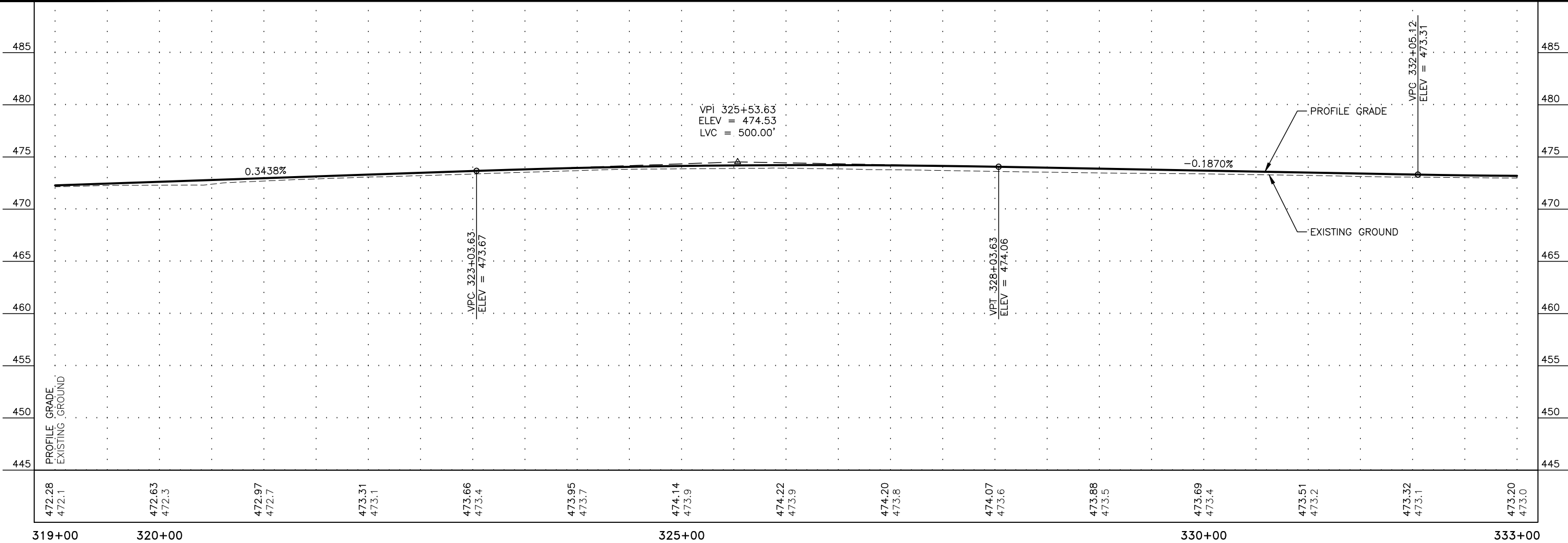
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-319+00.00-333+00.00 Mon, Jan/29/18 08:38am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWHY00096	2018	F17	----

MATCH "05" 319+03 LINE

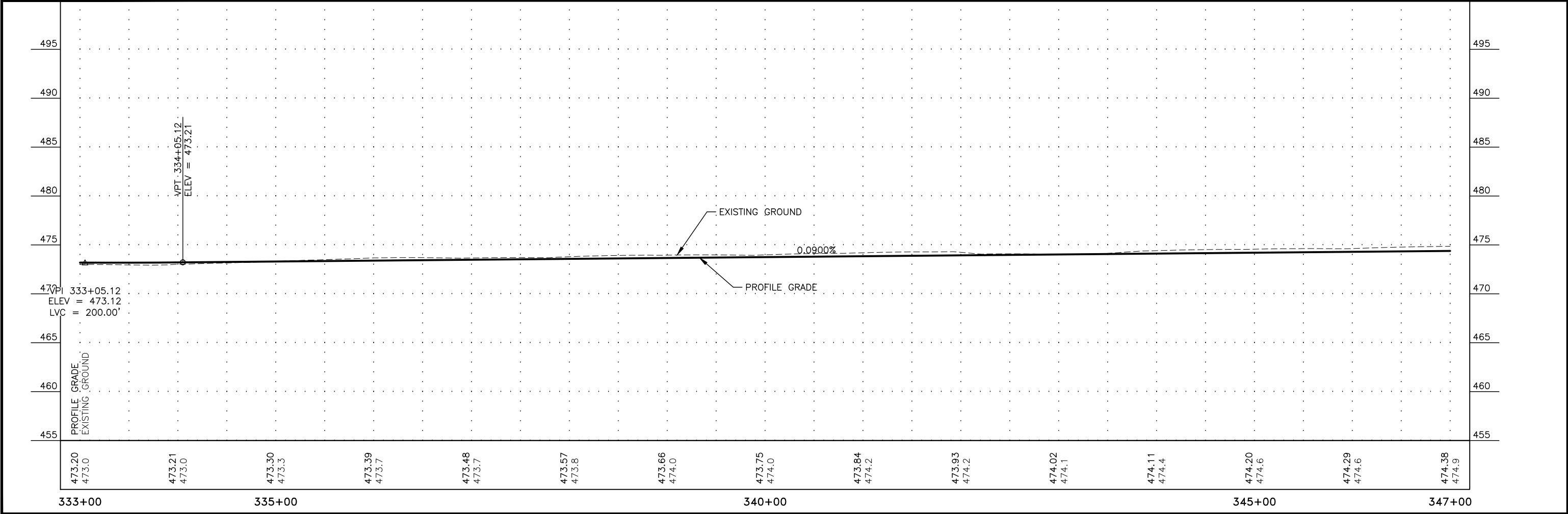
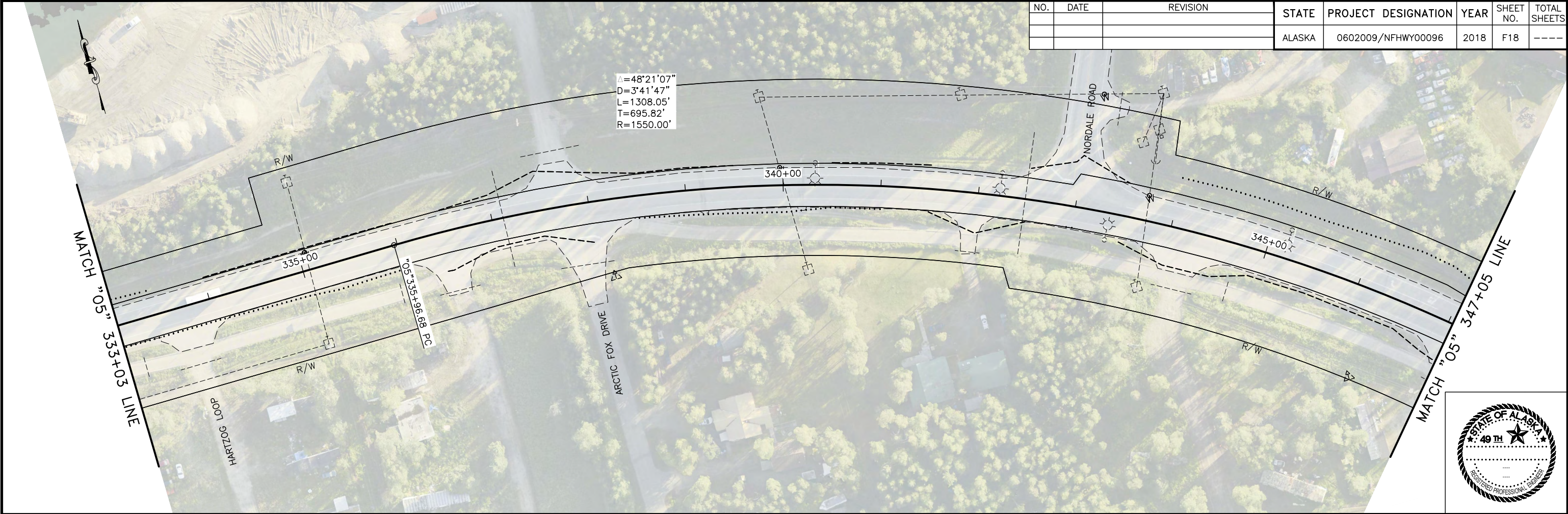


MATCH "05" 333+03 LINE



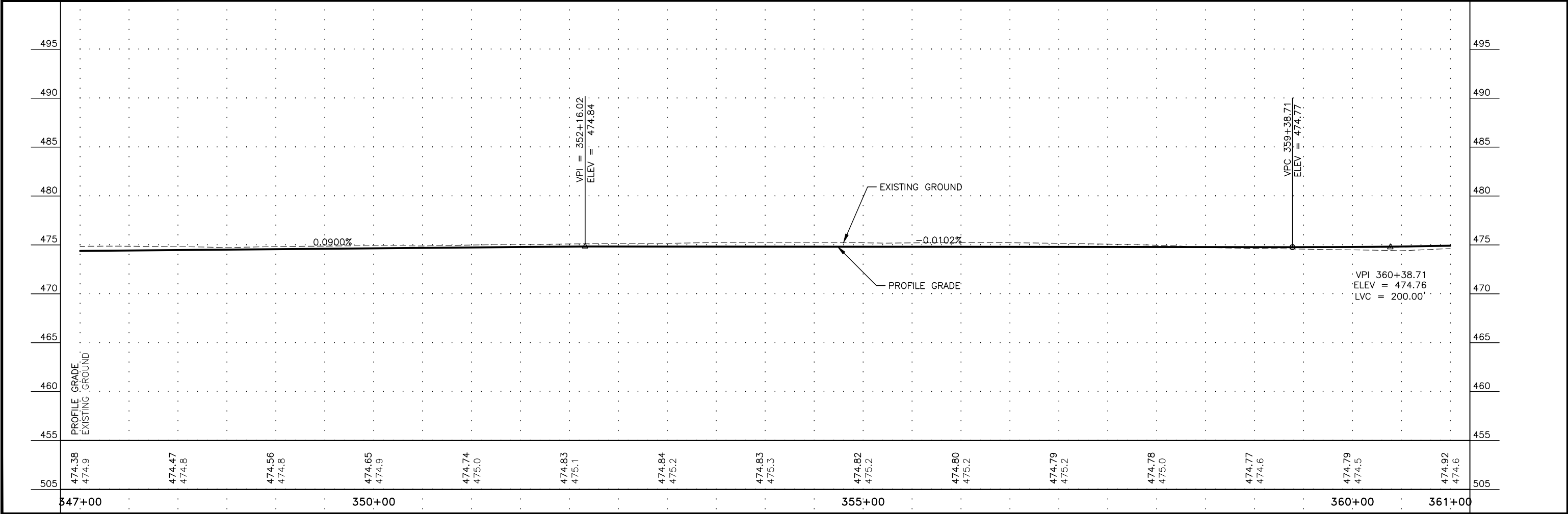
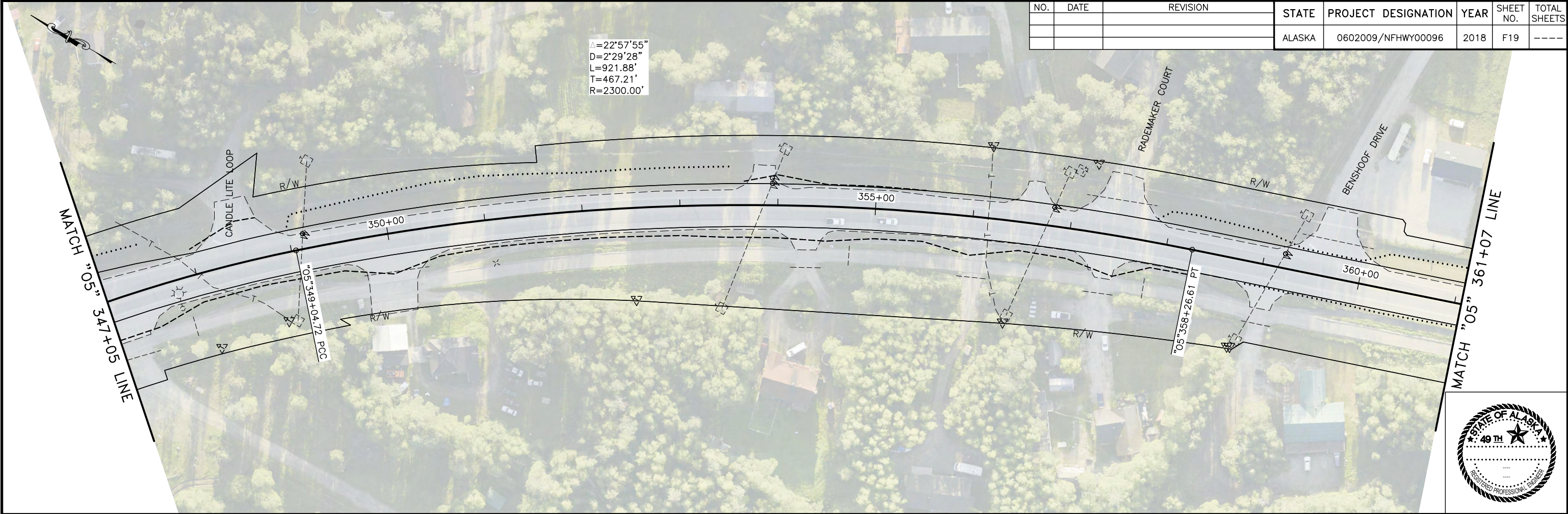
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-333+00.00-347+00.00 Mon, Jan/29/18 08:39am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F18	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-347+00.00-361+00.00 Mon, Jan/29/18 08:40am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F19	----

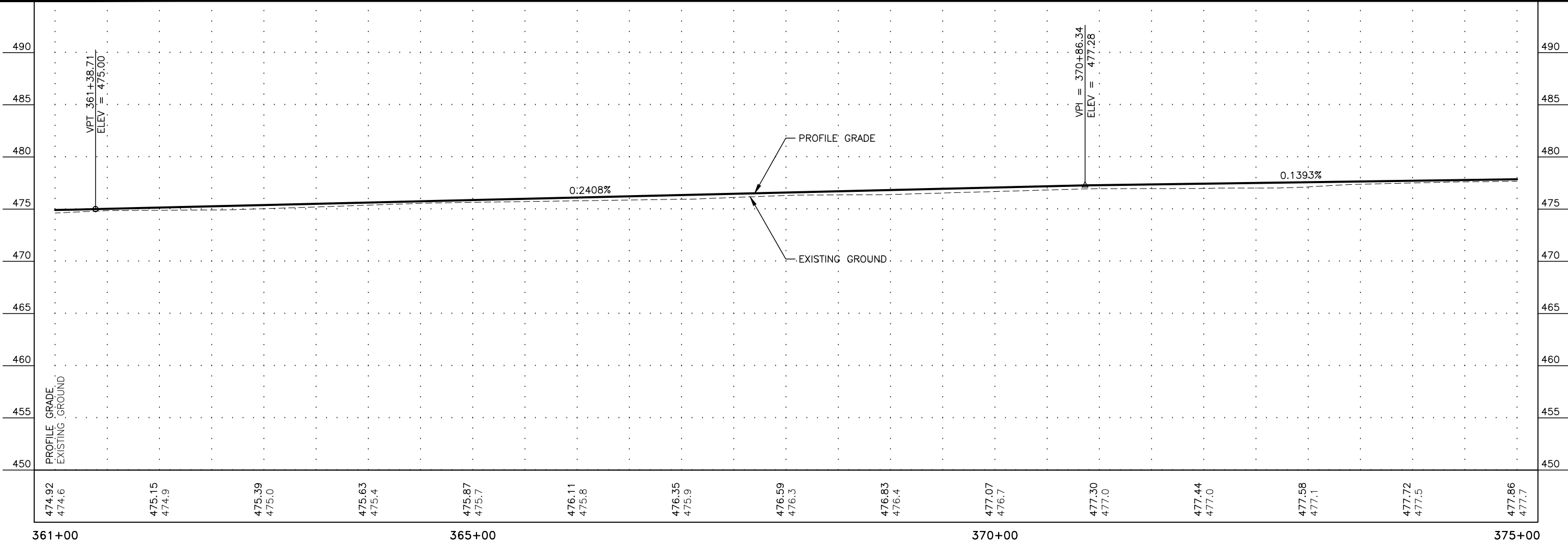


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-361+00.00-375+00.00 Mon, Jan/29/18 08:41am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F20	----

MATCH "05" 361+07 LINE

MATCH "05" 375+07 LINE

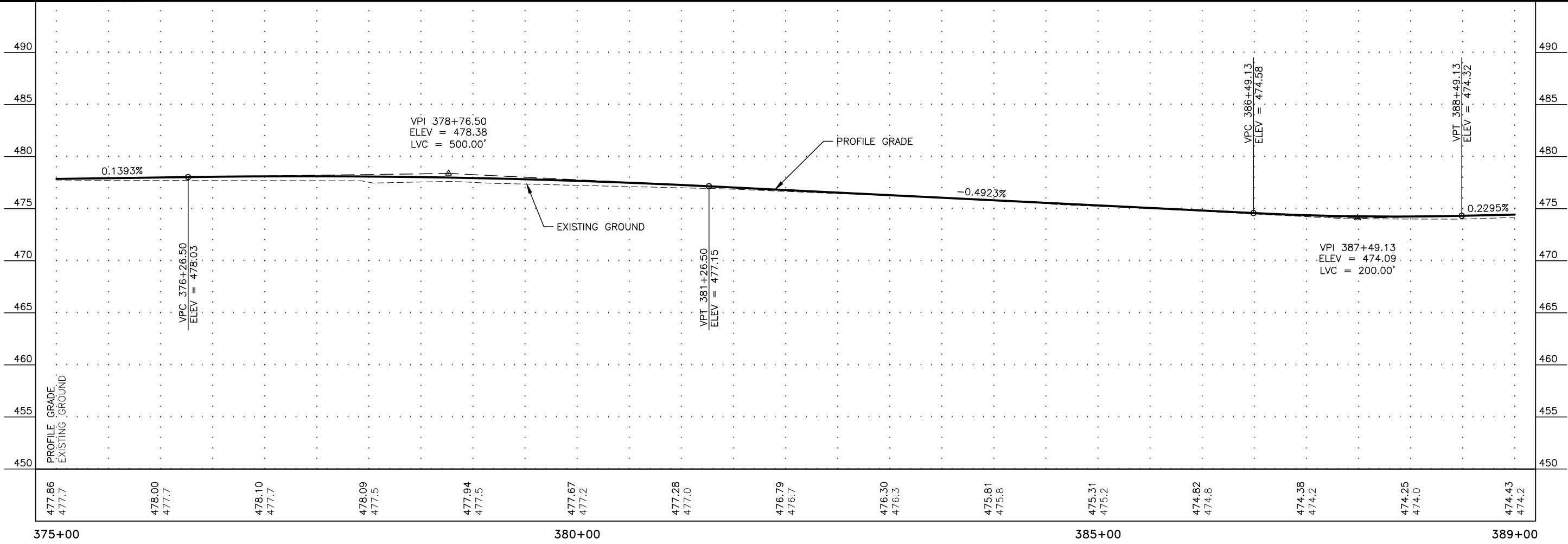
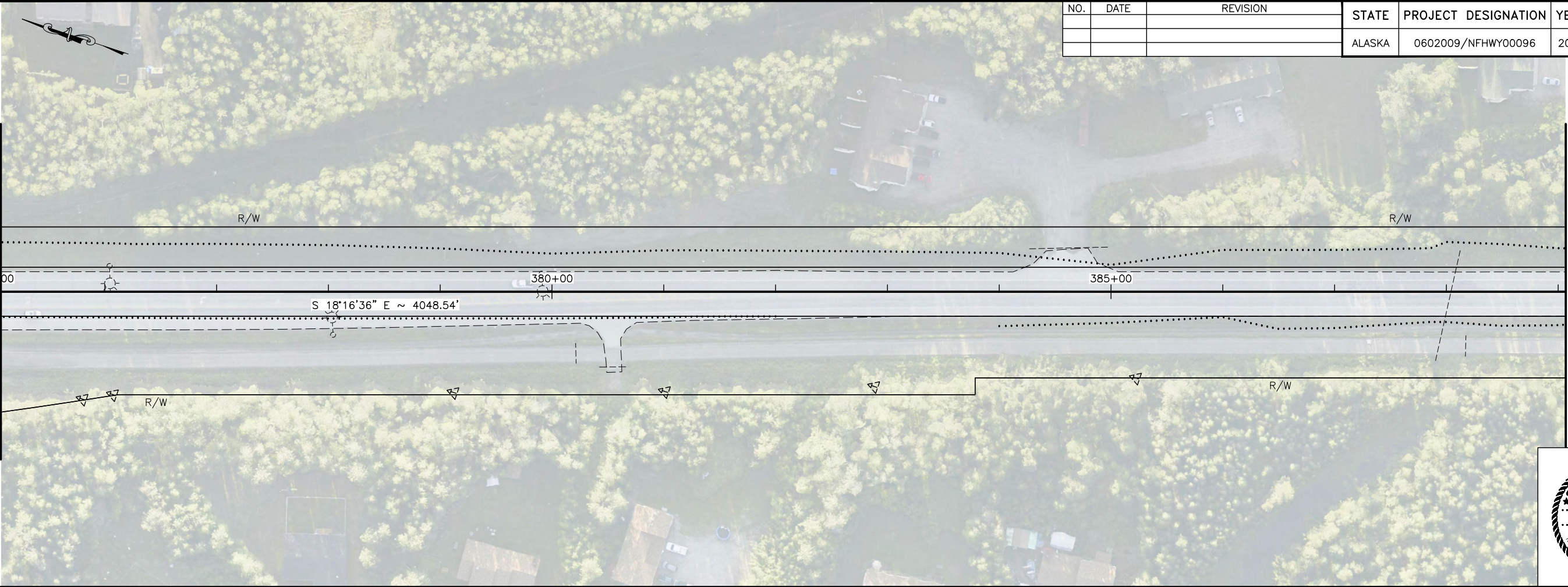


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-375+00.00-389+00.00 Men\_Jan/29/18 08:42am

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			ALASKA	0602009/NFHWY00096	2018	F21	----

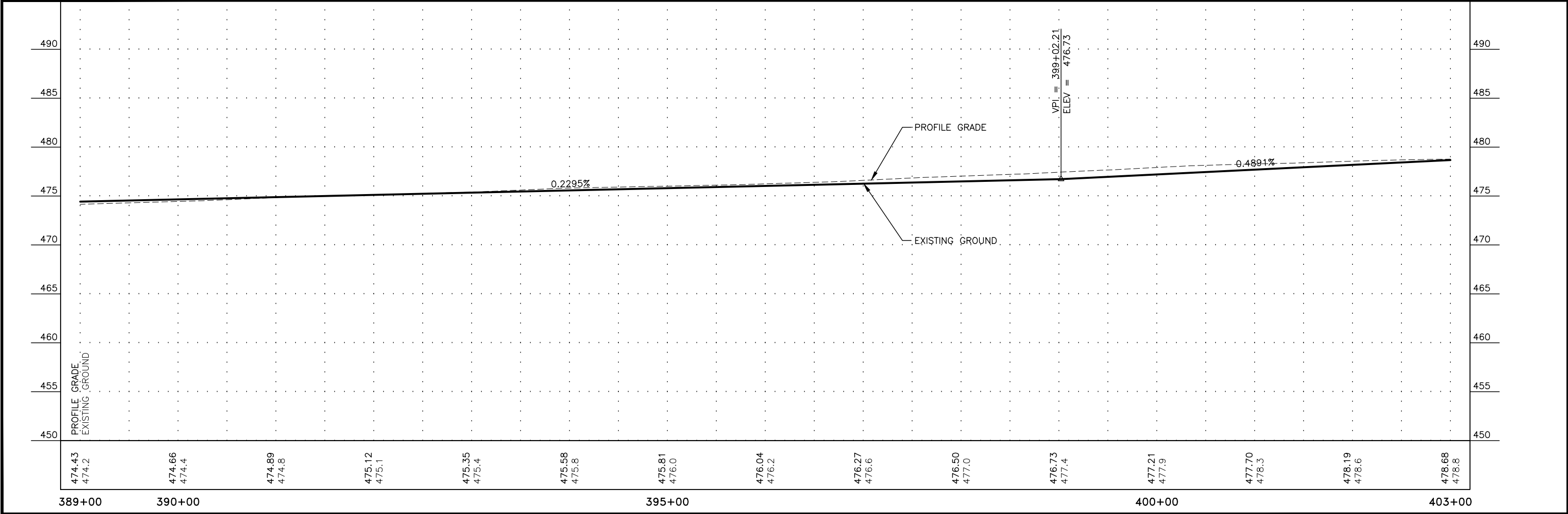
MATCH "05" 375+07 LINE

MATCH "05" 389+07 LINE



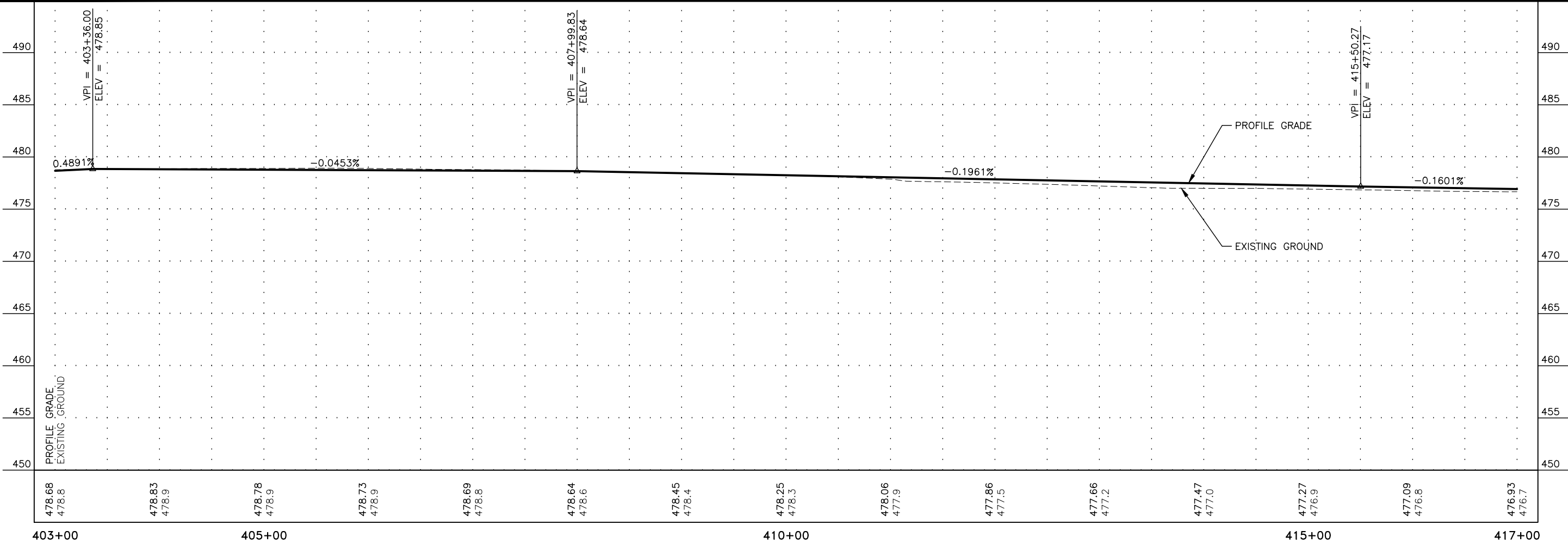
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-389+00.00-403+00.00 Mon, Jan/29/18 08:43am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F22	----



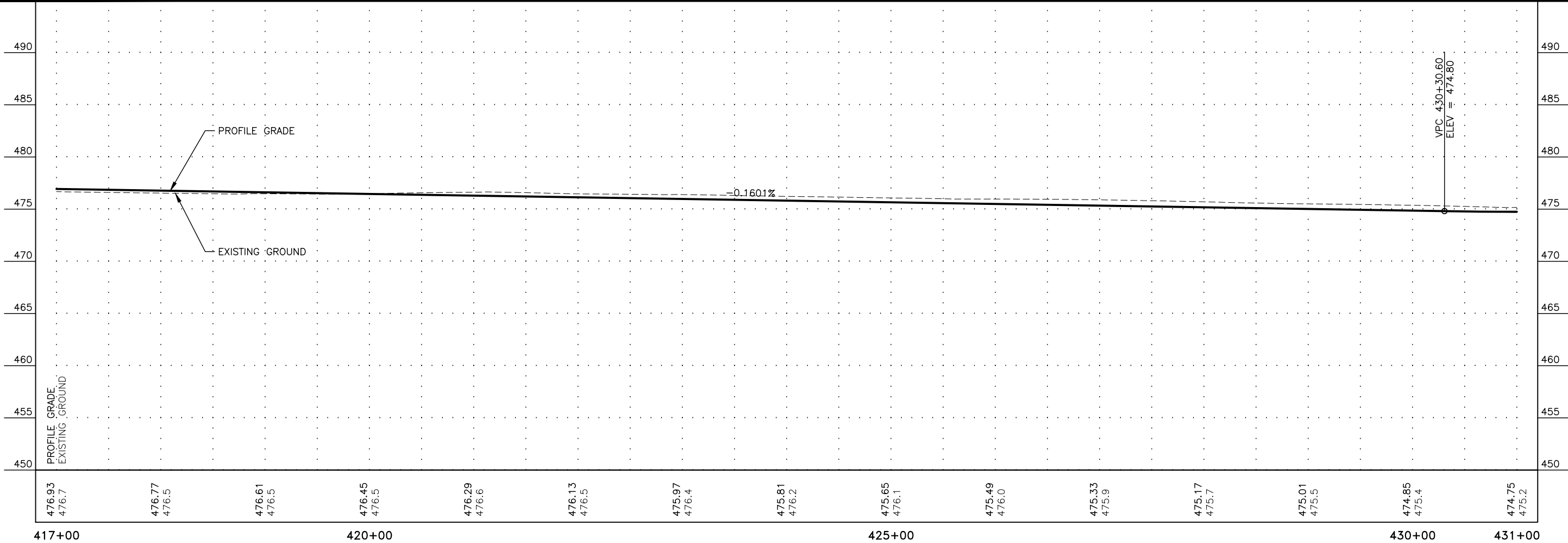
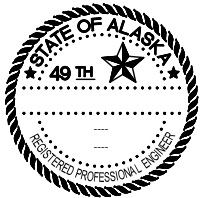
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-403+00.00-417+00.00 Mon, Jan/29/18 08:44am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F23	----



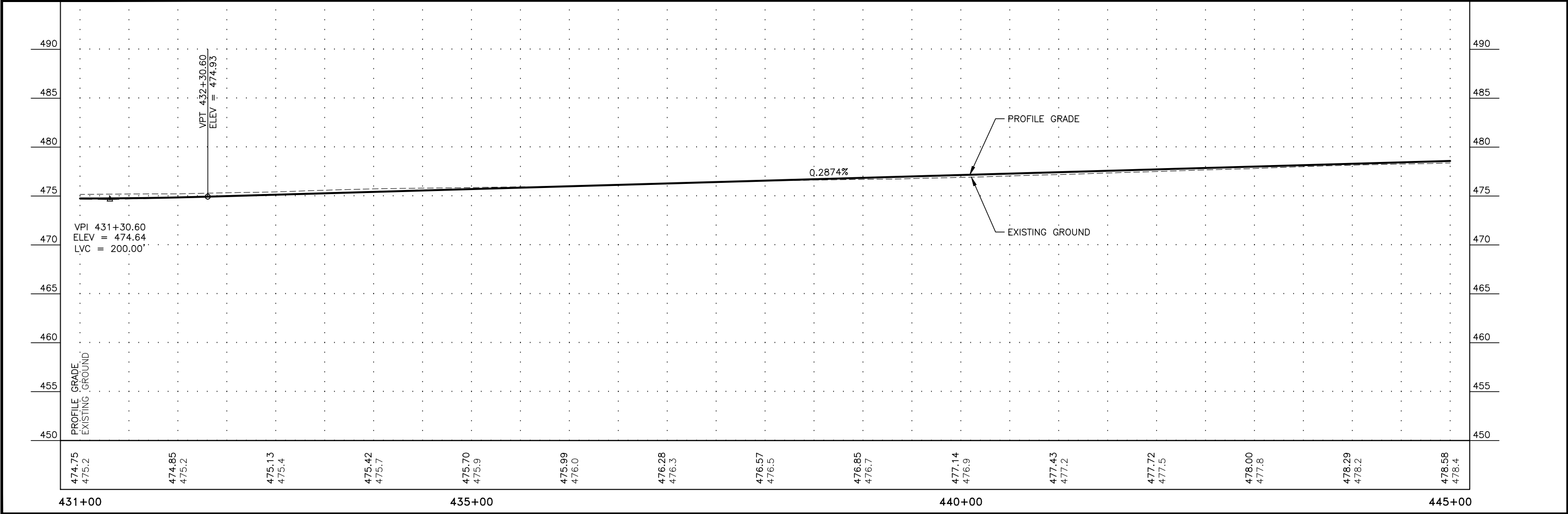
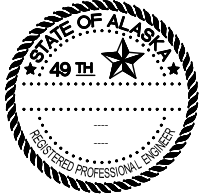
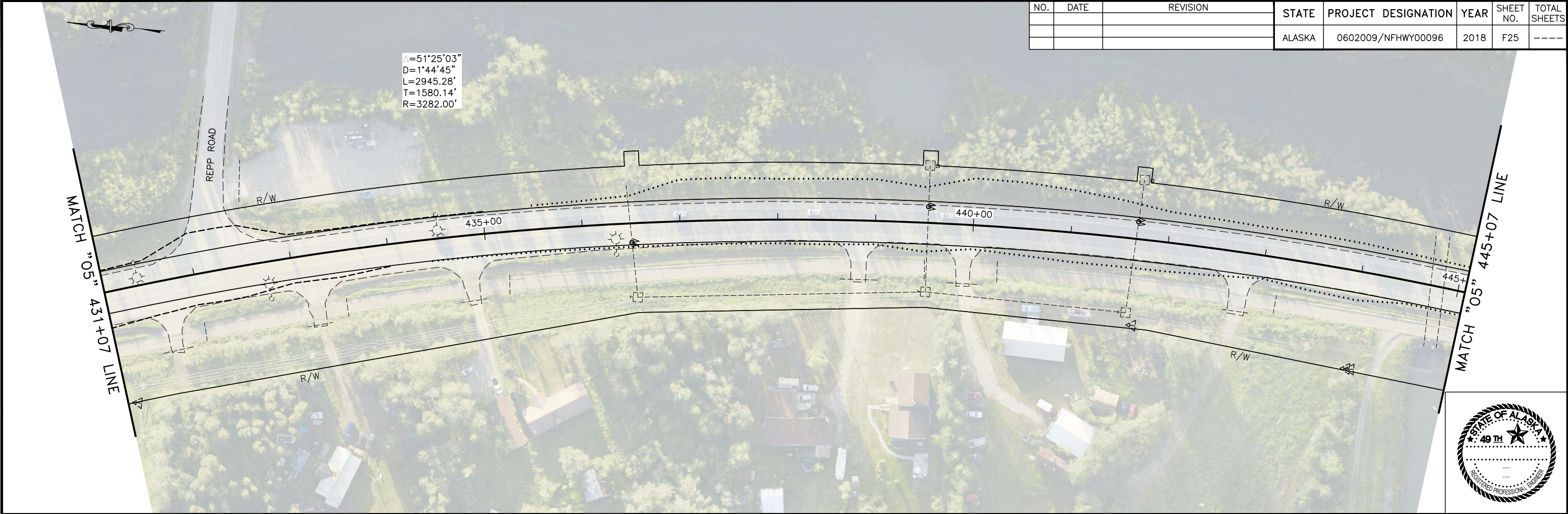
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-417+00.00-431+00.00 Mon\_Jan/29/18 08:45am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F24	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-431+00.00-445+00.00 Mon, Jan/29/18 08:45am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWHY00096	2018	F25	----

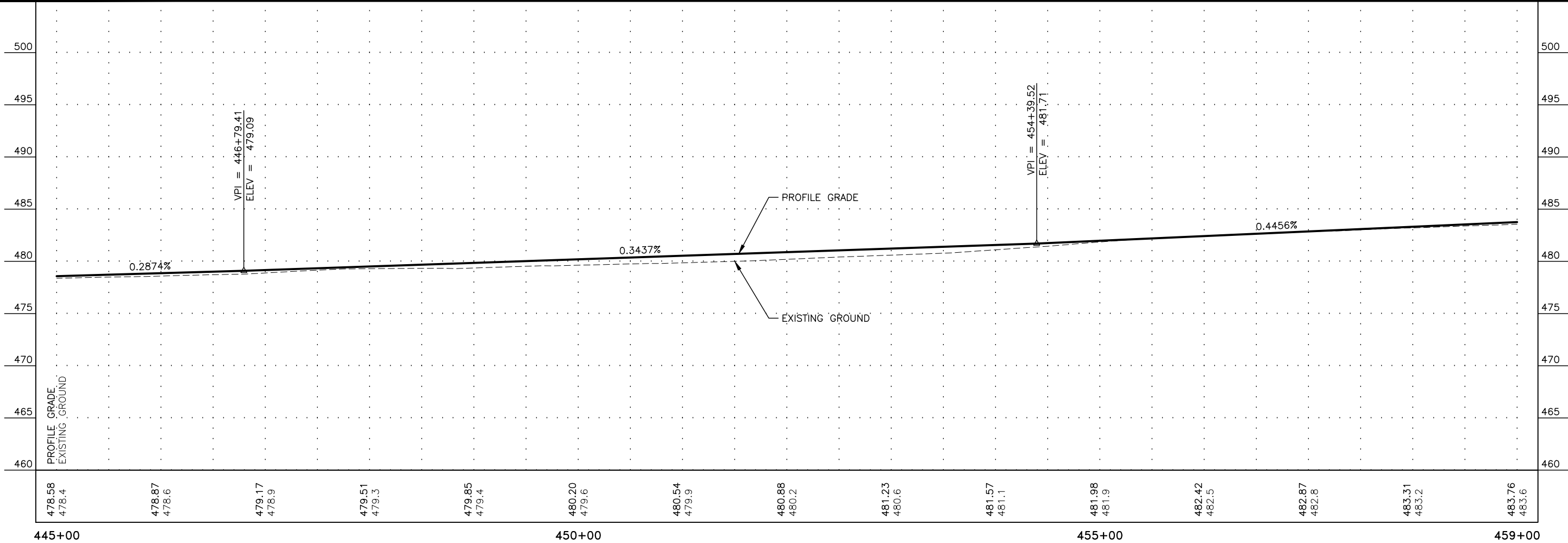


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-445+00.00-459+00.00 Mon, Jan/29/18 08:46am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F26	----

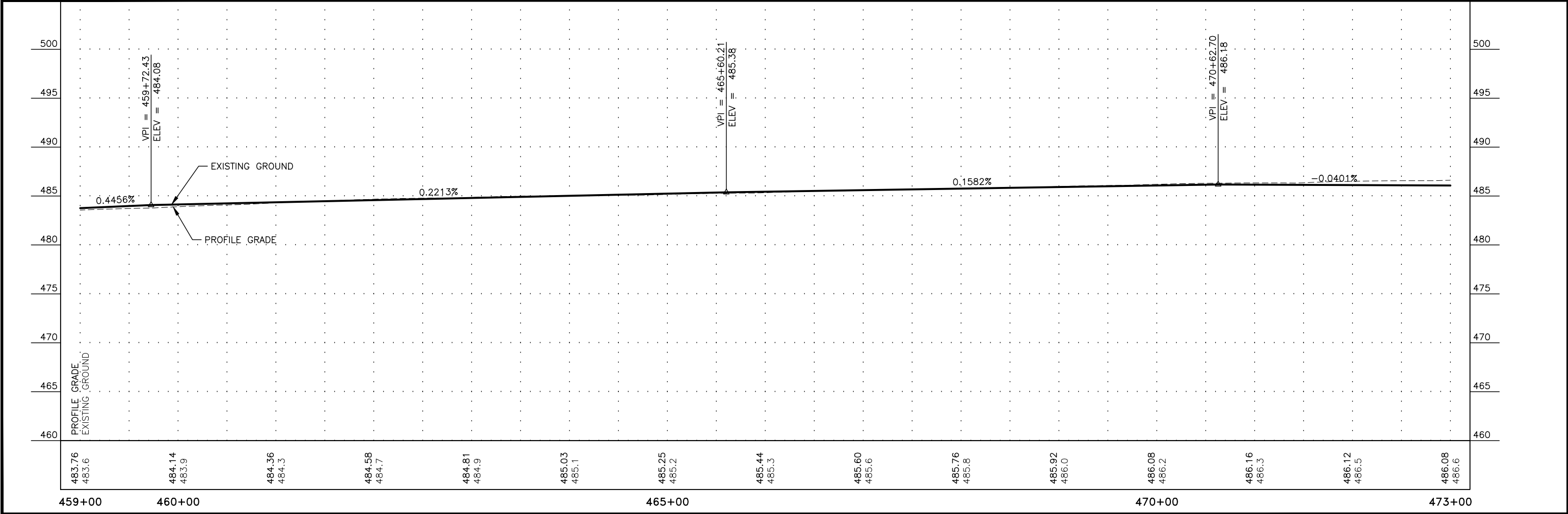
MATCH "05" 445+07 LINE

MATCH "05" 459+07 LINE



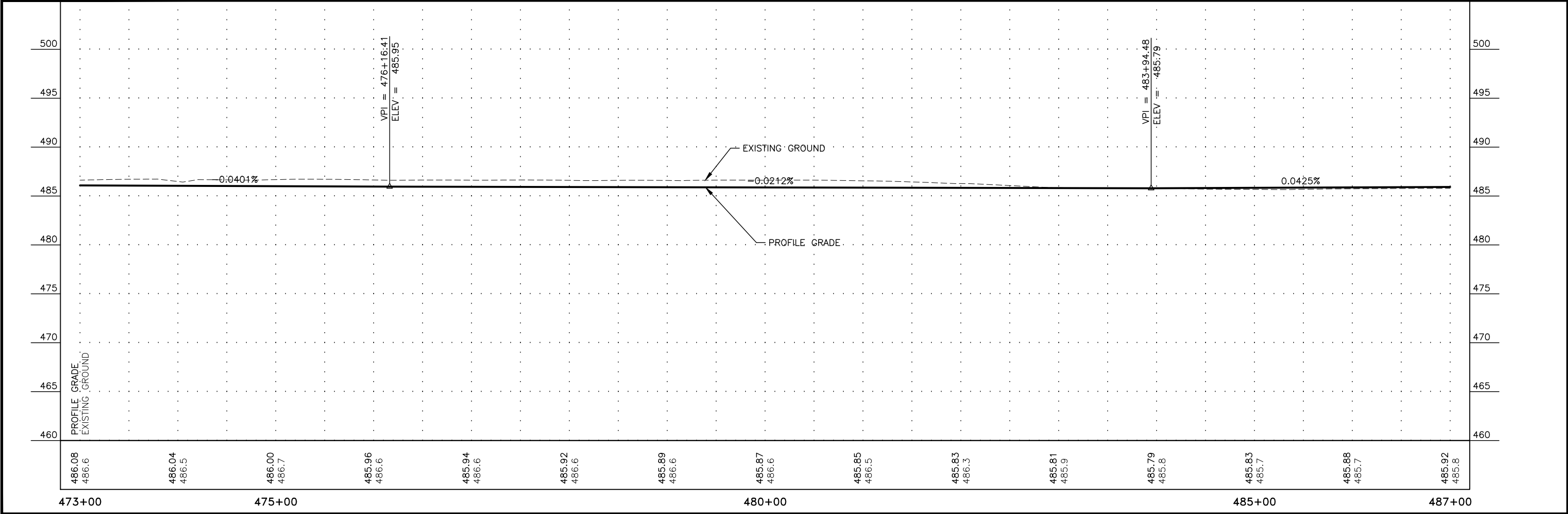
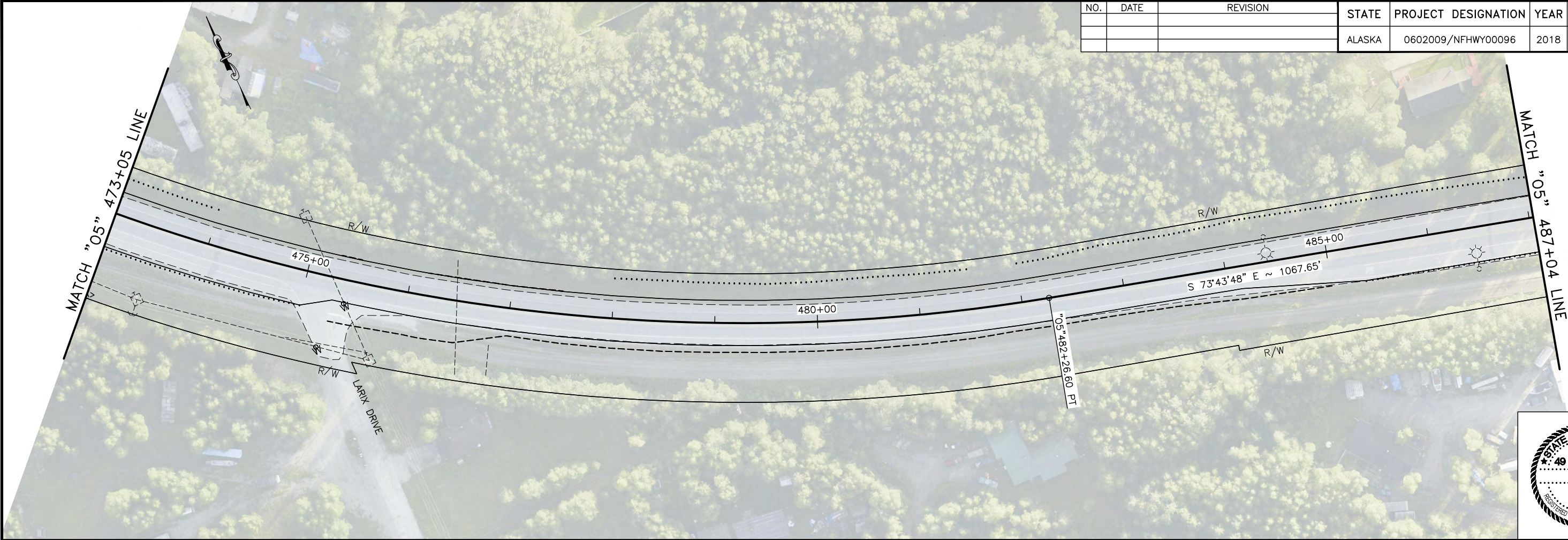
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-459+00.00-473+00.00 Mon, Jan/29/18 08:47am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F27	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-473+00.00-487+00.00 Mon, Jan/29/18 08:48am

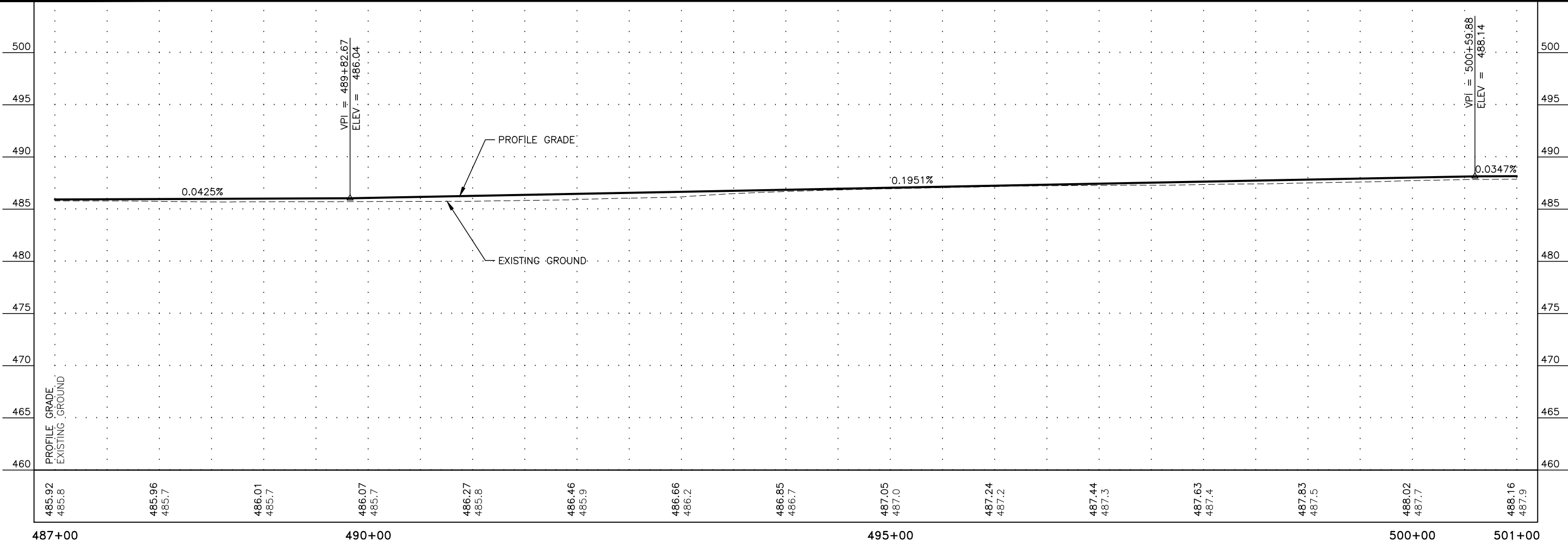
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F28	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-487+00.00-501+00.00 Mon, Jan/29/18 08:49am

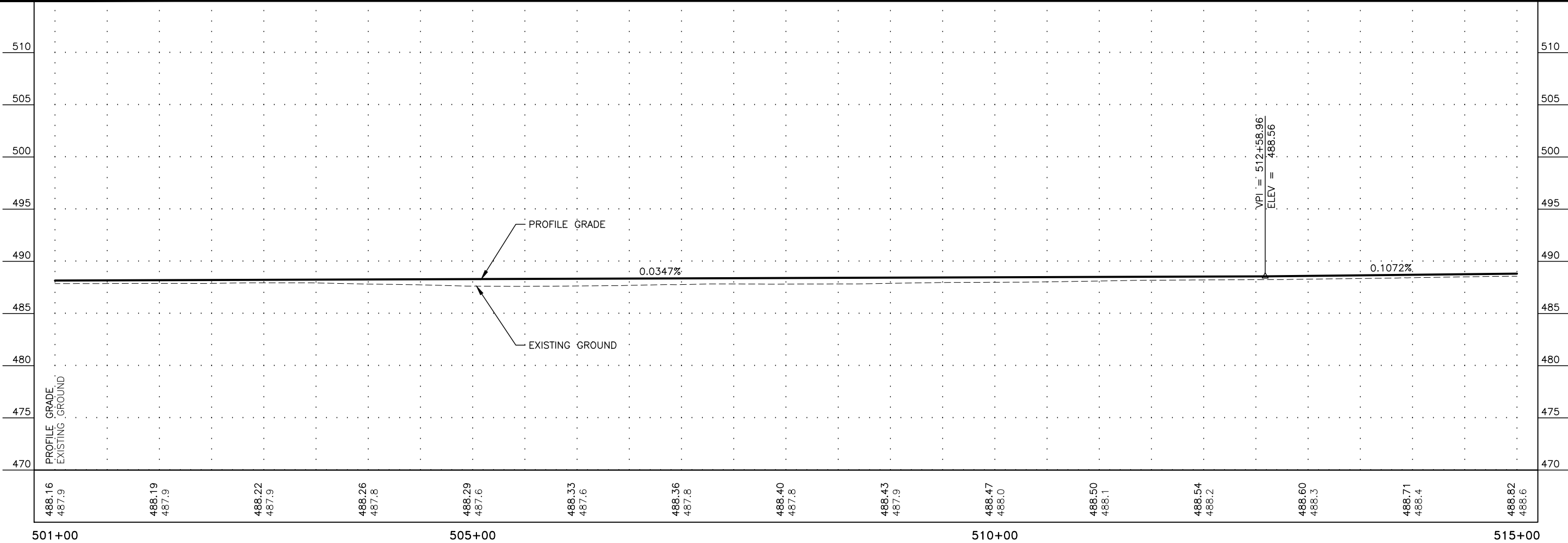
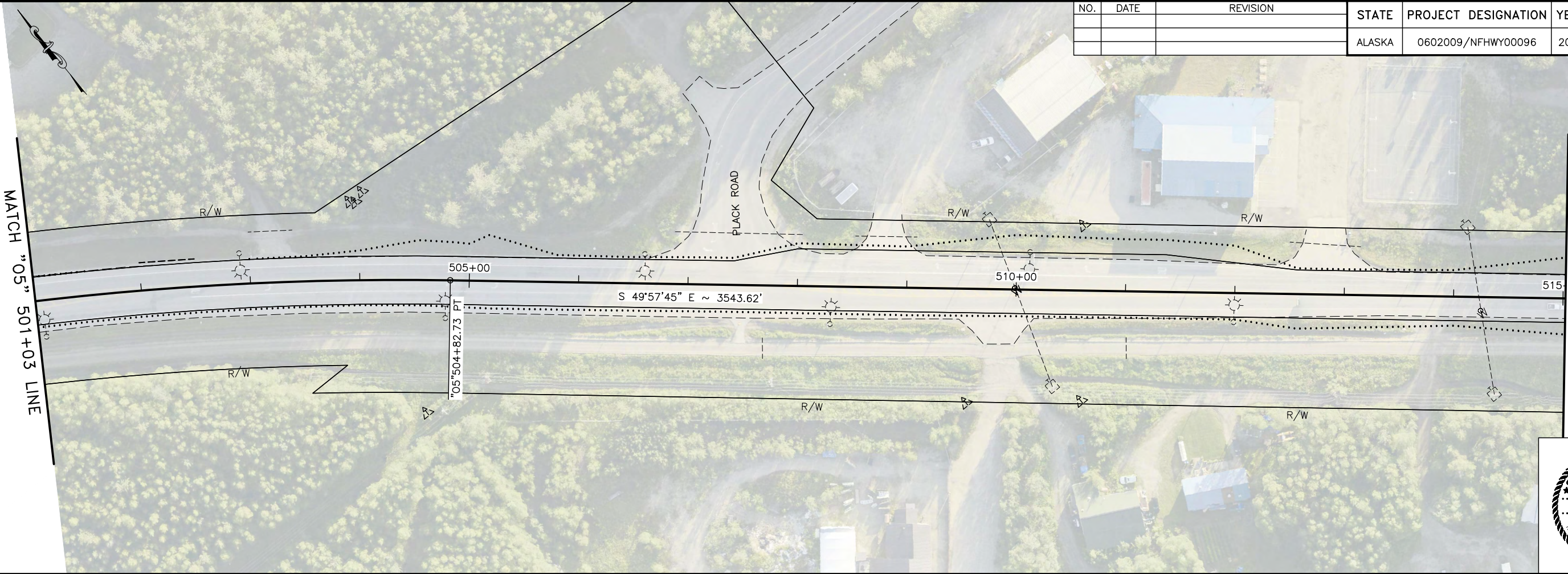
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F29	----

$\Delta=23^{\circ}46'04''$   
 $D=1^{\circ}59'59''$   
 $L=1188.47'$   
 $T=602.91'$   
 $R=2865.00'$



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-501+00.00-515+00.00 Mon, Jan/29/18 08:50am

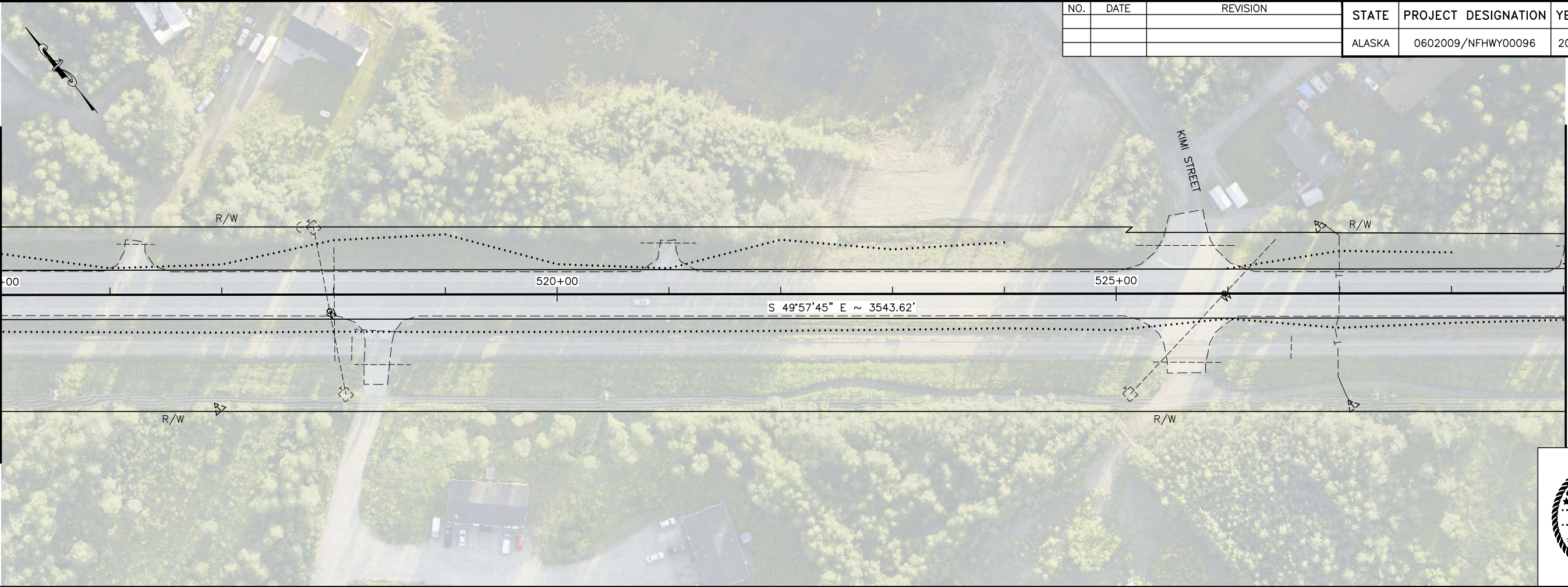
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F30	----



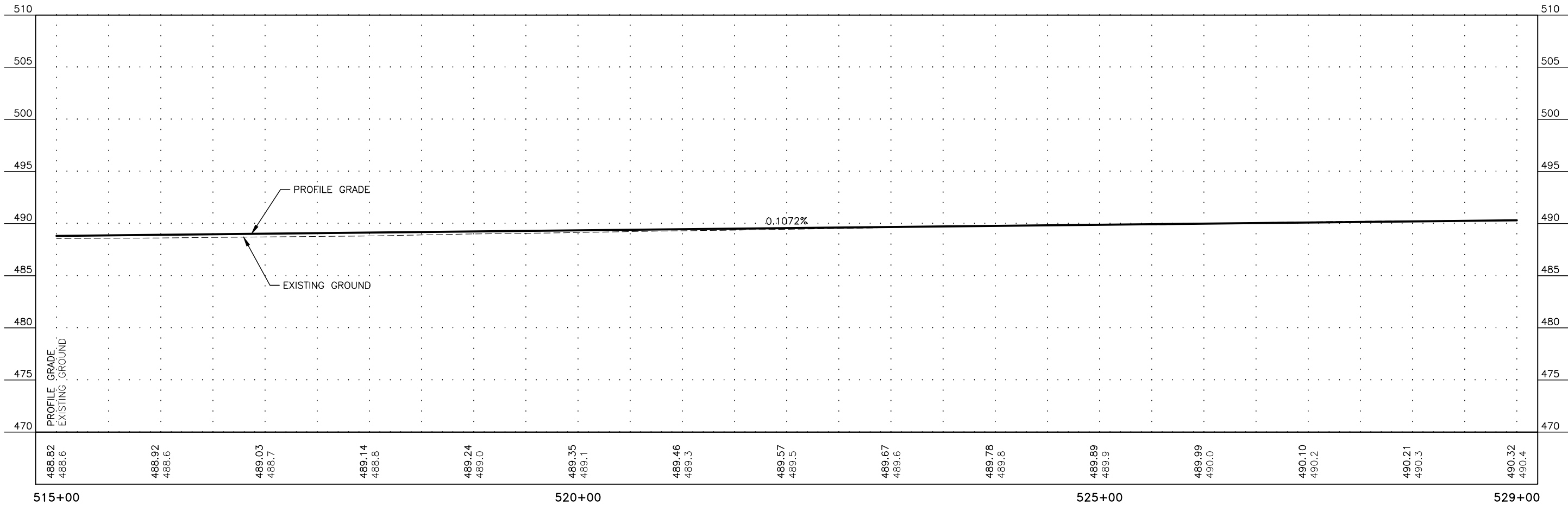
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-515+00.00-529+00.00 Mon, Jan/29/18 08:51am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F31	----

MATCH "05" 515+02 LINE



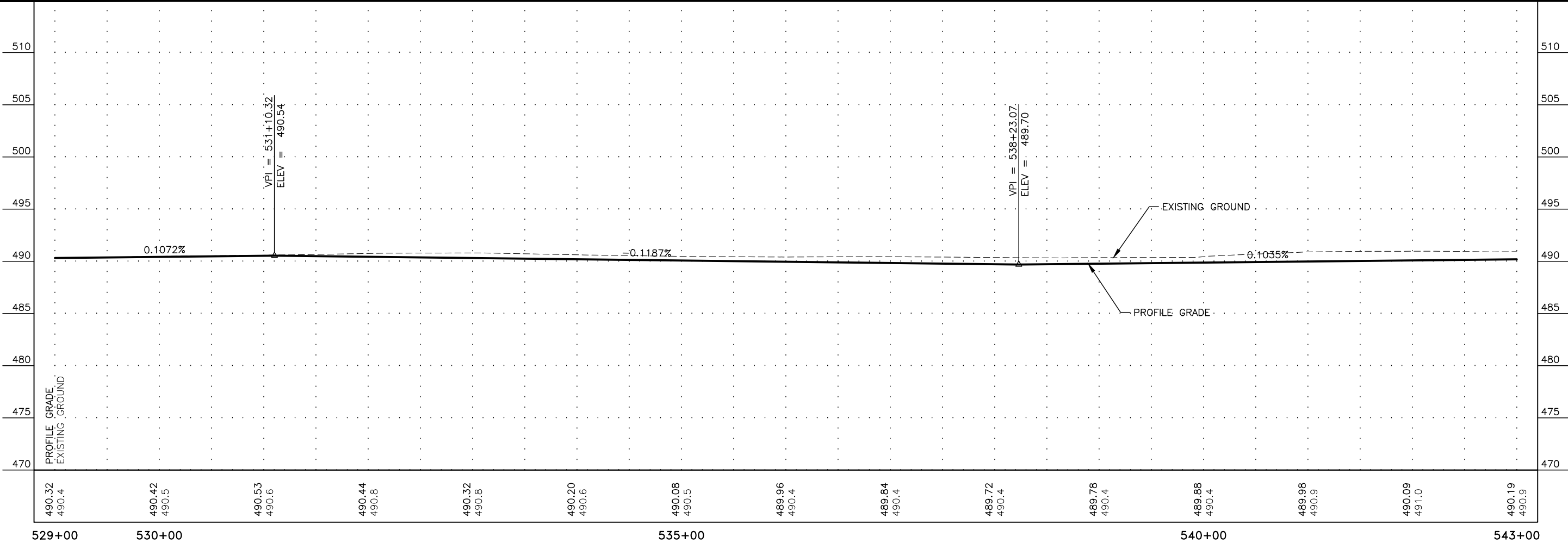
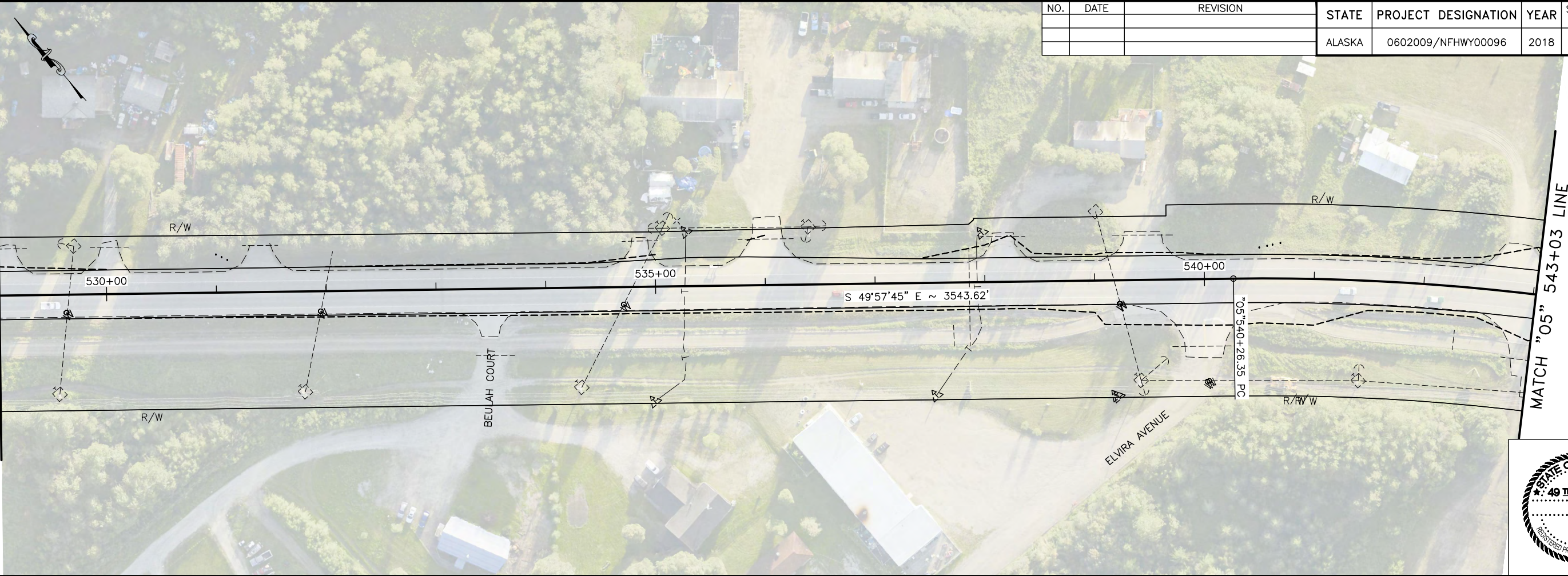
MATCH "05" 529+02 LINE



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-529+00.00-543+00.00 Mon, Jan/29/18 08:52am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F32	----

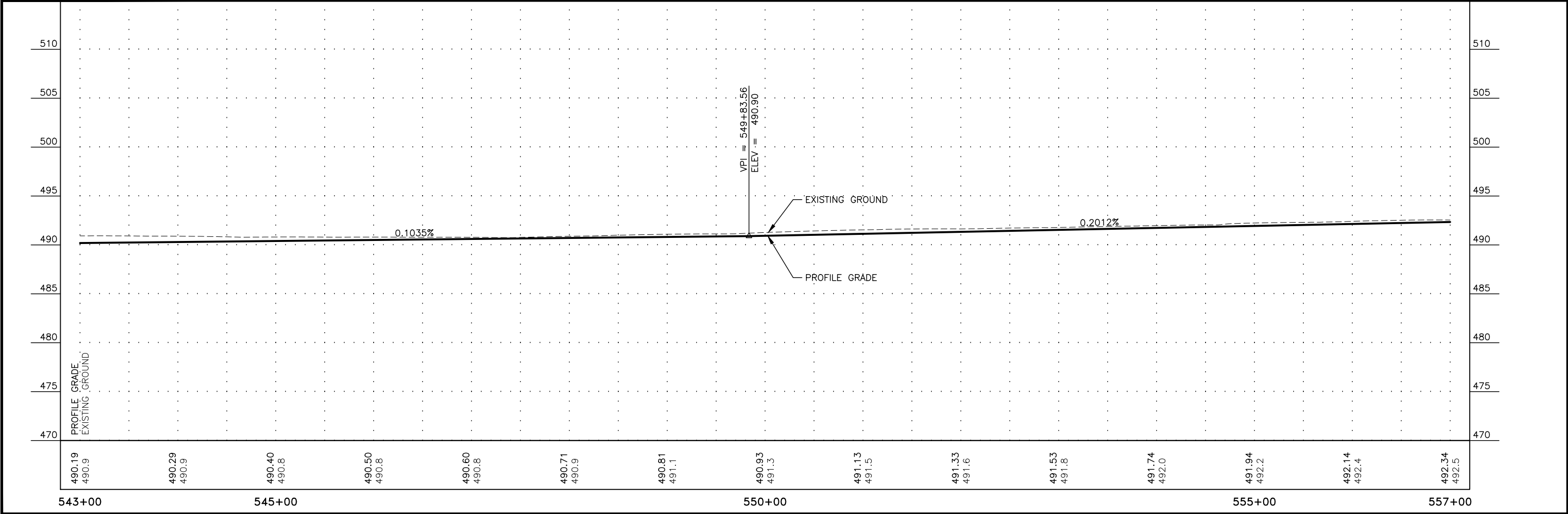
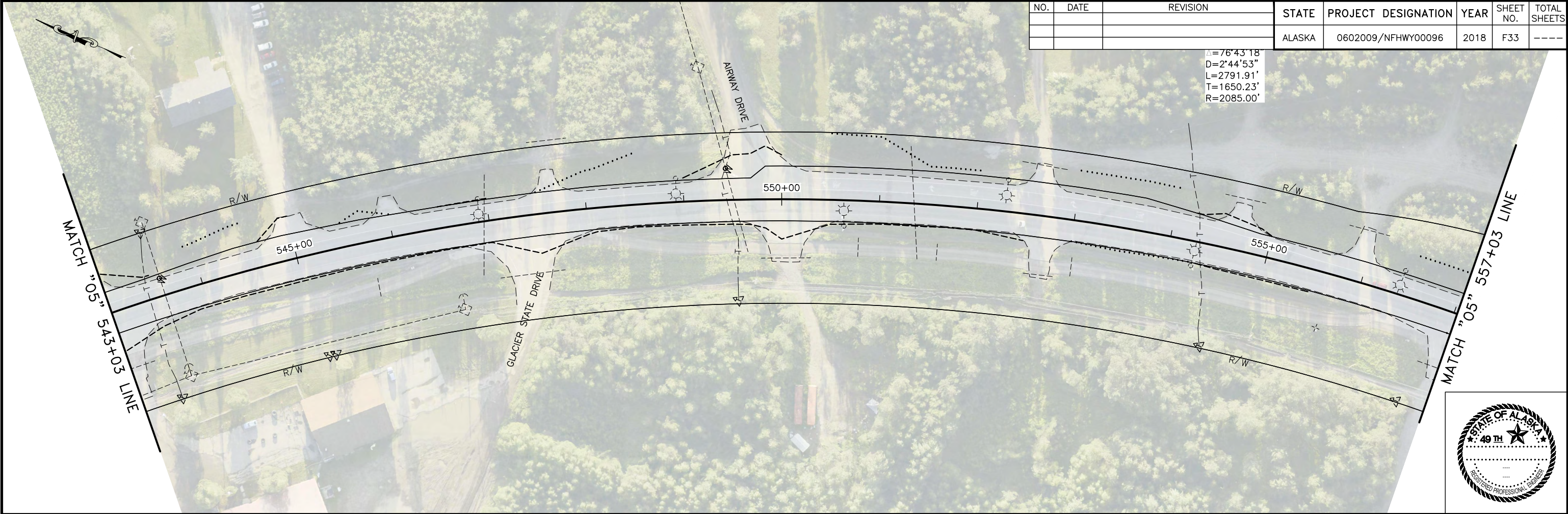
MATCH "05" 529+02 LINE



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-543+00.00-557+00.00 Mon, Jan/29/18 08:53am

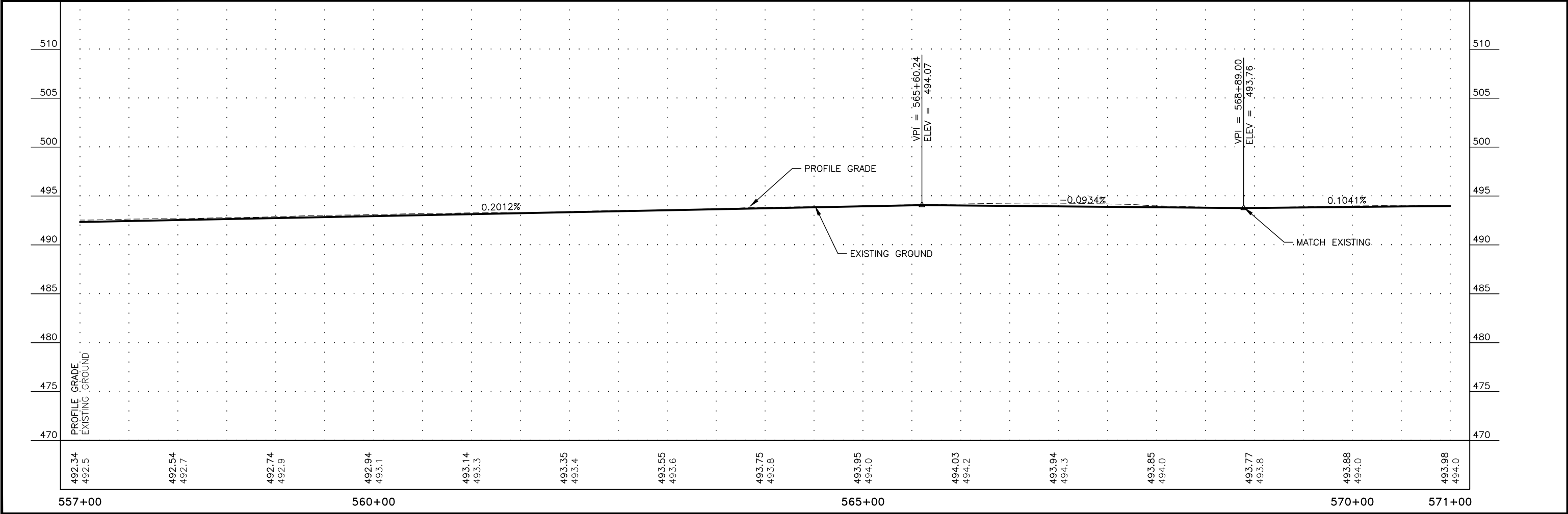
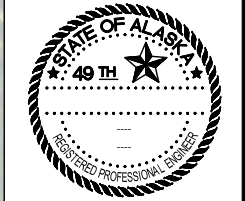
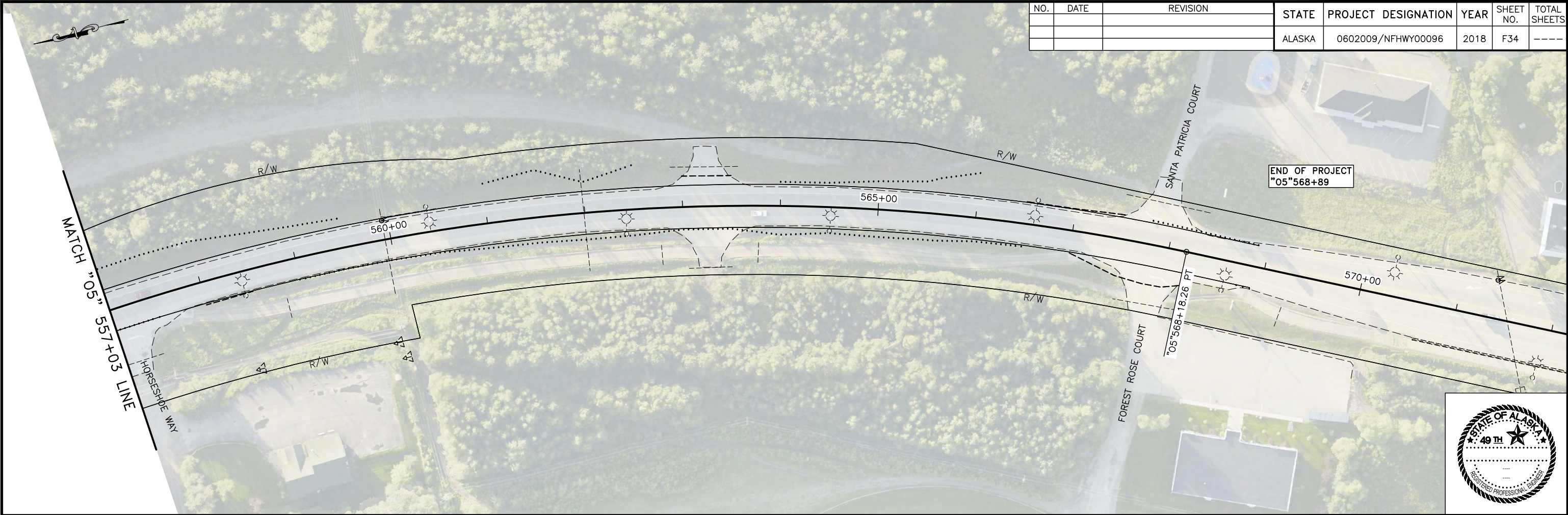
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F33	----

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 $R=2085.00'$

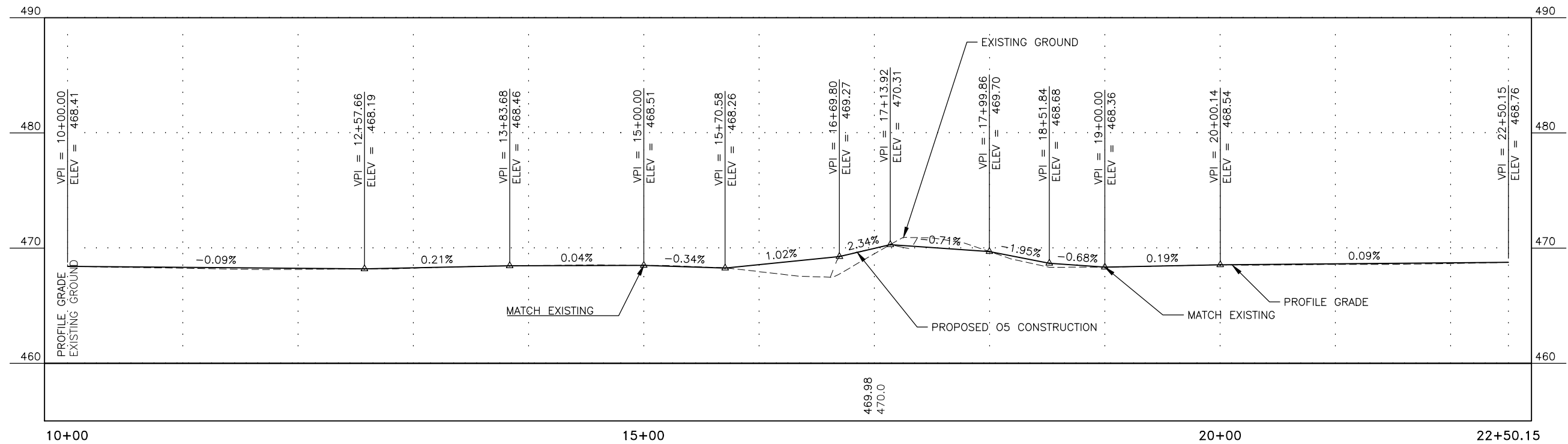
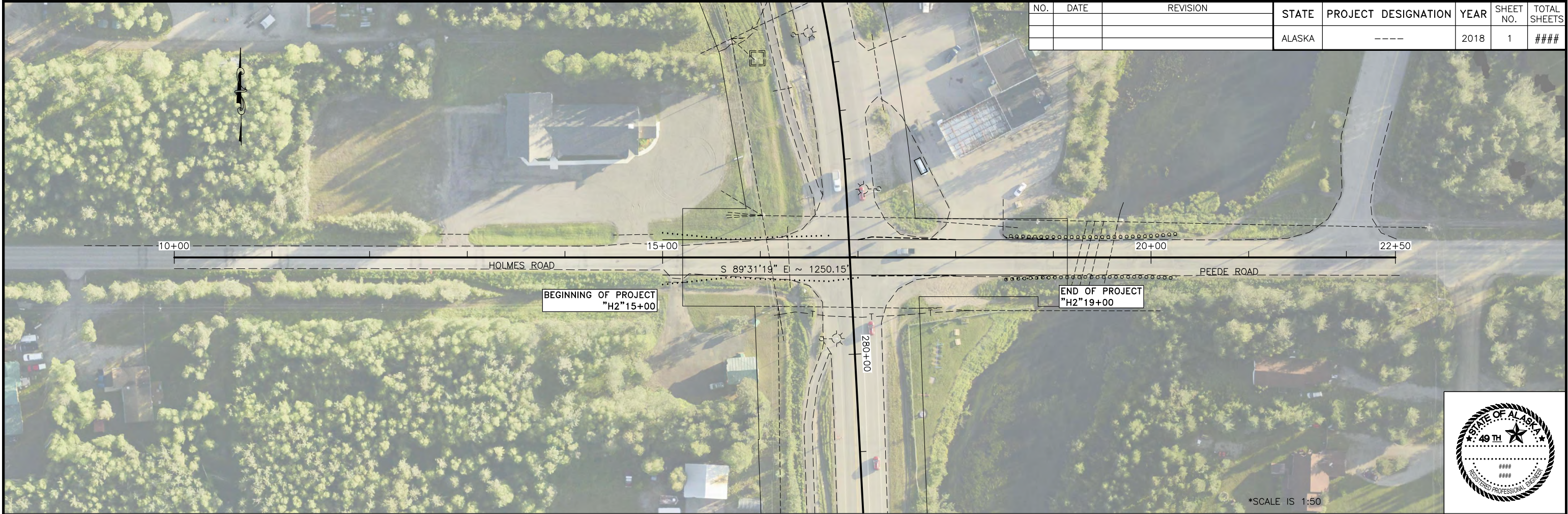


PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
H:\Projects\Fbks\_NF\90096\_Bodger\_HSIP\Design\C3D\90096\_P&P-557+00.00-571+00.00 Mon, Jan/29/18 08:54am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0602009/NFHWY00096	2018	F34	----



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
\\dotfogna\precon\Projects\Fbks\_NF\90096\_Bodge\HSIP\Design\C3D\90096\_CM-10-00.00-22+50.15 Tue, Jan/30/18 11:55am



## **APPENDIX E**

### **DRAFT UTILITY CONFLICT REPORT**



# HSIP: Bader Road Two Way Left Turn Lane

NFHWY00096

SHEET NUMBER

1

OF

3

CALCULATED BY

J. Farleigh

Date

12/22/2017

CHECKED BY

Date

## Utility Conflict Report

## Remarks

Station	Facility	Owner	Existing Height/Depth (Ft)	Proposed Height/Depth (Ft)	Remarks
O5 99+50	Petroleum	US ARMY	-6.5	6.5	Under Ground
O5 102+79	OH Power	ACS/GVEA	19.4	19.9	
O5 107+98	OH Power	ACS/GVEA	23.0	23.5	
O5 112+87	OH Power	ACS/GVEA	33.2	33.2	
O5 113+12	Comm	ACS	-6.0	6.3	Under Ground
O5 120+96	OH Power	ACS/GVEA	25.9	25.4	
O5 149+72	OH Power	ACS	29.7	29.6	
O5 156+62	OH Power	GVEA	28.8	29.5	
O5 168+00	OH Power	ACS/GVEA	20.8	20.7	
O5 170+24	Comm	ACS	21.3	21.1	
O5 172+90	OH Power	ACS/GVEA	27.5	27.4	
O5 212+26	OH Power	GVEA	20.4	19.9	
O5 215+18	OH Power	GVEA	21.8	21.8	
O5 217+41 LT to O5 220+94 LT	Comm	ACS	-3.0	-4.0	Utility is buried at proposed new toe of slope, project left.
O5 221+35	OH Power	ACS/GVEA	22.7	22.2	
O5 224+72	Comm	ACS	-6.0	6.3	Under Ground
O5 226+55	Comm	GCI	-6.0	6.2	Under Ground
O5 226+77	Comm	ACS	-6.0	6.2	Under Ground
O5 234+44	OH Power	ACS/GVEA	25.8	26.0	
O5 239+50	OH Power	ACS/GVEA	25.5	26.5	
O5 242+63	Comm		-6.0	5.8	Under Ground
O5 248+13	Comm	ACS	-6.0	6.2	Under Ground
O5 248+26	OH Power	ACS/GVEA	27.7	27.7	
O5 250+96	OH Power	ACS/GVEA	25.0	24.6	
O5 253+80	Comm	ACS/GVEA	-6.0	6.7	Under Ground
O5 254+31	OH Power	ACS/GVEA	32.8	32.5	
O5 260+20	OH Power	ACS/GVEA	20.6	20.7	
O5 265+79	Comm	ACS	-6.0	6.1	Under Ground
O5 266+56	OH Power	GVEA	23.2	23.8	
O5 269+28	OH Power	GVEA	28.9	29.5	



# HSIP: Bader Road Two Way Left Turn Lane

NFHWY00096

SHEET NUMBER

2

OF

3

CALCULATED BY

J. Farleigh

DATE

12/22/2017

CHECKED BY

DATE

## Utility Conflict Report

## Remarks

Station	Facility	Owner	Existing Height/Depth (Ft)	Proposed Height/Depth (Ft)	Remarks
O5 272+48	OH Power	GVEA	19.6	20.1	
O5 276+11	Comm	ACSN	-6.0	5.9	Under Ground
O5 276+31	OH Power	GVEA	24.8	24.9	
<b>O5 278+60</b>	<b>OH Power</b>	<b>GVEA/GCI</b>	<b>17.2</b>	<b>16.6</b>	<b>Request Utility Move</b>
O5 279+53	OH Power	ACS/GVEA	31.2	30.5	
O5 279+62	Comm	ACS	-6.0	6.6	Under Ground
O5 292+64	OH Power	ACS/GVEA	28.0	27.7	
O5 300+55	OH Power	ACS/GVEA	21.1	21.0	
O5 306+02	OH Power	ACS/GVEA/GCI	25.9	25.8	
O5 313+69	OH Power	ACS/GVEA	20.2	20.1	
O5 318+42	OH Power	ACS/GVEA	21.9	21.9	
O5 332+09	OH Power	GVEA/GCI	21.8	21.6	
O5 335+08	OH Power	GCI/GVEA	19.0	19.5	
<b>O5 340+02</b>	<b>OH Power</b>	<b>GCI/GVEA/ACS</b>	<b>17.5</b>	<b>17.8</b>	<b>Request Utility Move</b>
O5 343+74	OH Power	GCI/GVEA	22.4	22.8	
O5 348+00	Comm	ACS	-6.0	5.5	Under Ground
O5 349+11	OH Power	ACS/GCI/GVEA	19.1	19.6	
O5 353+85	OH Power	ACS/GVEA	18.2	18.4	
O5 356+15	Comm	GCI	-6.0	5.3	Under Ground
O5 356+76	OH Power	GVEA/GCI	24.3	24.4	
O5 359+16	OH Power	GVEA	25.0	24.8	
O5 363+33	OH Power	GVEA	35.7	35.4	
O5 371+49	Comm	ACS	-6.0	6.4	Under Ground
O5 373+53	Comm	ACS	-6.0	6.3	Under Ground
O5 373+77	OH Power	GCI/GVEA	24.4	24.2	Fiber optic cable too.
O5 400+82	OH Power	GVEA	31.4	32.2	
O5 404+19	Comm	ACS	-6.0	6.0	Under Ground
O5 421+07	Comm	GCI	-6.0	5.6	Under Ground
O5 421+08	OH Power	GVEA	19.2	19.5	
O5 446+49	OH Power	GVEA/GCI	18.4	18.2	
O5 439+54	OH Power	GVEA/GCI	19.1	19.0	
O5 441+68	OH Power	GVEA/GCI	21.8	21.7	



# HSIP: Bader Road Two Way Left Turn Lane

NFHWY00096

HEET NUMBE

3

OF

3

ALCULATED E

Jadon Farleigh

DATE

12/22/2017

CHECKED BY

DATE

## Utility Conflict Report

## Remarks

Station	Facility	Owner	Existing Height/ Depth (Ft)	Proposed Height/ Depth (Ft)	Remarks
O5 456+30	Comm	ACS	-6	5.8	Under Ground
O5 457+26	OH Power	GVEA/GCI	25.9	26.0	
O5 462+58	OH Power	GVEA	24.6	24.7	
O5 466+66	Comm	ACS	-6	5.8	Under Ground
O5 469+30	OH Power	GVEA/ACS	27.3	27.5	
O5 471+60	OH Power	GVEA/GCI	17.8	18.3	
O5 475+25	OH Power	GVEA/ACS/GCI	21.3	22.1	
O5 488+54	OH Power	GVEA	24.3	24.0	
O5 488+55	Comm	ACS	-6	6.3	Under Ground
O5 489+53	Comm	GCI	-6	6.2	Under Ground
O5 489+60	OH Power	GVEA	21.4	21.2	
O5 510+00	OH Power	GVEA/GCI	19.7	19.3	
O5 514+24	OH Power	GVEA/GCI	18.8	18.6	
O5 517+95	OH Power	GVEA	23.2	22.9	
O5 525+97	OH Power	GVEA	19.8	19.8	
O5 527+00	Comm	ACS	-6	5.9	Under Ground
O5 529+67	OH Power	GVEA	23.5	23.6	
O5 523+00	OH Power	GVEA	24.3	24.6	
O5 534+78	OH Power	GVEA/ACS	18	18.5	
O5 535+26	Comm	ACS	-6	5.6	Under Ground
O5 537+93	Comm	ACS	-6	5.4	Under Ground
O5 539+19	OH Power	GVEA	20.9	21.5	
O5 543+44	Comm	ACS	-6	5.3	Under Ground
O5 543+61	OH Power	GVEA/GCI	22.9	23.7	
O5 459+44	Comm	ACS	-6	5.7	Under Ground
O5 549+52	OH Power	GVEA/GCI	19.4	19.9	
O5 554+31	Comm	ACS	-6	5.8	Under Ground
O5 559+95	OH Power	GVEA/ACS/GCI	18.4	18.5	

## **APPENDIX F**

### **HSIP NOMINATION PACKAGE**

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

**FFY16 Highway Safety Improvement Program Candidate Projects**  
**Project Description and Cost Estimate**

**Candidate Project Name:**

16NR03 Badger Road Two Way Left Turn Lane

**Candidate Project Location:**

This project is located on Badger Road, CDS Route 188810, between Dennis Road (Milepoint 1.8825) and Hurst Road (Milepoint 10.9181).

Badger Road is a minor arterial roadway that connects the Fort Wainwright area with the North Pole area. The route connects to the Richardson Highway via interchanges at both ends, and is shown below:



### **Safety Problem Description:**

Several high profile crashes on Badger Road in the past decade prompted Northern Region to request a Road Safety Audit (RSA), which was completed in March 2013. The RSA team found many favorable things to say about the facility; however, the RSA team noted that the number of access points along the corridor seemed high for an arterial roadway. Fairbanks North Star Borough planning staff plotted access points along the route during the RSA, and a copy of their map is included in the attachments. It was noted by the team that the functional classification of Badger Road was upgraded from collector to minor arterial in 2011.

Removing all of the crashes at the major intersections (those with dedicated turn lanes), there were 61 PDO crashes, 33 minor injury crashes, 4 major injury crashes, and 1 fatal crash between Dennis and Hurst Road from 2008-2011. One of the crash patterns present in the data are crashes associated with turning in/out of driveways and minor side streets along the route.

### **Proposed Mitigation:**

To minimize the potential for crashes, the proposed project will add a two-way left-turn lane (TWLTL) to the route, effectively connecting the existing left turn pockets at the major intersections. The route currently has two 12' lanes and 8' shoulders, for an effective top width of 40'.

At a minimum, this project would restripe the existing 40' top with a 12' TWLTL, 11' thru lanes, and 3' shoulders. A safety edge would be added to reduce the potential for severe crashes resulting from overcorrection should a vehicle leave the road prism.

However, it appears that it would be possible to widen the roadway to have a 14' TWLTL, 12' thru lanes and 4' shoulders with a safety edge without substantially impacting drainage or acquiring right of way. The project could also reduce the superelevation through the Holmes/Peede intersection - another area for improvement identified by the RSA team. As this combination of improvements would be the most costly solution, benefit/cost ratio reported below is based on this scenario. Variations for adding the TWLTL will be vetted through the design process.

It is anticipated that a speed reduction to 45 mph would accompany the installation of the TWLTL, but that will be evaluated as the project progresses.

### **Conformance with the Strategic Highway Safety Plan:**

This project aligns with Action 2.5 of Strategy 2 (Implement infrastructure projects to address intersection crashes) of the Roadways Emphasis Area of the Strategic Highway Safety Plan.

**Benefit/Cost Ratio:**

A CRF of 36% for installing a TWLTL is reported on the CMF Clearinghouse, (Persaud, et. al., "Safety Evaluation of Installing center Two-Way Left-Turn Lanes on Two-Lane Roads." Further reading of the document suggests a conservative CRF of 29% be used, and this is the value agreed upon between HQ Traffic and Safety and NR Traffic and Safety for the project nomination.

This project has a predicted benefit cost ratio of 0.23:1.

**Cost Estimate:**

Preliminary Engineering (Phase 2):	\$700,000	FFY 16
Right of Way (Phase 3):		
Utilities (Phase 7):	\$150,000	FFY 19
Construction (Phase 4):	\$19,130,000	FFY 19

**TOTAL:      \$19,980,000**

**HQ Reporting Information**

	Badger Road
CDS Route	188000
Milepoint range	1.8825 (Dennis Road)- 10.9181 (Hurst Road)
Ownership	100% State; 0% Local
Speed Limit	55 mph (begin project – milepoint 10.7318; 40 mph (Milepoint 10.7318-end)
Functional Class	Minor Arterial
2013 ADT	Varies from 4066-9598

**Attachments**

Project Ranking Worksheet  
Construction Cost Estimate  
Crash Data  
Badger Road Access Points

Alaska DOT/PF  
Highway Safety Improvement Program  
**Project Ranking Worksheet**

Red fields are input fields.  
Black fields are fixed,  
computed, or derived.

HSIP Project Name:	<b>Badger Road TWLTL</b>		
Analysis Period:	1/1/08	to	12/31/12
Form Completed by:	Pam Golden		Date: 4/23/15

Miscellaneous Data	
Rate of Return:	3%
No of years of accident analysis	5

Accident Cost Data	
Accident Severity	Accident Cost
Property Damage Only:	\$13,700
Minor Injury:	\$137,000
Major Injury:	\$685,000
Fatality:	\$1,370,000

Predicted Change in Accidents due to Improvement(s)							
Imprv Type Num	Improvement	Type of Accident Susceptible to Reduction or Increase due to Improvement	Reduction Factor (+ or -)	No of Acc.s Susceptible to Reduction or Increase			
				PDO	Min	Maj	Fat
103.1	install TWLTL on 2-lane road	All	-29%	57	33	4	1
Total Accidents Susceptible to Reduction or Increase:				57	33	4	1
Predicted Change in Accidents:				-17	-9.6	-1.2	-0.3
Predicted Change in Accident Cost (\$1,000):				-227	-1,316	-797	-399

Benefit/Cost of Improvements (Safety and M&O Benefits Only)											
Improvement	Total Proj Cost (K)	Ann M/O Cost (K)	Life of Impvt (yrs)	Predicted Change in Accidents				Predicted Change in Accident Cost	Annualized Safety and M&O Benefits	Annualized Constr. and M&O Costs	Benefit Cost (Safety and M&O Benefits only)
				PDO	Min	Maj	Fat				
install TWLTL on 2-lane road	19980	0.6	10	-16.6	-9.6	-1.2	-0.3	-\$2,738,863	\$547,773	\$2,342,866	0.2 : 1
Subtotals:				-16.6	-9.6	-1.2	-0.3				
Totals/Averages:	19980	0.6	10.0	-27.6				-\$2,738,863	\$547,773	\$2,342,866	0.23 : 1

Benefit Cost Formula (Safety and M&O Benefits Only)	
B/C Ratio =	$\frac{(\text{Estimated Annual Reduction in Accident Cost}) + (\text{Decrease in Ann Maintenance Cost, 0 if increase})}{(\text{Annualized Construction cost}) + (\text{Increase in Ann Maintenance cost, 0 if decrease})}$
Combined Effects of Multiple Countermeasures	
$ARF_{combined} = \left[ 1 - \left( 1 - \frac{ARF_1}{100} \right) \left( 1 - \frac{ARF_2}{100} \right) \dots \left( 1 - \frac{ARF_n}{100} \right) \right] \times 100$	
<p>Compute a combined Accident Reduction Factor only for crash types jointly influenced by dissimilar improvements at the location of interest. Consider limitations of this formula as discussed in TRB Special Report 214 Designing Safer Roads, 1987, pg. 253-255.</p>	

FFY16 Highway Safety Improvement Program Construction Cost Estimate					
16NR03: Badger Road Safety Improvements					
6/29/2015					
Work	Quantity	Unit	Unit Cost	Total Cost	Remarks
<b>REMOVALS</b>					
Unclassified Excavation	96481	CY	\$7.00	\$675,370.37	Assumes 1' ex throughout project
Remove Existing Pavement		SY	\$4.00	\$0.00	Covered in CABC
<b>INSTALLATION</b>					
Borrow Type "A"	63678	TON	\$10.00	\$636,777.78	Avg. end area 15 sf, added 10%
Aggregate Base Course	121567	TON	\$10.00	\$1,215,666.67	CABC/RAP, 4"
Asphalt Treated Base (ATB)		TON	\$32.00	\$0.00	
Asphalt Cement for ATB		TON	\$650.00	\$0.00	
Asphalt Concrete	50942	TON	\$55.00	\$2,801,822.22	3" HMA plus 10% for safety edge & approaches
Asphalt Cement	3006	TON	\$700.00	\$2,103,913.78	5.9% of Asph Concrete
Ramp Modifications		LS	\$70.00	\$0.00	
Intersection Improvements		LS	All Req'd	\$0.00	
Install Rumble Strips		MI	\$3,000.00	\$0.00	
Sidewalk / Pathway		SY	\$60.00	\$0.00	
Curb & Gutter		LF	\$30.00	\$0.00	
Curb Ramp		EA	\$1,500.00	\$0.00	
Culverts	1600	LF	\$120.00	\$192,000.00	Assume all culverts require 10% lengthening
Guardrail End Treatments		EA	\$3,000.00	\$0.00	
Inlet		EA	\$2,500.00	\$0.00	
<b>TRAFFIC CONTROL DEVICES</b>					
Relocated Electroliers	101	EA	\$3,500.00	\$353,500.00	
New Electroliers		EA	\$15,000.00	\$0.00	
New Load Center	6	EA	\$7,000.00	\$42,000.00	
Modify Existing Load Center		EA	\$3,000.00	\$0.00	
New Controller/Foundation		EA	\$25,000.00	\$0.00	
Relocate Traffic Structure Support		EA	\$50,000.00	\$0.00	
New Junction Boxes	147	EA	\$500.00	\$73,500.00	
Loop Detectors		EA	\$750.00	\$0.00	
New Traffic Signal Wiring		LS	All Req'd	\$0.00	Assume intersection layouts largely unchanged.
New Signal Pole, Heads, Signs		EA	\$70,000.00	\$0.00	
Concrete Foundations		EA	\$200.00	\$0.00	
Sign Panels (installed no post)	2090	SF	\$90.00	\$188,100.00	Existing signs plus 10%
2"x2" PST Sign Posts		EA	\$100.00	\$0.00	includes post in sign cost
2.5" x 2.5" PST Sign Posts		EA	\$100.00	\$0.00	
3" Pipe Posts/foundations		EA	\$1,250.00	\$0.00	
W 6x9 Posts/foundations		EA	\$3,000.00	\$0.00	
Striping Methyl	1	LS	\$1,500,000.00	\$1,500,000.00	Inlaid methyl
<b>SUBTOTAL</b>			Subtotal	\$11,739,180.98	Plus 20% Incidentals
<b>OTHER</b>					
Erosion/Pollution Control		LS	All Req'd	\$176,088.00	1.5% of pay items
Field Office		LS	All Req'd	\$25,000.00	
Traffic Maintenance		LS	All Req'd	\$1,173,918.00	10% of pay items
Construction Survey		LS	All Req'd	\$125,000.00	
Mobilization/Demobilization		LS	All Req'd	\$586,960.00	5% of pay items
<b>CONSTRUCTION CONTRACT COST</b>			Subtotal	\$15,208,761.68	Plus 10% Contingency
<b>UTILITIES</b>					Covered in Phase 7 cost
Utility Preliminary Design		LS	All Req'd	\$0.00	
Underground Telephone Relocate		LS	All Req'd	\$0.00	
Electric Relocate		LS	All Req'd	\$0.00	
Storm Drain		LS	All Req'd	\$0.00	
Waterline Relocate		LS	All Req'd	\$0.00	
Sewerline Relocate		LF	\$150.00	\$0.00	
Overhead Electric Relocate		LS	All Req'd	\$0.00	
			Utilities Subtotal	\$0.00	
<b>COST ESTIMATE SUMMARY</b>					
Preliminary Design (Phase 2)		LS	All Req'd	\$700,000.00	Includes ICAP (4.79%)
Right-of-Way (Phase 3)		LS	All Req'd		Includes ICAP (4.79%)
Utilities (Phase 7)		LS	All Req'd	\$150,000.00	Includes ICAP (4.79%)
Construction (Phase 4)		LS		\$19,130,000.00	Includes ICAP (4.79%) & Contract Admin
Contract Administration (%)	1.2				
Project Name:					
16NR03: Badger Road Safety Improvements			Total:	\$19,980,000	Estimated Project Cost

Badger Road Crash Data

intersection crashes at major intersection have been hidden; all crashes shown susceptible to correction by proposed countermeasure

ACCNUM	CDSRTE	ACCMPT	ACCDATE	ACCDAY	ACCTIME	STREET	CROSSSTREET	INTERDIST	REFUNITS	INTERDIR	RDJUNCT	NUMVH	ACCSEVERITY	TOTYHJ	MAJHJ	MINHJ	TOTFAHJ	EVETYPE	EVELOC	WEATHER	RCHARACTER	SURFACECOND	LIGHT	ALC_DRUG	V1_TRVDIRECT	V1_ACTPREACT	V1_SECEVENT	V1_NONCOMCONFIG	V2_TRVDIRECT	V2_ACTPREACT	V2_SECEVENT	_NONCOMCONF	V3_TRVDIRECT	V3_ACTPREACT	V3_SECEVENT
201106583	188800	6.408	20110321	MONDAY		1640 BADGER ROAD	ARCTIC FOX	5 FEET		SOUTH	NOT A JUNCTION	2	FATALITY	2	1	1	2	2 VEH - ANGLE	ROADWAY	CLEAR	CURVE/GRD	ICE	DAYLIGHT	NO	NORTH	OUT OF CONTROL	SNOWBERM	PASSENGER CAR	SOUTH	STRAIGHT AHEAD	MISSING	LIGHT TRUCK (ON			
201090280	188800	2.346	20100820	FRIDAY		2231 BADGER ROAD	LAKLEY DR	500 FEET		EAST	NOT A JUNCTION	1	INCAPACITATING INJURY	1	1	0	0 ANIMAL	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DARK - LIGHTED ROADWAY	NO	EAST	AVOIDING OBJECTS IN ROAD	CROSS MEDIAN/	MOTORCYCLE								
200808364	188800	8.136	20090226	FRIDAY		1645 BADGER RD	MARGOLD RD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	1	1	0	0	0	0 RAN OFF ROAD	ROADWAY	CLEAR	CURVE/LVL	DRY	DAYLIGHT	NO	NORTH	STRAIGHT AHEAD	PASSENGER CAR	NORTH	TURNING LEFT	MISSING	LIGHT TRUCK (ON					
201090782	188800	8.136	20100525	TUESDAY		2000 BADGER ROAD	MARGOLD ROAD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - REAR END	ROADWAY	CLOUDY	CURVE/LVL	DRY	DAYLIGHT	NO	NORTH	SLOWING	PASSENGER CAR	NORTH	TURNING LEFT	MISSING	LIGHT TRUCK (ON					
200911189	188800	10.523	20090922	TUESDAY		1541 BADGER RD	AIRWAY DR	0.1 MILES		EAST	NOT A JUNCTION	3	3	1	2	0	0 VEH - REAR END	ROADWAY	RAIN	CURVE/LVL	WET	DAYLIGHT	NO	SOUTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR	SOUTH	STOPPED	MISSING	LIGHT TRUCK (ON	NORTH	STRAIGHT AHEAD	SIDESWIPE	
201100576	188800	3	20110312	SATURDAY		1006 BADGER RD	LINCOLNWOOD DR	300 FEET		EAST	NOT A JUNCTION	1	1	0	0	0	0 SNOBERM	ROADWAY	CLEAR	STRAIGHT/LVL	ICE	DAYLIGHT	NO	WEST	SKIDDING	DITCH	LIGHT TRUCK (ONLY 4 TIRES)								
201100581	188800	3.596	20110810	WEDNESDAY		912 BADGER RD	OLD BADGER ROAD	200 FEET		SOUTH	NOT A JUNCTION	1	1	0	0	0	0 MAILBOX	ROADSIDE	RAIN	STRAIGHT/LVL	WATER	DAYLIGHT	NO	NORTH	OUT OF CONTROL	SIGN	PASSENGER CAR								
200962618	188800	3.706	20091202	WEDNESDAY		1605 BADGER ROAD	OLD BADGER ROAD	0.15 MILES		EAST	NOT A JUNCTION	3	3	0	0	0	0 VEH - REAR END	ROADWAY	CLOUDY	STRAIGHT/LVL	ICE	DAYLIGHT	NO	EAST	SKIDDING	VEH - HEAD ON	PASSENGER CAR	EAST	SLOWING	MISSING	LIGHT TRUCK (ON	WEST	SLOWING	RAN OFF ROAD	
201100580	188800	3.746	20110318	FRIDAY		1811 BADGER ROAD	OLD BADGER	1000 FEET		SOUTH	NOT A JUNCTION	2	0	2	0	0	0 RAN OFF ROAD	ROADWAY	CLEAR	STRAIGHT/LVL	ICE	DAYLIGHT	NO	SOUTH	OUT OF CONTROL	OVERTURN	LIGHT TRUCK (ONLY 4 TIRES)								
200813521	188800	4.309	20081229	MONDAY		1654 BADGER RD	LANDING RD	0 AT INT. W/		NOT APPLICABLE	4-WAY INTERSECTION	1	0	1	0	0	0 VEH - REAR END	ROADWAY	ICE FOG	STRAIGHT/LVL	ICE	DARK - ROADWAY NOT LIGHTED	NO	NORTH	SKIDDING	MISSING	PASSENGER CAR	NORTH	UNKNOWN	MISSING	NULL	LIGHT TRUCK (ON			
201202014	188800	4.465	20120209	THURSDAY		1835 BADGER RD	KANTOLAS CT	0 AT INT. W/		NOT APPLICABLE	NOT A JUNCTION	2	2	0	0	0	0 VEH - REAR END	ROADWAY	CLOUDY	STRAIGHT/LVL	ICE	DARK - ROADWAY NOT LIGHTED	NO	SOUTH	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)								
200901355	188800	4.618	20090119	MONDAY		1721 1897 BADGER RD	BONANNA LN	0 AT INT. W/		NOT APPLICABLE	NOT A JUNCTION	1	1	0	0	0	0 MOOSE	ROADWAY	SNOW	STRAIGHT/LVL	SNOW	DARK - ROADWAY NOT LIGHTED	NO	WEST	STRAIGHT AHEAD	MISSING	LIGHT TRUCK (ONLY 4 TIRES)								
201100572	188800	4.701	20110408	FRIDAY		2205 BADGER ROAD	KENDAL STREET	300 FEET		WEST	NOT A JUNCTION	1	1	0	0	0	0 MOOSE	ROADWAY	CLOUDY	CURVE/LVL	WATER	DARK - ROADWAY NOT LIGHTED	NO	NORTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR								
200901768	188800	5.124	20090129	THURSDAY		705 BADGER ROAD	LEVADO	6 MILES		NORTH	OTHER	2	2	0	0	0	0 VEH - REAR END	ROADWAY	CLOUDY	UNKNOWNWN	ICE	DARK - LIGHTED ROADWAY	NO	NORTH	STOPPED	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	NORTH	STRAIGHT AHEAD	MISSING	LIGHT TRUCK (ON				
200907984	188800	5.124	20090629	MONDAY		1135 BADGER ROAD	1998 BADGER ROAD DRIVEWAY	0 AT INT. W/		NOT APPLICABLE	DRIVEWAY	1	0	1	0	0	0 DITCH	SHOULDER	CLOUDY	CURVE/GRD	DRY	DAYLIGHT	NO	SOUTH	OUT OF CONTROL	OVERTURN	PASSENGER CAR								
201093455	188800	5.689	20101204	SATURDAY		530 BADGER ROAD	BURGESS AIRSTRIP RD	0 NOT APPLICABLE		NOT APPLICABLE	NOT A JUNCTION	1	1	0	0	0	0 RAN OFF ROAD	ROADSIDE	NOT REP	CURVE/LVL	OTHER	DARK - ROADWAY NOT LIGHTED	NO	SOUTH	OUT OF CONTROL	OVERTURN	PASSENGER CAR								
201093130	188800	5.709	20101010	SUNDAY		1859 BADGER RD	BURGESS AIRSTRIP RD	110.77 FEET		SOUTH	NOT A JUNCTION	1	1	0	0	0	0 CROSS MEDIAN/CENTERLINE	ROADWAY	CLEAR	CURVE/LVL	ICE	TWILIGHT	NO	SOUTH	SKIDDING	DITCH	LIGHT TRUCK (ONLY 4 TIRES)								
20105183	188800	5.952	20120924	MONDAY		630 BADGER RD	SANDUSKY ST	0 NOT APPLICABLE		NOT APPLICABLE	NOT A JUNCTION	1	1	0	0	0	0 MOOSE	ROADWAY	CLEAR	UNKNOWNWN	WATER	DARK - ROADWAY NOT LIGHTED	NO	SOUTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR								
201100567	188800	6.296	20110320	SUNDAY		1643 BADGER RD	HARTZOG LOOP RD	21.26 FEET		SOUTH	NOT A JUNCTION	2	2	0	0	0	0 SIDESWIPE	ROADSIDE	CLEAR	STRAIGHT/LVL	ICE	DAYLIGHT	NO	WEST	OUT OF CONTROL	MISSING	PASSENGER CAR	EAST	STRAIGHT AHEAD	SNOWBERM	LIGHT TRUCK (ON				
201100558	188800	6.407	20110302	WEDNESDAY		1236 BADGER ROAD	ARCTIC FOX DR	0 AT INT. W/		NOT APPLICABLE	4-WAY INTERSECTION	2	0	2	0	0	0 VEH - REAR END	ROADWAY	CLEAR	CURVE/LVL	ICE	DAYLIGHT	NO	NORTH	OUT OF CONTROL	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	NORTH	STRAIGHT AHEAD	MISSING	LIGHT TRUCK (ON				
201093118	188800	6.503	20110330	SATURDAY		1222 BADGER RD	NORDALE RD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	CURVE/GRD	ICE	DAYLIGHT	NO	SOUTH	TURNING LEFT	DITCH	LIGHT TRUCK (ONLY 4 TIRES)								
201270614	188800	6.503	20120103	TUESDAY		1847 BADGER ROAD	NORDALE ROAD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	1	1	0	0	0	0 LIGHT SUPPORT	OUTSIDE TRAFFIC	CLEAR	STRAIGHT/LVL	ICE	DARK - LIGHTED ROADWAY	NO	NORTH	STRAIGHT AHEAD	UNKNOWNWN	LIGHT TRUCK (ONLY 4 TIRES)								
201202010	188800	6.511	20120213	MONDAY		1534 BADGER ROAD	CANDLE LITE LOOP	0.1 MILES		NORTH	NOT A JUNCTION	1	1	0	0	0	0 SNOBERM	ROADWAY	CLOUDY	CURVE/GRD	ICE	DAYLIGHT	NO	SOUTH	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)								
200900321	188800	6.74	20090105	MONDAY		1416 2355 BADGER ROAD	CANDLE LITE LOOP	222 FEET		NORTH	DRIVEWAY	1	1	0	0	0	0 SNOBERM	SHOULDER	ICE FOG	CURVE/LVL	ICE	DAYLIGHT	NO	SOUTH	STRAIGHT AHEAD	MAIL BOX	LIGHT TRUCK (ONLY 4 TIRES)								
200806429	188800	8.136	20080629	SUNDAY		1521 BADGER LP RD	MARGOLD RD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	1	1	0	0	0	0 SGN	SHOULDER	CLEAR	CURVE/GRD	DRY	DAYLIGHT	NO	SOUTH	OUT OF CONTROL	MISSING	PASSENGER CAR								
200864208	188800	8.136	20091112	THURSDAY		1600 BADGER ROAD	MARGOLD RD	0 AT INT. W/		NOT APPLICABLE	OTHER	2	2	0	0	0	0 VEH - REAR END	ROADWAY	SNOW	UNKNOWNWN	SNOW	TWILIGHT	NO	UNKNOWNWN	PASSING	MISSING	PASSENGER CAR	UNKNOWNWN	OUT OF CONTROL	MISSING	PASSENGER CAR				
200807425	188800	8.699	20080830	SATURDAY		2027 BADGER RD	LIONS RD	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	3	0	3	0	0	0 VEH - REAR END	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DAYLIGHT	NO	NORTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR	NORTH	STOPPED	MISSING	PASSENGER CAR				
201104971	188800	8.951	20111019	WEDNESDAY		940 BADGER RD	DILLON AVE	0 AT INT. W/		NOT APPLICABLE	UNKNOWNWN	2	2	0	0	0	0 VEH - REAR END	ROADWAY	CLOUDY	UNKNOWNWN	ICE	MISSING	NO	UNKNOWNWN	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	UNKNOWNWN	PASSING	MISSING	LIGHT TRUCK (ON				
201100575	188800	9.012	20111202	FRIDAY		1524 BADGER RD	LARIX DR	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	0	2	0	0	0 VEH - REAR END	ROADWAY	SNOW	CURVE/GRD	SNOW	TWILIGHT	NO	WEST	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	WEST	SLOWING	DITCH	PASSENGER CAR				
200802718	188800	9.03	20080430	WEDNESDAY		753 BADGER LOOP RD	TOPAZ AVE	500 FEET		NORTH	NOT A JUNCTION	3	0	3	0	0	0 VEH - REAR END	ROADWAY	SNOW	CURVE/LVL	SLUSH	DAYLIGHT	NO	NORTH	SKIDDING	VEH - HEAD ON	LIGHT TRUCK (ONLY 4 TIRES)								
200806445	188800	9.149	20080614	THURSDAY		1652 BADGER L LOOP RD	KIML ST	0 AT INT. W/		NOT APPLICABLE	NOT A JUNCTION	2	0	2	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DAYLIGHT	NO	NORTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR								
201100561	188800	10.194	20110105	WEDNESDAY		1611 BADGER RD	ELVIRA AVE	250 FEET		NORTH	OTHER	2	2	0	0	0	0 SIDESWIPE	ROADWAY	CLOUDY	STRAIGHT/LVL	ICE	DARK - ROADWAY NOT LIGHTED	NO	NORTH	PASSING	DITCH	PASSENGER CAR	NORTH	STRAIGHT AHEAD	DITCH	LIGHT TRUCK (ON				
201093116	188800	10.323	20110123	MONDAY		1705 BADGER RD	AIRWAY RD	0.1 MILES		NORTH	NOT A JUNCTION	2	2	0	0	0	0 VEH - REAR END	ROADWAY	SNOW	CURVE/LVL	ICE	MISSING	DARK - ROADWAY NOT LIGHTED	NO	NORTH	STRAIGHT AHEAD	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	NORTH	TURNING LEFT	MISSING	PASSENGER CAR			
200806964	188800	10.385	20080817	SUNDAY		1440 BADGER RD	GLACIER STATE DR	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DAYLIGHT	NO	WEST	TURNING LEFT	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	EAST	STRAIGHT AHEAD	MISSING	PASSENGER CAR				
200804000	188800	10.423	20080607	SATURDAY		2003 BADGER LP RD	AIRWAY DR	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	CURVE/LVL	DRY	DAYLIGHT	NO	WEST	TURNING LEFT	MISSING	PASSENGER CAR	NORTH	STRAIGHT AHEAD	MISSING	MOTORCYCLE				
200962621	188800	10.423	20091123	MONDAY		1821 BADGER ROAD	AIRWAY DRIVE	200 FEET		SOUTH	DRIVEWAY	1	1	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	CURVE/LVL	ICE	DARK - ROADWAY NOT LIGHTED	NO	SOUTH	TURNING LEFT	OTHER	LIGHT TRUCK (ONLY 4 TIRES)	NORTH	STRAIGHT AHEAD	OTHER	LIGHT TRUCK (ON				
200813421	188800	10.443	20081226	FRIDAY		823 BADGER RD	BROWN HILLS QUARRY	100 FEET		NORTH	OTHER	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	CURVE/LVL	DRY	DAYLIGHT	NO	NORTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR								
200804039	188800	10.605	20080609	MONDAY		1642 BADGER LOOP RD	HORSESHOE WAY	200 FEET		NORTH	NOT A JUNCTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	CURVE/LVL	DRY	DAYLIGHT	NO	NORTH	MAKING U-TURN	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	SOUTH	STRAIGHT AHEAD	MISSING	PASSENGER CAR				
200901556	188800	1.963	20090124	SATURDAY		1730 BADGER RD	ANNAPOLIS RD	0 AT INT. W/		NOT APPLICABLE	NOT A JUNCTION	1	0	0	0	0	0 MOOSE	ROADWAY	CLEAR	UNKNOWNWN	ICE	DARK - LIGHTED ROADWAY	NO	EAST	AVOIDING OBJECTS IN ROAD	MISSING	LIGHT TRUCK (ONLY 4 TIRES)								
200806517	188800	2.435	20080805	TUESDAY		1721 BADGER RD	LOWOOD ST	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - REAR END	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DAYLIGHT	NO	EAST	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	EAST	STOPPED	MISSING	LIGHT TRUCK (ON				
200901388	188800	2.435	20090120	TUESDAY		702 BADGER RD	LOWOOD ST	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	STRAIGHT/LVL	SNOW	DARK - LIGHTED ROADWAY	NO	EAST	SKIDDING	SNOWBERM	LIGHT TRUCK (ONLY 4 TIRES)	EAST	STOPPED	MISSING	NULL				
200903023	188800	2.805	20090302	MONDAY		1501 BADGER ROAD	OLD BADGER ROAD - EAST	0 AT INT. W/		NOT APPLICABLE	T - INTERSECTION	2	2	0	0	0	0 VEH - ANGLE	ROADWAY	CLEAR	STRAIGHT/LVL	ICE	DAYLIGHT	NO	UNKNOWNWN	SKIDDING	MISSING	LIGHT TRUCK (ONLY 4 TIRES)	EAST	STOPPED	RAN OFF ROAD	LIGHT TRUCK (ON				
201204770	188800	2.94	20121004	THURSDAY		0 BADGER RD	LINCOLNWOOD DRIVE	0 NOT APPLICABLE		NOT APPLICABLE	OTHER	0	0	0	0	0	0 OTHER	ROADWAY	CLEAR	UNKNOWNWN	DRY	DAYLIGHT	NO	UNKNOWNWN	STRAIGHT AHEAD	MISSING	PASSENGER CAR	UNKNOWNWN	UNKNOWNWN	MISSING	LIGHT TRUCK (ON				
201100571	188800	3.253	20110705	TUESDAY		2046 BADGER RD	JOY DR	0 AT INT. W/		NOT APPLICABLE	NOT A JUNCTION	2	2	0	0	0	0 CROSS MEDIAN/CENTERLINE	ROADWAY	CLEAR	STRAIGHT/LVL	DRY	DAYLIGHT	NO	EAST	OUT OF CONTROL	SIDESWIPE	PASSENGER CAR	WEST	STRAIGHT AHEAD	SIDESWIPE					
200813925	188800	3.306	20080101	WEDNESDAY		911 BADGER LP RD	OLD BADGER LP RD	72.5 MILES		SOUTH	NOT A JUNCTION	1	0	0	0	0	0 RAN OFF ROAD	ROADWAY	CLOUDY	STRAIGHT/LVL	ICE	DAYLIGHT	NO												

# Badger Road Access Points

