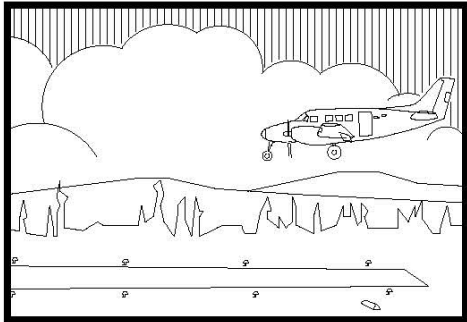


DESIGN STUDY REPORT

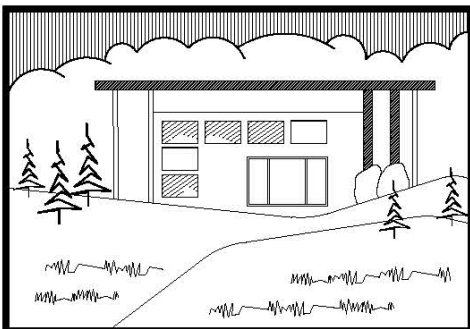
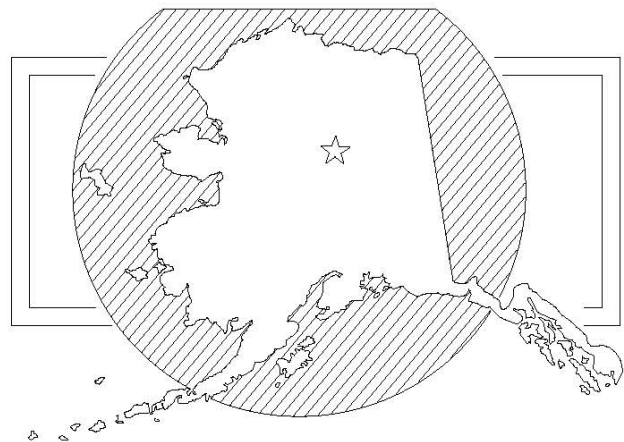
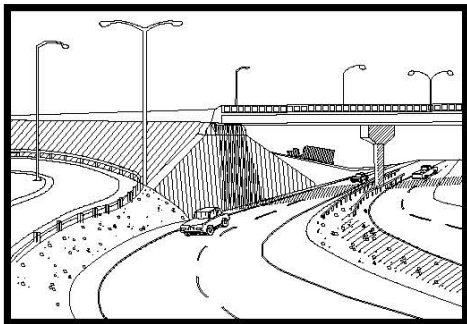
Richardson Highway MP 359 Railroad Grade Separated Facility

Z607340000/0A24033



STATE OF ALASKA

Department of Transportation
and Public Facilities



NORTHERN REGION


March 2021

DESIGN APPROVAL

RICHARDSON HIGHWAY MP 359 RAILROAD GRADE SEPARATED FACILITY

PROJECT NO. Z607340000/0A24033

Requested by: Colleen Ackiss 04-01-2021
Colleen M. Ackiss, P.E. Date
Engineering Manager
Northern Region

Design Approval
Granted:  4/7/2021
Date
for Sarah E. Schacher, P.E.
Preconstruction Engineer
Northern Region

Distribution: NR Design Directive 20-01 Distribution

DESIGN STUDY REPORT
FOR

RICHARDSON HIGHWAY MP 359 RAILROAD GRADE SEPARATED FACILITY

PROJECT NO. Z607340000/0A24033

PREPARED BY: James McCurtain, P.E.



ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
NORTHERN REGION DESIGN AND ENGINEERING SERVICES
MARCH 2021

RICHARDSON HIGHWAY MP 359 RAILROAD GRADE SEPARATED FACILITY
PROJECT NO. Z607340000/0A24033

Table of Contents

INTRODUCTION/HISTORY	1
PROJECT DESCRIPTION	2
DESIGN STANDARDS	2
DESIGN EXCEPTIONS AND DESIGN WAIVERS	3
DESIGN ALTERNATIVES	3
PREFERRED DESIGN ALTERNATIVE	4
3R ANALYSIS	4
TRAFFIC ANALYSIS	5
HORIZONTAL/VERTICAL ALIGNMENT	5
TYPICAL SECTION(S)	5
PAVEMENT DESIGN	6
PRELIMINARY BRIDGE LAYOUT	6
RIGHT-OF-WAY REQUIREMENTS	6
MAINTENANCE CONSIDERATIONS	6
MATERIAL SOURCES	7
UTILITY RELOCATION & COORDINATION	7
ACCESS CONTROL FEATURES	7
PEDESTRIAN/BICYCLE (ADA) PROVISIONS	8
SAFETY IMPROVEMENTS	8
INTELLIGENT TRANSPORTATION SYSTEM FEATURES	8
DRAINAGE	8
SOIL CONDITIONS	9
EROSION AND SEDIMENT CONTROL	10
ENVIRONMENTAL COMMITMENTS	10
WORK ZONE TRAFFIC CONTROL	11
VALUE ENGINEERING	11
COST ESTIMATE	11
LOCATION MAP	Figure 1
PROJECT LIMITS	Figure 2
TYPICAL SECTION	Figure 3
TYPICAL SECTION	Figure 4
DESIGN CRITERIA AND DESIGN DESIGNATION	Appendix A
ENVIRONMENTAL DOCUMENT	Appendix B
TRAFFIC ANALYSES AND SPEED STUDIES	Appendix C
PAVEMENT DESIGN	Appendix D
PRELIMINARY PLAN AND PROFILE SHEETS	Appendix E
PRELIMINARY BRIDGE PLANS	Appendix F
UTILITY CONFLICT LIST AND CROSS SECTIONS	Appendix G

INTRODUCTION/HISTORY

This design study report has been prepared to document the basis of design and design decisions for the Richardson Highway MP 359 Railroad Grade Separated Facility project. The limits of the project extend approximately 0.5 mile in either direction from the existing at-grade railroad crossing. The railroad crossing will be replaced with a grade separation in accordance with the Alaska State Rail Plan, developed by the Alaska Department of Transportation and Public Facilities (DOT&PF) and Alaska Railroad Corporation (ARRC).

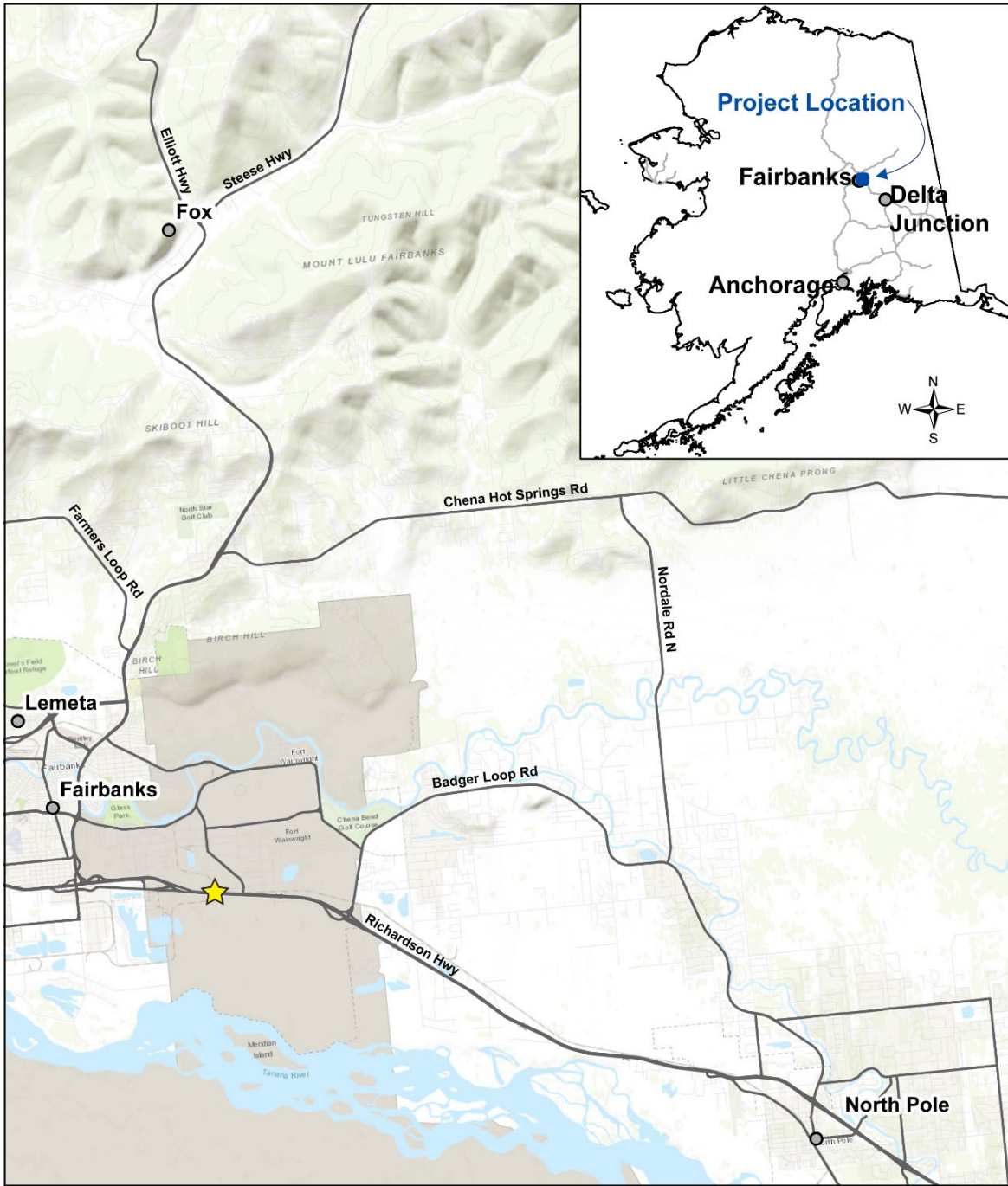


Figure 1 – Location Map

PROJECT DESCRIPTION

The DOT&PF, in cooperation with the Federal Highway Administration (FHWA), proposes to improve the Richardson Highway near milepost (MP) 359. The existing facility is a divided, four lane highway with level terrain and full controlled access. From west to east, the highway follows a slight S-curve and enters a tangent section before crossing the ARRC tracks.

The proposed project will reconstruct approximately 1 mile of the Richardson Highway at its intersection with the railroad. The project work will include construction of a twin single-span grade separation between the Richardson Highway and the ARRC tracks. Work also includes reconstructing the north and southbound lanes, constructing retaining walls, improving ditches and drainage, and adding an undercrossing for use by troops at Fort Wainwright. A multi-use pathway will be constructed that connects into a separate pathway project that extends from Fairbanks to North Pole.

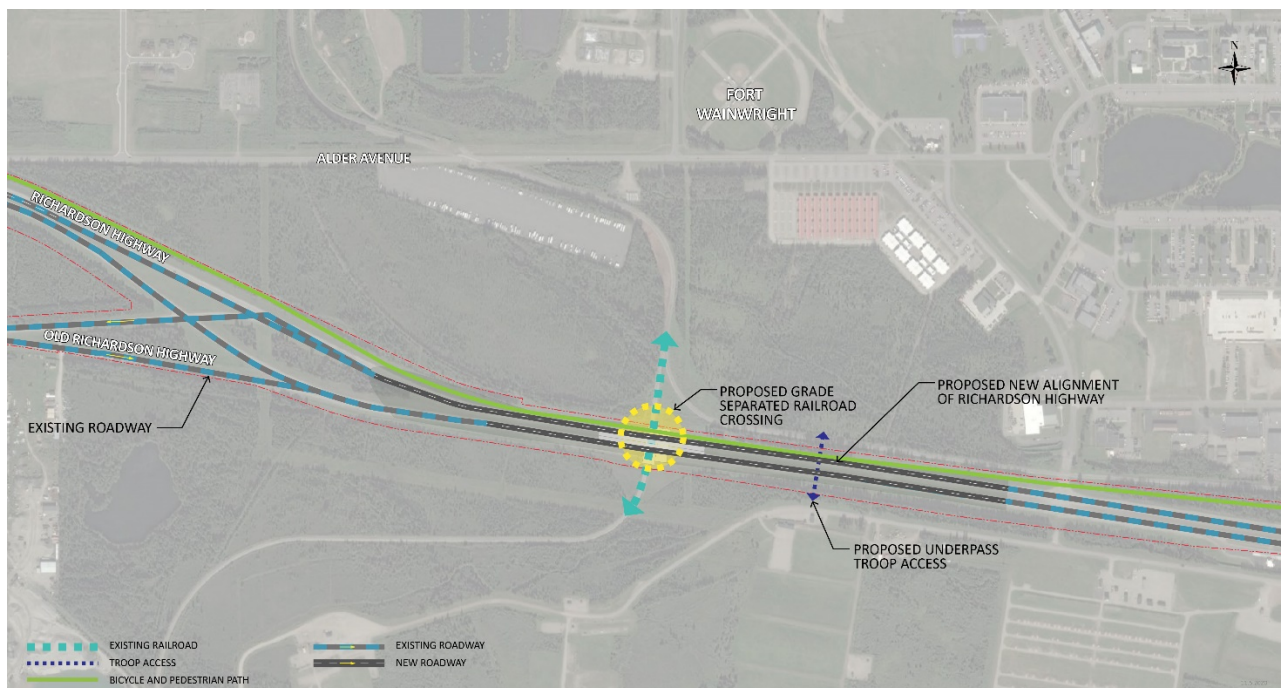


Figure 2 – Project Limits

DESIGN STANDARDS

Design standards and guidelines that apply to this project are contained in the following publications:

Standards:

- *A Policy on Geometric Design of Highways and Streets*, 6th Edition, American Association of State Highway and Transportation Officials (AASHTO), 2011
- *Roadside Design Guide*, 4th Edition, AASHTO, 2011
- *Alaska Highway Preconstruction Manual*, State of Alaska, DOT&PF, 2020
- *Alaska Highway Drainage Manual*, State of Alaska, DOT&PF, 2006

- The *Alaska Traffic Manual*, consisting of the *Manual on Uniform Traffic Control Devices*, 2009 as amended, United States Department of Transportation, FHWA and the *Alaska Traffic Manual Supplement*, State of Alaska, DOT&PF, 2016
- *ADA Standards for Transportation Facilities*, United States Department of Transportation, 2006
- *Guide for the Development of Bicycle Facilities*, 4th Edition, AASHTO, 2012
- *Recommended Practice for Roadway Lighting (RP-8-14)*, American National Standards Institute/Illuminating Engineering Society, 2014
- *Highway Capacity Manual*, 5th Edition, Transportation Research Board, 2010
- *LRF Bridge Design Specifications*, 9th Edition, AASHTO, 2020
- *Alaska Bridges and Structures Manual*, State of Alaska, DOT&PF, 2017
- *AASHTO Guide Specifications for LRF Seismic Bridge Design*, 2nd Edition, AASHTO, 2011, with 2012, 2014, and 2015 Interim Revisions

Guidelines:

- *Alaska Flexible Pavement Design Manual*, State of Alaska, DOT&PF, 2020
- *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, 1st Edition, AASHTO, 2004

Appendix A contains the project Design Criteria and Design Designation.

DESIGN EXCEPTIONS AND DESIGN WAIVERS

There are no design exceptions or design waivers for this project.

DESIGN ALTERNATIVES

Design alternatives for the bridge overcrossing and the troop undercrossing were evaluated. The following bridge alternatives were developed and evaluated for the overcrossing.

- **Bridge Alternative 1 – Single-span Deck Bulb-T.** Alternative 1 would construct twin single-span deck bulb-T girders with mechanically stabilized earth (MSE) retaining walls at the bridge abutments to reduce bridge length.
- **Bridge Alternative 2 – Three-span Deck Bulb-T.** Alternative 2 would construct twin three-span deck bulb-T girders with slopes at the bridge abutments.
- **Bridge Alternative 3 – Single-Span Steel.** Alternative 3 would construct twin single-span steel girders with slopes at the bridge abutments.

The project includes a troop underpass of Richardson Highway to accommodate the movement of troops between the portions of Fort Wainwright located north and south of the highway. The underpass was sized to match typical multi-use path clear opening requirements of 10 feet high and 12 feet wide. The underpass is to be located east of the railroad tracks in a location where the roadway profile provides adequate clearance above the path. A longer bridge to accommodate a

troop crossing adjacent to the railroad was evaluated. ARRC indicated that this access should be separate from the railroad grade separation as a troop underpass.

The troop underpass could be accommodated with a very short-span bridge or a buried structure. Possible buried structure types include various three- or four-sided structures. Three-sided structures required footings on each side to support the side walls, top slab, and fill above. Three- or four-sided structures could be elliptical or arched configurations of precast concrete, cast-in-place concrete, or corrugated steel or aluminum; or they could be rectangular of precast or cast-in-place concrete. Elliptical and arched configurations would require longer span lengths and higher vertical clearance in the center of the path than a rectangular structural section in order to accommodate the required horizontal and vertical clearance.

PREFERRED DESIGN ALTERNATIVE

Twin single-span decked bulb-T girder bridges on shared MSE wall abutments were found to be the most cost-effective bridges for this project.

The proposed twin bridge configuration was found to be the most cost-effective solution for this interchange, having both the lowest initial construction cost and anticipated long-term maintenance cost. Decked bulb-T girder bridges are commonly constructed throughout the state. Similar bridges have recently been constructed at the Montana Creek and Sunshine railroad grade-separated crossing on the Parks Highway. Contractors in Alaska are familiar with this bridge type. The prefabricated girder can be built quickly to better accommodate Alaska's short construction season while incorporating high-quality materials. Consequently, decked bulb-T girder bridges have been found to be a highly durable, low-maintenance structure.

For the troop underpass, a buried structure was chosen over a short-span bridge to reduce maintenance concerns with bridge decks and pavement to bridge deck joints, to minimize the potential negative impacts from differential settlement, and to save construction cost. The underpass was located to maintain required fill over the top of the underpass top slab of at least 2 feet at the median ditch and a maximum of approximately 7 feet on the median side of the southbound lanes. A location farther west would have had additional overburden fill, which would require additional structure.

Geotechnical explorations near the proposed troop underpass indicate soils without significant short- or long-term settlement concerns.

An elliptical metal culvert was chosen for the troop underpass for its ease of construction and to provide the most cost-effective solution. The design includes a vertical concrete headwall on the north side with abutting MSE walls on the east and west sides, and a sloped concrete headwall on the south side of the undercrossing. Perimeter fencing at the structure access points will be included to secure entry from the public.

3R ANALYSIS

Not applicable. This is a reconstruction project.

TRAFFIC ANALYSIS

The existing traffic volumes of the Richardson Highway through the project corridor are 26,000 average daily traffic. The projected traffic volumes for the design year (2045) are 35,900 average daily traffic. These projections are based on the Fairbanks Metropolitan Area Transportation System travel demand model.

The grade separation of the railroad crossing removes all vehicle delays associated with train crossings and vehicles required by law to stop at the tracks. The proposed concept also eliminates the crash risk associated with stopping and weaving conflicts and stalled vehicles at the at-grade railroad crossing.

Further description of the projections and traffic and safety analysis are included in Appendix C.

HORIZONTAL/VERTICAL ALIGNMENT

The Richardson Highway proposed horizontal alignment matches the alignment of the existing highway. The highway for most of the project limits is in a tangent, but the northbound lanes will require reconstruction of an existing 14-degree horizontal curve. The vertical alignment is elevated by as much as 30 feet to provide adequate (23 feet minimum) bridge clearance for the new ARRC undercrossing. The maximum grade for the raised vertical is 3 percent, which follows the project design criteria. Both the horizontal and vertical alignments will meet the criteria for 70 miles per hour.

See Appendix E for the preliminary plan and profile sheets.

TYPICAL SECTION(S)

The proposed typical section consists of four 12-foot lanes, two in each travel direction with 10-foot outside shoulders, 4-foot inside shoulders, and a 36-foot-wide median with 6:1 side slopes. As the road embankment is raised to accommodate the railroad undercrossing, exterior slopes will be steepened beyond the clear zone or an MSE wall will be utilized to ensure that all improvements are located within the existing right-of-way (ROW). The multi-use pathway will also be brought adjacent to the roadway to reduce bridge costs over the ARRC crossing.

See Figures 3 and 4 for preliminary typical sections.

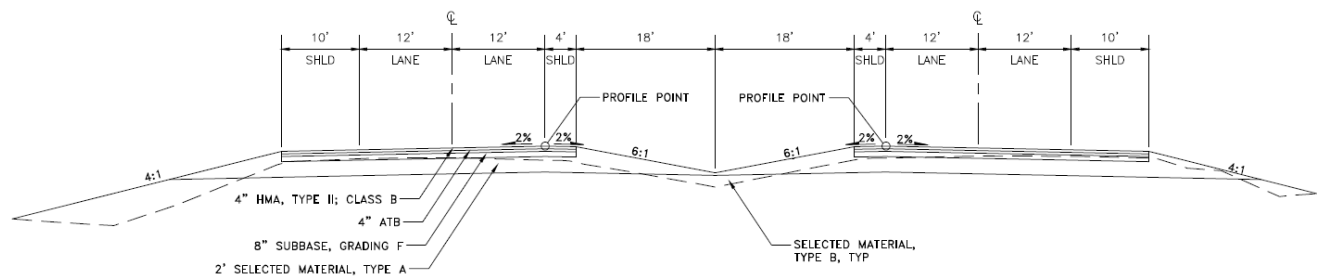


Figure 3 – Typical Section

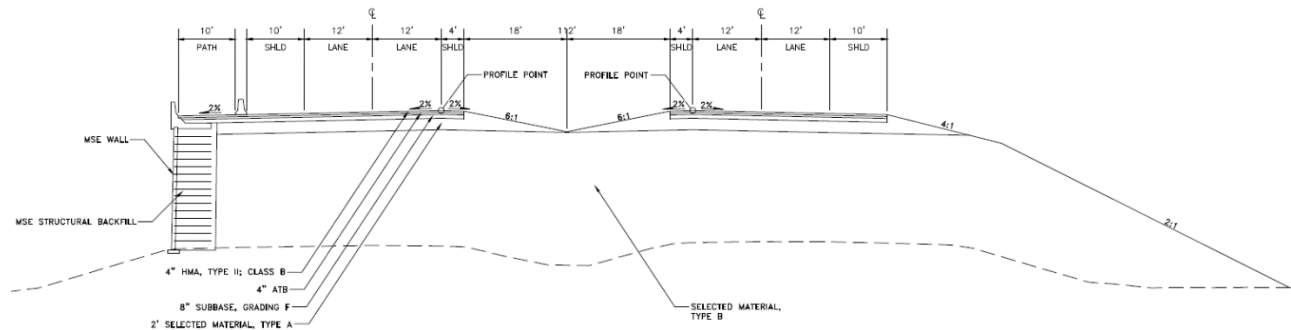


Figure 4 – Typical Section

PAVEMENT DESIGN

The pavement design for this project followed the procedures and guidelines in the *Alaska Flexible Pavement Design Manual*. The design life of the pavement is 15 years. The projected design year values for heavy vehicle percentages and equivalent axle loading can be found in the Design Criteria in Appendix A.

The Richardson Highway pavement design consists of the following layers:

- 4-inch Hot Mix Asphalt, Type II; Class B
- 4-inch Asphalt Treated Base
- 8-inch Subbase, Grading F
- 24-inch Selected Material, Type A
- Selected Material, Type B will be used for all other embankment

See Appendix D for the approved pavement design.

PRELIMINARY BRIDGE LAYOUT

This project includes the construction of a pair of twin single-span decked bulb-T girder bridges over the railroad. Each bridge is approximately 83 feet long. The southbound bridge width is 40.5 feet and the northbound bridge width is 51.5 feet. The northbound bridge is 11 feet wider than the southbound bridge in order to accommodate the pedestrian pathway.

See Appendix F for the preliminary bridge plans.

RIGHT-OF-WAY REQUIREMENTS

All improvements will occur within existing ROW limits.

MAINTENANCE CONSIDERATIONS

Maintenance of the Richardson Highway will remain the responsibility of the State of Alaska and the local DOT&PF Maintenance and Operations station. Based on discussions with maintenance and operations staff, the maintenance efforts are expected to be reduced with the project improvements because of the grade separation.

The existing roadway maintenance responsibility is an estimated 3.21 lane-miles within the project limits. After project construction, the roadway maintenance responsibility will be reduced to 2.67 lane-miles. The proposed multi-use pathway will add 0.65 lane-mile of maintenance responsibility. DOT&PF Maintenance and Operations does not maintain other separated pathways in the winter and does not plan on maintaining the proposed multi-use pathway for this project in the winter either.

DOT&PF Maintenance and Operations has requested all foreslopes be constructed at a 4:1 slope or flatter. Because of the constrained ROW on the southern side of the highway, the project is currently proposing a 4:1 slope until the edge of clear zone, where the slope will be steepened to 2:1. Maintenance and Operations has also requested that all new fencing installed be 6 feet in height, except for Fort Wainwright perimeter fencing which will match existing height and material.

MATERIAL SOURCES

All material sources will be contractor furnished. There are sufficient commercial material sources capable of providing quality materials meeting project specifications.

UTILITY RELOCATION & COORDINATION

Existing railroad utilities outside the railroad easement that are associated with the at-grade crossing will be decommissioned, salvaged, and given to ARRC. Coordination with ARRC will be required to determine construction staging and schedule. A utility agreement with ARRC will also be required for a construction zone flagger and for any temporary signal/gate installation that may be necessary.

Alaska Communications has one buried cable within the project limits. The line is adjacent to the railroad crossing and will be relocated as necessary.

Golden Valley Electrical Association has one electrical overhead transmission line that crosses the corridor near the railroad tracks. Another Golden Valley Electrical Association overhead transmission line runs parallel along the southern side of the Richardson Highway. The line that crosses the highway will need to be raised or relocated to provide a minimum vertical clearance of 20.5 feet over the roadway. The line that runs parallel will require several poles to be adjusted to finished grade.

See Appendix G for a list of utility conflicts and preliminary project cross sections.

ACCESS CONTROL FEATURES

The Richardson Highway, within the project limits, is a full access-controlled facility. Interchange on and off-ramps are located to the west (Mitchell Expressway) and east (Badger Road) of the project. No change to access control features are proposed.

PEDESTRIAN/BICYCLE (ADA) PROVISIONS

A multi-use pathway will be constructed along the entire length of the project and will connect to a pathway that is currently in design that will connect Fairbanks to North Pole (Richardson Highway MP 356-362 Bicycle and Pedestrian Facility project). The pathway will be elevated over the ARRC crossing on the proposed northbound bridge. All aspects of the pedestrian facility will be in ADA compliance, including profile grades and cross slopes.

SAFETY IMPROVEMENTS

The proposed project will eliminate one of the primary vehicle conflict points within the corridor, the at-grade railroad crossing. Though the instance of crashes is relatively low at this location, potential severity of these crashes is high due to highway speeds.

A primary objective of the Alaska State Rail Plan is to remove at-grade railroad/highway crossings throughout the state to enhance safety. A focal point of this effort is to grade separate all crossings on Alaska's National Highway System (NHS) routes. As a part of the Richardson Highway/Steese Expressway Corridor Planning and Environmental Linkages Study, the Diagnostic Team supported the grade separation of this crossing.

The environmental document discusses the occurrence of dense ice fog events during the winter, which are generated by the Fort Wainwright power plant's cooling ponds. This ice fog can severely limit visibility through the project area and pose safety issues. The environmental document states that elevating and lighting the highway should help mitigate the ice fog's impact.

Dedicated non-motorized transportation facilities are not currently located within the project limits. The Alaska Administrative Code restricts pedestrian use except in an emergency; however, pedestrians currently utilize the highway shoulders because of the lack of nearby alternate routes. The addition of a multi-use pathway on the northern side of the Richardson Highway will improve safety by increasing the separation between non-motorized transportation users and freeway traffic.

INTELLIGENT TRANSPORTATION SYSTEM FEATURES

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

DRAINAGE

The project area encompasses approximately 20.3 acres of terrain. There is a net reduction of impervious area throughout the corridor. The amount of precipitation is consistent throughout the project site because of its relatively small size. The median ditches and the area south of the Richardson Highway generally drains to a cluster of ponds south of (away from) the project area. The overflow of these ponds drains south, toward the Tanana River. The project area north of the highway includes a flat vegetated swale, causing surface runoff to slow and infiltrate.

The Richardson Highway and railroad tracks are higher than the surrounding terrain. There is one 24-inch culvert inside the project limits draining the water from the median ditch south

toward the Tanana River. This culvert will need to be removed and replaced in kind to maintain adequate drainage.

Wood curbs will be installed at the base of the guardrail with riprap downdrains at the ends of the curb to collect runoff traveling from the crest curve situated at the ARRC track crossing. The curb and downdrains will protect the embankment, and soil stabilization features will be designed to handle the concentrated flows that could erode the fill slopes.

SOIL CONDITIONS

According to test hole bore logs for the Richardson Highway MP 357-362 Bicycle/Pedestrian Path project, underlying soils are characteristic of Fairbanks with intermixed layers of gravel, sand, and silt. Frost-susceptible soils are present. Exploration drilling for the bridge abutments is currently (as of October 29, 2020) in progress and expected to be completed no later than November 10, 2020.

Borings recently completed on-site for Railroad Overcrossing Bridge encountered the following generalized subsurface profile (listed in sequential order of soil lithology from ground surface to bottom of approximately 100-foot boring):

- 0- to 2-inch organic mat
- 2-inch to 7.5-foot thawed dry loose to medium dense poorly graded and with silt and gravel
- 7.5- to 14 foot thawed loose moist to wet silt with sand
- 14- to 22 foot thawed loose wet silty sand; interval was heaving significantly
- 22- to 29 foot thawed wet loose gravel with silt and sand
- 29- to 49 foot thawed wet loose poorly graded sand with silt
- 49- to 59 foot frozen (Nbn) silty sand
- 59- to 89 foot frozen (Nbn) and frozen poorly graded gravel
- 89- to 100 foot frozen (Nbn) poorly graded gravel

The average monthly air temperature, freezing degree days, and thawing degree days for Fairbanks International Airport from 1949-2012 are provided in Table 1. Historical climate data was taken from the Western Regional Climate Center website using the National Oceanic and Atmospheric Administration Cooperative Stations data. The mean annual air temperature is 26.9 degrees Fahrenheit (°F), and the freezing index is 5,266 °F-days and the thawing index is 3,459 °F-days.

Table 1: Climate Data

Month	Mean Temperature (°F)	Freezing Degree Days (°F-days)	Thawing Degree Days (°F-days)
January	-10.2	1308	0
February	-2.7	980	0
March	10.1	679	0
April	31.6	12	0
May	49	0	527
June	60.1	0	843
July	62.1	0	933
August	56.5	0	760
September	45.2	0	396
October	24.8	223	0
November	3.2	864	0
December	-6.7	1200	0
TOTAL		5,266	3,459

EROSION AND SEDIMENT CONTROL

Proper implementation of temporary and permanent erosion and sediment control measures will play a critical role in the successful construction and commission of the project. A stormwater pollution prevention plan (SWPPP) conforming to the project’s erosion and sediment control plan (ESCP) will be required from the construction contractor. The ESCP outlines the best management practices (BMPs) during construction and provides detail on areas in need of additional protection. The contractor will submit the SWPPP for approval to the construction project engineer. All construction activities will be conducted in accordance with the approved SWPPP.

The major work items requiring erosion/sediment control measures will include work associated with grading and excavation of the road and diversions. The best management practices called for in the ESCP and the SWPPP will be implemented to control erosion and minimize sediment leaving the project.

ENVIRONMENTAL COMMITMENTS

A Categorical Exclusion has been prepared and approved for this project. The environmental commitments are listed below.

Environmental Commitments:

- No mechanical vegetation clearing during the U.S. Fish and Wildlife Service-recommended nesting window of May 1 to July 5. Contact DOT&PF environmental staff if the proposed project activities cannot occur outside the bird nesting season. Surveys would be conducted no more than 5 days prior to scheduled activity. If any active nests or breeding bird behavior are detected within the area of impact during surveys, no vegetation removal activities should be conducted until nestlings have fledged or the nest fails or breeding behaviors are no longer observed. If the activity must occur, establish a

buffer zone around the nest and no activities will occur within that zone until nestlings have fledged and left the nest area.

Mitigation Measures:

- Cost-efficient mitigation measures (e.g., wash equipment) are recommended to minimize the transport of propagules off-site. Prevention measures to reduce the risk of introducing additional species include using certified weed-free seed mixes for revegetation.

See Appendix B for the environmental document.

WORK ZONE TRAFFIC CONTROL

This project is not a significant project as defined in Chapter 14 of the Alaska Highway Preconstruction Manual.

Temporary TCPs will be developed at final design to show major construction and traffic maintenance sequencing. The contractor will develop a TCP during construction to safely guide and protect the traveling public in work zones, in accordance with the Alaska Traffic Manual and the project specifications. The contractor will be required to coordinate with ARRC for traffic control and temporary railroad signals during construction. The plan will be assessed and approved by the construction project engineer and the traffic control engineer. The contractor is responsible for providing advance notice to the public—including local businesses, residents, and road travelers—of construction activities that could cause delays, detours, or affect access to adjacent properties.

VALUE ENGINEERING

A value engineering study is not required for this project.

COST ESTIMATE

The estimated costs for this project are as follows:

Design	\$1,347,892
Utilities	\$4,000,000
Right of Way	\$0.00
Construction (Includes 14% Engineering, 4.75% ICAP)	\$24,000,000
Total Cost of Project	<hr/> \$29,347,892

APPENDIX A

**DESIGN CRITERIA
AND
DESIGN DESIGNATION**

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

Project Name: Richardson Highway MP 359 Railroad Grade Separated Facility	
<input checked="" type="checkbox"/> New Construction/Reconstruction <input type="checkbox"/> 3R <input type="checkbox"/> PM <input type="checkbox"/> Other:	
Project Number: Z607340000/0A24(033)	<input checked="" type="checkbox"/> NHS <input type="checkbox"/> Non NHS
Functional Classification:	Interstate
Design Year:	2045
Design Year ADT:	35,900
DHV:	11.60%
Percent Trucks:	4.85%
Pavement Design Year:	2037
Terrain:	Level
Design Speed:	70 MPH
Lane Width:	12 ft
Shoulder Width:	Outside: 10 ft Inside: 4 ft
Cross Slope:	2%
Superelevation:	6% (max)
Min. Radius of Horizontal Curvature:	2040
Maximum Allowable Grade:	3%
Stopping Sight Distance:	730 ft
Vertical Clearance:	20'-6" - overhead utilities; 23'-0" - railroad
Design Loading Structural Capacity:	HL 93
Bridge Width:	38 ft Each Structure (excluding shared use path)
Min. Allowable Grade:	0.5%
Min. K-Value for Vert. Curves:	Sag: 181 Crest: 247
Passing Sight Distance:	N/A
Surface Treatment:	T/W: Bituminous Shoulders: Bituminous
Side Slope Ratios:	Foreslopes: Varies Backslopes: Varies
Degree of Access Control:	Full Access Control
Median Treatment:	Depressed
Illumination:	Partial
Lateral Offset to Obstruction:	N/A
Curb Usage and Type:	N/A
Bicycle Provisions:	Shared Use Path
Pedestrian Provisions:	Shared Use Path
Misc. Criteria:	None

Proposed - Designer/Consultant: _____ Date: 9/4/20
 Endorsed - Engineering Manager: Colleen Achim Date: 09/04/2020
 Approved - Preconstruction Engineer: _____ Date: 9/4/2020

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

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

MEMORANDUM

State of Alaska Department of Transportation & Public Facilities

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

DATE: July 10, 2020

FILE NO: I:\Traffic
Data\Design\2020\RichHwyMP359_Z607340000

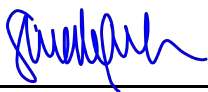
**TELEPHONE
NO:** 451-5150

FROM: Scott Vockeroth
Traffic Data Manager
Fairbanks Field Office

SUBJECT: Richardson Highway MP 359 Railroad Grade
Separation Z607340000/0A24(033)
Design Designation Request

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

Contact our office if you have any questions.



7/13/2020

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

Date

cc: Colleen Ackiss, P.E., Engineer, Northern Region

Attachment

DESIGN DESIGNATION
Northern Region Planning
Traffic Data & Forecasting

ROUTE NAME: Richardson Highway
CDS NO: 190000
ROUTE ID: 11000001000
MILEPOINT: 360.210-360.930
FUNCTIONAL CLASS: Interstate
URBAN/RURAL: Urban

	YEAR	AADT	%	
AADT	2019	26,000		
	2035	31,700		
	2045	35,900		
DHV	2035		11.60	3700
	2045			4200
D(30)				35-65
T			4.85	Total
			0.10	Class 4
			1.05	Class 5
			1.00	Class 6
			1.50	Class 8
			0.40	Class 9
			0.65	Class 10
		0.15	Class 13	
ESAL'S (Design Lane)	To Be Provided by Design			

Submitted Data Request Type: Design Designations Request (Northern)	
Latest Status Update:	Data Request Record has been assigned to an email address.
Assigned to the following e-mail address:	jill.melcher@alaska.gov; scott.vockeroth@alaska.gov
Record Creation:	July 08, 2020 01:56:49 PM
Routed to assigned e-mail address:	July 08, 2020 03:16:15 PM
Request Resolution:	Resolution Pending

Requestor

First Name: *	Colleen	Last Name: *	Ackiss
Email: *	colleen.ackiss@alaska.gov		
Additional Email Contacts:	colleen.ackiss@alaska.gov +		
Date Needed: (AKST)	07 / 24 / 2020 x		

Project Information

Project Name: *	Richardson Highway MP 359 Railroad Grade Separation
Project Engineer(s): *	Colleen Ackiss +
State Project Number: *	Z607340000
Federal Project Number: *	0A24(033)
Route ID: *	190000 and 190000SB
Milepoint (To/From): *	360.210 to 360.930 and 2.609 to 4.080
Construction Year: *	2024

Please select the type of project. *

Reconstruction
 Rehabilitation
 New Construction
 Other (please describe): Reconstruction

Project Notes:

Project will be constructing a grade separation (highway over railroad. There will be two lanes in each direction.

Please select the project's region to view the Data Fields that are available to request. *

Central
 Northern
 Southcoast

Data Fields Requested: (please pick at least one) *

Present AADT
 Design Year AADT (Please specify Year) 2045
 Mid-Design Year AADT (Please specify Year) 2035
 Design Hourly Volume (DHV)
 Directional Split (D)
 Percent Trucks
 Road Functional Classification
 Intersection Turning Movements (Please specify Locations)

Please specify any other requested data fields not listed above:

Traffic Data Request Form

TDR Form-1-10/20/03

Alaska Department of Transportation & Public Facilities

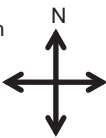
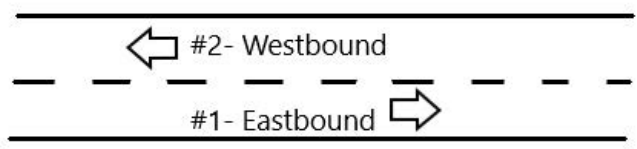

Requested By: Colleen Ackiss		Design Project Number: Z607340000	Date Requested: 7/8/20																		
Base Year: 2019		Common Route Name: Richardson Highway	CDS Route Name: CDS- 190000 Route- 11000001000																		
Base Year Total AADT: 26,000		Functional Class: Urban/Rural Interstate	CDS M.P. Interval: 360.210-360.930																		
AADT Growth Rate		Historic M.P. Interval:																			
Forward (%/yr): 1.25 End Year: 2045																					
Back Cast (%/yr): Begin Year:																					
<table border="1"> <thead> <tr> <th>Truck Category</th> <th>Load Factor (ESALs per Truck)</th> <th>% of Total AADT in Truck Category</th> </tr> </thead> <tbody> <tr> <td>2-axle</td> <td>See attached</td> <td></td> </tr> <tr> <td>3-axle</td> <td></td> <td></td> </tr> <tr> <td>4-axle</td> <td></td> <td></td> </tr> <tr> <td>5-axle</td> <td></td> <td></td> </tr> <tr> <td>≥ 6-axle</td> <td></td> <td></td> </tr> </tbody> </table>		Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category	2-axle	See attached		3-axle			4-axle			5-axle			≥ 6-axle			Lane Configuration Sketch: (Designer: Provide sketch of lane layout. Number each lane and show directions.) Indicate North  	
Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category																			
2-axle	See attached																				
3-axle																					
4-axle																					
5-axle																					
≥ 6-axle																					
Percent of Base Year Total AADT for Each Numbered Lane in Configuration Sketch:		Comments:																			
Lane #	1	%	35- Eastbound																		
Lane #	2	%	65- Westbound																		
Lane #		%																			
Lane #		%																			
Lane #		%																			
Lane #		%																			
Data Provided By: Scott Vockeroth		Provider's Signature: 	Date Provided: 7/10/2020																		

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

Route ID	Route Name	Measure	Feature	Location	Attribute1	Attribute2
1100000I000	Richardson Highway (Richardson Highway)		0	Route Begin		
1100000I000	Richardson Highway (Richardson Highway)		355	Report Begin		
1100000I000	Richardson Highway (Richardson Highway)		355 FHWA Urban Area	Begin	Urbanized Area Type: Urbanized Area	Urbanized Area Name: Fairbanks
1100000I000	Richardson Highway (Richardson Highway)		355 Functional Class	Begin	Functional Class: Interstate	
1100000I000	Richardson Highway (Richardson Highway)		355 Traffic Link	Begin	AADT: 19173	Traffic Link ID: AL001293
1100000I000	Richardson Highway (Richardson Highway)	355.6190964	Milepost	Point	Milepost_Number: 354	
1100000I000	Richardson Highway (Richardson Highway)	355.9678985	Intersections	Point	Intersection Name: Richardson Highway & Old Rich @ Badger Road 1	
1100000I000	Richardson Highway (Richardson Highway)	356.1832056	Intersections	Point	Intersection Name: Richardson Highway & Rozak Road 1	
1100000I000	Richardson Highway (Richardson Highway)	356.6018394	Milepost	Point	Milepost_Number: 355	
1100000I000	Richardson Highway (Richardson Highway)	357.587456	Milepost	Point	Milepost_Number: 356	
1100000I000	Richardson Highway (Richardson Highway)	357.5994472	Intersections	Point	Intersection Name: Richardson Highway & Davison Street 1	
1100000I000	Richardson Highway (Richardson Highway)	357.812479	Intersections	Point	Intersection Name: Richardson Highway & Frontage Road Spur	
1100000I000	Richardson Highway (Richardson Highway)	358.277735	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB Off-Ramp (Badger)	
1100000I000	Richardson Highway (Richardson Highway)	358.6122224	Milepost	Point	Milepost_Number: 357	
1100000I000	Richardson Highway (Richardson Highway)	358.6499206	Intersections	Point	Intersection Name: Richardson Highway & Badger Road 1	
1100000I000	Richardson Highway (Richardson Highway)	359.1788028	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB On-Ramp (Badger)	
1100000I000	Richardson Highway (Richardson Highway)	359.1819213	Traffic Link	End	AADT: 19173	Traffic Link ID: AL001293
1100000I000	Richardson Highway (Richardson Highway)	359.1819213	Traffic Link	Begin	AADT: 25923	Traffic Link ID: AL001294
1100000I000	Richardson Highway (Richardson Highway)	359.5949859	Milepost	Point	Milepost_Number: 358	
1100000I000	Richardson Highway (Richardson Highway)	360.5927306	Milepost	Point	Milepost_Number: 359	
1100000I000	Richardson Highway (Richardson Highway)	361.1604438	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB Off-Ramp (Old Rich @ S Fairbanks)	
1100000I000	Richardson Highway (Richardson Highway)	361.1635623	Traffic Link	End	AADT: 25923	Traffic Link ID: AL001294
1100000I000	Richardson Highway (Richardson Highway)	361.1635623	Traffic Link	Begin	AADT: 23144	Traffic Link ID: AL003286
1100000I000	Richardson Highway (Richardson Highway)	361.5951608	Milepost	Point	Milepost_Number: 360	
1100000I000	Richardson Highway (Richardson Highway)	362.2358948	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB Off-Ramp (Glenn SB On-Ramp)	
1100000I000	Richardson Highway (Richardson Highway)	362.2390134	Functional Class	End	Functional Class: Interstate	
1100000I000	Richardson Highway (Richardson Highway)	362.2390134	Functional Class	Begin	Functional Class: Principal Arterial - Other	
1100000I000	Richardson Highway (Richardson Highway)	362.5509573	Intersections	Point	Intersection Name: Richardson Highway & Parks NB Off-Ramp (Richardson NB On-Ramp) 1	
1100000I000	Richardson Highway (Richardson Highway)	362.5540758	Traffic Link	End	AADT: 23144	Traffic Link ID: AL003286
1100000I000	Richardson Highway (Richardson Highway)	362.5540758	Traffic Link	Begin	AADT: 20697	Traffic Link ID: AL001295
1100000I000	Richardson Highway (Richardson Highway)	362.5969427	Milepost	Point	Milepost_Number: 361	
1100000I000	Richardson Highway (Richardson Highway)	362.6249759	Intersections	Point	Intersection Name: Richardson Highway & Parks NB Off-Ramp (Richardson NB On-Ramp)	
1100000I000	Richardson Highway (Richardson Highway)	362.6338174	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB Off-Ramp (Glenn SB On-Ramp) 1	
1100000I000	Richardson Highway (Richardson Highway)	362.8416208	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB On-Ramp (Cushman) 1	
1100000I000	Richardson Highway (Richardson Highway)	363.1710161	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB On-Ramp (Cushman)	
1100000I000	Richardson Highway (Richardson Highway)	363.5225279	Milepost	Point	Milepost_Number: 362	
1100000I000	Richardson Highway (Richardson Highway)	363.5890101	Intersections	Point	Intersection Name: Richardson Highway & Richardson NB Off-Ramp (Gaffney)	
1100000I000	Richardson Highway (Richardson Highway)	363.6531171		Route End		
1100000I000	Richardson Highway (Richardson Highway)	363.6531171	FHWA Urban Area	End	Urbanized Area Type: Urbanized Area	Urbanized Area Name: Fairbanks
1100000I000	Richardson Highway (Richardson Highway)	363.6531171	Functional Class	End	Functional Class: Principal Arterial - Other	
1100000I000	Richardson Highway (Richardson Highway)	363.6531171	Traffic Link	End	AADT: 20697	Traffic Link ID: AL001295
1100000I000	Richardson Highway (Richardson Highway)	363.6531171		Report End		

Computations and Historical Data

Project: Richardson Hwy MP 359 Railroad Grade Separation

Historical AADTs

Link	Start CDS	Start Feature	End CDS	End Feature	Year										
					1980	1981	1982	1983	1984	1985					
1	352.717	Old Rich Intersection	359.182	Badger NB On-Ramp											
2	359.595	Badger NB On-Ramp	361.164	Off-ramp to Old Rich	9501	10655	11976	13986	16698	17426					

Link	Year														
	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1	11157	9118	11133	11248	14355	12088	13725	13993		16093		17670	15263	15637	18226
2	16855	17137	16460	16748	17893	18223	19517	20116	21298	21174	21166	22017	22516	21967	22379

Link	Year														
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1		16381		16325	19401	19150			19318	19374	20072	17276	19768	16891	15621
2	22812	23102	23403	24090	24188	23934	24719	23371	24117	25289	24876	24956	24578	24883	25187

Link	Year			
	2016	2017	2018	2019
1	20129	19300	18684	19076
2	26179	25490	25812	25923

Growth Rate 1.25% Traffic trends along Richardson Hwy corridor

Growth Factors	
Year	Factor
2035	1.220
2045	1.381

Future AADT	Year	AADT
	2019	26,000
	2035	31,700
	2045	35,900

D Factor (30) 35-65

K-Factor (30) 11.60% Obtained from Continous Count at Richardson Hwy @ Big Bend (MP 359)

Design Hourly Volume (DHV)
 2035 3700
 2045 4200

Class Data

Station ID	Station Description	MP	Year	Percent by Class							Total Truck %
				4	5	6	8	9	10	13	
13420514	Richardson Hwy at MP 359	359	2019	0.10	1.05	1.00	1.50	0.40	0.65	0.15	4.85
				Load Factor	1.00	0.50	0.85	1.20	1.55	2.24	2.24
				Number of Axles	2/3	2	3	4	5	6	7+

APPENDIX B

ENVIRONMENTAL DOCUMENT

State of Alaska
Department of Transportation & Public Facilities

CATEGORICAL EXCLUSION DOCUMENTATION FORM
(NEPA Assignment Program Projects)



The environmental review, consultation, and other actions required by the applicable Federal environmental laws for this project are being, or have been carried out by the DOT&PF pursuant to 23 U.S.C 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

I. Project Information:

A. Project Name: Richardson Highway MP 359 Railroad Grade Separated Facility

B. Federal Project Number: A024033

C. State Project Number: Z607340000

D. Primary/Ancillary Project Connections:
none

E. CE Designation: 23 CFR 771.117(c)(22)

F. List of Attachments:

1A- Study Area Map

1B- Project Overview Map

2A- Section 106 - Consultation Initiation

2B- Section 106 - Findings

2C- Section 106 - SHPO Concurrence

2D- Section 106- PA Update

3A- FNSB Air Quality Boundaries and Exhibits

3B- Conformity Analysis for the 2040 Metropolitan Transportation Plan

3C- Air Quality Conformity Memorandum

4A- Flood Zone A Figure

4B- Flood Zone A Map

4C- Location Hydraulics Study

5- Noise Memorandum

6- Website Content for Online Open House

7- Fairbanks Daily News-Miner Ad

8- Online Public Notice

9A- Agency Scoping Letter and Distribution List

9B- Agency Comments and Responses

10A- Stakeholder Meeting Agenda

10B- Stakeholder Meeting Sign-in Sheet

10C- Public and Stakeholder Comments and Responses

G. Project Scope (Use STIP Project Description)

Need ID 28069: Construct grade-separated facility on the Richardson Highway to improve operations and reduce railroad/vehicular conflicts. Work includes a new bridge.

H. Project Purpose and Need:

The proposed project will make improvements to operations and safety in the vicinity of MP 359 of the Richardson Highway with roadway upgrades and the addition of a new grade separation.

The proposed project area is bordered by federal military land to the north and south, with private, mostly industrial land to the south west (Attachment 1A). The Richardson Highway supports military operations at both Fort Wainwright Army and Eielson Air Force bases and is considered part of the National System of Interstate Defense Highways and the Strategic Highway Network. The proposed Richardson Highway MP 359 Railroad Grade Separated Facility project supports the continued transition of the segment of the Richardson Highway between Fairbanks and the Eielson Air Force Base to a controlled-access freeway (Fairbanks Metropolitan Area Transportation System [FMATS] Policy Committee resolution, 1984).

Studies indicate that safety improvements are needed in the project area due to the potential severity of crashes at highway speeds (Kittelson and Associates, June 2017). The project will address this need by eliminating a vehicle conflict point, the at-grade railroad crossing, which does not meet driver expectations for a freeway facility. Removing the at-grade railroad crossing will also improve operations by reducing delays.

The Richardson Highway is a critical freight corridor and is a part of the National Highway Freight Network, connecting Fairbanks and North Pole with communities in eastern Alaska, Canada, and the contiguous 48 states. This highway has a large percentage of truck traffic and is designated as an official route for long combination vehicles (17 AAC 25.014). Current operations require some westbound vehicles, often freight traffic hauling hazardous materials, to stop at the railroad crossing using auxiliary pullout lanes on the right-hand side of the highway and then accelerate to highway speed while making three lane changes in less than a half mile along a horizontal curve to exit left to the Old Richardson Highway. Replacing the at-grade railroad crossing with a grade-separated bridge will remove the need to stop in the auxiliary lane and allow drivers to prepare for the left exit outside of the half mile section.

I. Project Description:

The project will replace the existing at-grade railroad crossing and signal infrastructure with a new grade-separated bridge that raises the Richardson Highway main line over the railroad (Attachment 1B). Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, separated pathway, utility relocates, and overhead transmission lines. This project will coordinate with a portion of a planned, separated-pathway concept along the northern Richardson Highway right-of-way line, which is part of the Richardson Highway MP 356-362 Bicycle and Pedestrian Facility project. In addition, troop access will be provided to connect Fort Wainwright lands located both north and south of the Richardson Highway. All work will occur within the existing Alaska DOT&PF right-of way.

II. 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.

A. Right-of-Way Impacts

	<u>N/A</u>	<u>YES</u>	<u>NO</u>
1. Additional right-of-way required. If no, skip to 2.		<input type="checkbox"/>	<input checked="" type="checkbox"/>
a. Permanent easements required.		<input type="checkbox"/>	<input type="checkbox"/>
Estimated number of parcels: <u>N/A</u>			
b. Full or partial property acquisition required.		<input type="checkbox"/>	<input type="checkbox"/>

A. Right-of-Way Impacts

N/A YES NO

Estimated number of full parcels: N/A

Estimated number of partial parcels: N/A

c. Property transfer from state or federal agency required. *If yes, list agency in No. 4 below.*

d. Business or residential relocations required. If yes, insert the number of relocations below, summarize the findings of the conceptual stage relocation study in No. 4 below and attach the conceptual stage relocation study. If no, skip to 2.

i. Number of business relocations: N/A

ii. Number of residential relocations: N/A

e. Last-resort housing required.

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 [E.O. 12898](#) (FHWA Order 6640.23A, June 2012)?

3. The project will involve use of ANILCA land that requires an [ANILCA Title XI](#) approval.

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

The project will have no right-of-way impacts. The project will use existing right-of-way and will not require acquisition of adjacent private or federal land.

B. Social and Cultural Impacts

YES NO

1. The project will affect neighborhoods or community cohesion.

2. The project will affect travel patterns and accessibility (e.g. vehicular, commuter, bicycle, or pedestrian).

3. The project will affect school boundaries, recreation areas, churches, businesses, police and fire protection, etc.

4. The project will affect the elderly, handicapped, nondrivers, transit-dependent, minority and ethnic groups, or the economically disadvantaged.

5. There are unresolved project issues or concerns of a federally-recognized Indian Tribe [as defined in [36 CFR 800.16\(m\)](#)].

6. Summarize the social and cultural impacts, if any:

There will be no negative effects to neighborhoods or community. The project will foster improved accessibility for freight by reducing delays at the railroad crossing and eliminating the need for out-of-direction travel patterns for northbound access from the Old Richardson Highway to the Richardson Highway. Both the troop/pedestrian underpass and the bike/pedestrian path will increase community livability and sustainability through improved access for non-drivers. Additionally, the reduced risk of vehicle conflict is a safety benefit to the community.

- C. Economic Impacts** 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.
 2. The project will adversely affect established businesses or business districts.
 3. Summarize the economic impacts, if any:

The proposed project will not have adverse economic impacts. Construction will result in short-term employment opportunities, which could be filled by local workers. Increased patronage to local businesses from construction workers is another temporary positive impact of construction.

- D. Land Use and Transportation Plans** N/A YES NO
1. Project is consistent with land use plan(s).

Identify the land use plan(s) and date Fort Wainwright West Post District Area Development Plan, January 2017
 2. Project is consistent with transportation plan(s).

Identify the transportation plan(s) and date. Fairbanks Metropolitan Area Transportation System Freight Mobility Plan - Existing Conditions Report, February 2017; Richardson Highway/Steese Expressway Corridor Planning and Environmental Linkages Study, September 2015; Fairbanks Metro Area Transportation Plan: A Roadmap to 2040, January 2015.
 3. Project would induce adverse indirect and cumulative effects on land use or transportation. *If yes, attach analysis.* *
 4. Summarize how the project is consistent or inconsistent with the land use plan(s) and transportation plan(s):

The proposed project is consistent with existing transportation and land use plans and will not introduce indirect or cumulative effects.

- E. Impacts to Historic Properties** N/A YES NO
- Consider the [February 2015 DOT&PF Cultural Resources Confidentiality Guidelines](#) for cultural resource attachments.*
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 and skip to 10.* *
 3. Date Consultation/Initiation Letters sent January 18, 2019 (Attachment 2A and project file) *Attach copies to this form.*
 - a. List consulting parties Alaska State Historic Preservation Office; Fairbanks North Star Borough Commission on Historic Preservation; the Fairbanks North Star Borough; the City of Fairbanks; the Tanana-Yukon Historical Society; U.S. Army Garrison Alaska-Fort Wainwright; Tanana Chiefs Conference; Doyon, Limited; USARG Alaska Cultural Resource Manager/Native Liaison; and Denakkanaaga, Inc.
 - b. If no letters were sent, explain why not. *Attach “Section 106 Proceed*

E. Impacts to Historic Properties

N/A YES NO

Directly to Findings Worksheet”, if applicable N/A

- 4. Date “Finding of Effect” Letters sent March 14, 2019 (see Attachment 2B and project file) *Attach copies to this form*
- a. State “Finding of Effect” The Alaska Department of Transportation and Public Facilities determined that the project activities will have no historic properties affected, as no NRHP eligible properties have been located within the project Area of Potential Effect.
- b. State any changes to consulting parties N/A

- 5. List responding consulting parties, comment date, and summarize:
Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part" (see project file).
Alaska SHPO responded via email to the Initiation Letter sent on 1/28/2019 with no objection to the Study Area or level of identification (see project file).
Alaska SHPO concurred with the no historic properties affected finding for the project activities on 4/4/2019 (Attachment 2C and project file).
USARG Alaska Cultural Resource Manager/Native Liaison responded to the Findings Letter via email on 3/28/2019 with no concerns (see project file).

- 6. Are there any unresolved issues with consulting parties? *
If yes, the Section 106 process may not be complete, Statewide Cultural Resources Manager consultation is required. Attach consultation.

- 7. Date SHPO concurred with “Finding of Effect” April 4, 2019 (Attachment 2C)
Attach copy to this form.

- 8. Is a National Register of Historic Places listed or eligible property in the Area of Potential Effect?

- 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 Categorical Exclusions (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 V.*
 SHPO concurred with the determination of "No Historic Properties Affected"(Attachment 2C). Because the highway interchange was removed from the project description and utility and overhead transmission line relocates were added to the project description, a PA UPDATE was completed on August 3, 2020 (Attachment 2D).

F. Wetland Impacts

YES NO

- 1. Project affects wetlands as defined by the U.S. Army Corps of Engineers (USACE). *If yes, complete the remainder of this section and document public and agency coordination required per E.O. 11990, Protection of Wetlands. If no, skip to Section G.*

F. Wetland Impacts

YES NO

2. Are the wetlands delineated in accordance with the “[Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region \(Version 2.0\) Sept. 2007](#)”?
3. Estimated area of wetland involvement (acres): _____
4. Estimated fill quantities (cubic yards): _____
5. Estimated dredge quantities (cubic yards): _____
6. Is a USACE authorization anticipated?
If yes, identify type:
 NWP Individual General Permit Other
7. Wetlands Finding *Attach the following supporting documentation as appropriate:*
 Avoidance and Minimization Checklist, and Mitigation Statement
 Wetlands Delineation.
 Jurisdictional Determination.
 Copies of public and resource agency letters received in response to the request for comments.
- a. Are there practicable alternatives to the proposed construction in wetlands?
If yes, the project cannot be approved as proposed.
- b. Does the project include all practicable measures to minimize harm to wetlands? *If no, the project cannot be approved as proposed.*
- 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. *If no, the project cannot be approved as proposed.*
8. Summarize the wetlands impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section V](#).*

According to National Wetland Inventory data (Accessed: May 21, 2019), the proposed project would not impact wetlands. The nearest wetlands are approximately 500 feet to the north of the existing right-of-way (see project file for National Wetlands Inventory map).

G. Water Body Involvement

N/A YES NO

1. Does the project affect the following:
- a. A water body.
- b. A navigable water body as defined by USCG, (i.e. Section 9)? *
- c. Waters of the U.S. as defined by the USACE, Section 404? *
- d. Navigable Waters of the U.S. as defined by the USACE (Section 10)? *
- e. Fish passage across a stream frequented by salmon or other fish (i.e. [Title 16.05.841](#))?
- f. A resident fish stream ([Title 16.05.841](#))?
- g. A cataloged anadromous fish stream, river or lake (i.e. [Title 16.05.871](#))? *
- h. A designated Wild and Scenic River or land adjacent to a Wild and Scenic River? *If yes, the Regional Environmental Manager should consult with the NEPA Program Manager to determine applicability of Section 4(f).*

2. Proposed water body involvement:
 Bridge Culvert Embankment Fill Relocation
 Diversion Temporary Permanent Other
3. Type of stream or river habitat impacted:
 Spawning Rearing Pool Riffle Undercut bank
 Other
4. Amount of fill below (cubic yards):
 OHW N/A MHW N/A HTL N/A
5. Summarize the water body impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section V](#).*
 The proposed project will not impact any water bodies (see project file for National Wetlands Inventory map).

H. Fish and Wildlife

N/A YES NO

1. Anadromous and resident fish habitat. *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.*
- a. Database name(s) and date(s) queried:
<https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive> (Accessed: June 25, 2018)
- b. Anadromous fish habitat present in project area. *
- c. Resident fish habitat present in project area. *
- d. Adverse effect on spawning habitat. *
- e. Adverse effect on rearing habitat. *
- f. Adverse effect on migration corridors. *
- g. Adverse effect on subsistence species. *
2. Essential Fish Habitat (EFH). *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.*
- a. Database name(s) and date(s) queried:
<https://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=main.interactive> (Accessed: June 25, 2018)
- b. EFH present in project area.
- c. Project proposes construction in EFH. *If yes, describe EFH impacts in H.6.*
- 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 V](#).*
3. Wildlife Resources:
- a. Project is in area of high wildlife/vehicle accidents.
- b. Project would bisect migration corridors.
- c. Project would segment habitat.

H. Fish and Wildlife

N/A YES NO

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) : <https://ecos.fws.gov/ipac/> (Accessed: June 25, 2018)
- 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 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 V](#).*

There are no known occurrences of fish and wildlife documented directly within the project area, and the footprint of the project does not include suitable habitat. Suitable habitat for these species is limited to the lakes and ponds located in the industrial area to the southwest. An Aquatic Habitat Memo was prepared to further support these findings (see project file).

According to the IPAC report (see project file), the birds listed here are of particular concern either because they (1) occur on the U.S. Fish and Wildlife Service Birds of Conservation Concern (BCC) list or (2) otherwise warrant special attention due to vulnerability of the species. The following species were identified (based on liberal estimates) as possibly occurring within the 10-square-kilometer grid cells that intersect the project area, although are not anticipated to be present in the project area.

a. BCC Rangewide (peak breeding season): American Golden Plover (May 20 to August 15), Hudsonian Godwit (May 15 to July 31), Lesser Yellowlegs (May 1 to August 15), Olive-sided Flycatcher (May 20 to August 31), Whimbrel (May 10 to August 20)

b. Non-BCC Vulnerable: Bald Eagle, Golden Eagle

Standard conservation measures for transportation activities are recommended to avoid impacts to migratory birds that incidentally may breed in the area (e.g., survey tall grasses for nesting sites). All vegetation removal and trimming and grading of vegetated areas will be scheduled outside of the peak bird-breeding season to the maximum extent practicable. No mechanized vegetation clearing will occur from May 1 to July 15.

I. Threatened and Endangered Species (T&E)

YES NO

- 1. Database name(s) and date(s) queried: <https://ecos.fws.gov/ipac/> (Accessed: June 20, 2018) (see project file for IPAC report)
- 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 or Candidate species present in project area.
- 6. What is the effect determination for the project? *Select one.*
 - a. Project has no effect on listed or proposed T&E species or designated critical habitat.

- I. Threatened and Endangered Species (T&E)** YES NO
- b. 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.* *
- c. Project is likely to adversely affect a listed or proposed T&E species or designated critical habitat. *If yes, consult the NEPA Program Manager.* *
7. 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 V](#).*
 There are no T&E species or critical habitat in the proposed project area. An Aquatic Habitat Memo was prepared to further support these findings (see project file).

- J. Invasive Species** YES NO
1. Database name(s) and date(s) queried: <http://accs.uaa.alaska.edu/invasive-species/non-native-plants/> (Accessed: June 20, 2018).
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 V](#).*
 Among the 16 non-native species present in the project vicinity, 5 have an invasiveness rank greater than 70 and may pose an invasive threat due to the high propensity for spreading to areas outside the project area (Alaska Exotic Plant Information Clearinghouse). Although the documented density and extent of these populations are limited, cost-efficient mitigation measures are recommended to reduce the risk of transport of propagules off-site; measures such as burying, grubbing and minimizing disturbance. Preventative measures to reduce the risk of introducing additional species include using certified weed-free seed mixes for revegetation.
 Below is a list of the non-native species in the vicinity and the associated U.S. Department of Agriculture invasiveness rank:
 Lepidium densiflorum Schrad. (common pepperweed - 25), Plantago major (common plantain - 44), Hieracium umbellatum (narrowleaf hawkweed - 51), Crepis tectorum (narrowleaf hawksbeard - 56), Trifolium hybridum (alsike clover - 57), Taraxacum officinale (common dandelion - 58), Elymus repens (quackgrass - 59), Bromus inermis (smooth brome - 62), Hordeum jubatum (foxtail barley -63), Medicago sativa (yellow alfalfa - 64), Linaria vulgaris (butter and eggs - 69), Sonchus arvensis (field sowthistle - 73), Vicia cracca (bird vetch - 73), Caragana arborescens (Siberian peashrub - 74), Prunus padus (European bird cherry - 74), and Melilotus albus (white sweetclover - 81).

- K. Contaminated Sites** YES NO
1. Database name(s) and date(s) queried: <https://dec.alaska.gov/spar/csp.aspx> (Accessed: September 10, 2020)
2. There are known or potentially contaminated sites within or adjacent to the existing and/or proposed ROW. *If yes, attach ADEC coordination documentation and summarize below in IV.K.4.* *
3. There are contaminated sites within 1,500 feet of where excavation dewatering is anticipated? *If yes, attach ADEC coordination correspondence and summarize below in IV.K.4.*

K. Contaminated Sites

YES NO

- 4. Summarize the contaminated site impacts and mitigation, if any. *Include any commitments or mitigative measure in Section IV.*

There are no contaminated sites documented in the area of the proposed project (see project file for Alaska DEC contaminated sites map).

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. If no, skip to Section M.*
- 2. The project is exempt from an air quality analysis per [40 CFR 93.126](#) (Table 2 and Exempt Projects). *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.*
- 3. 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: January 30, 2019
- 4. Have there been a significant change in the scope or the design concept as described in the most recent conforming TIP and LRTP? *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).*
- 5. A CO project-level analysis was completed meeting the requirements of [Section 93.123](#) of the conformity rule. The results satisfy the requirements of [Section 93.116\(a\)](#) for all areas or [93.116\(b\)](#) for nonattainment areas. *Attach a copy of the analysis.*
- 6. A PM-2.5 project-level air quality analysis was completed meeting the requirements of [Section 93.123](#) of the conformity rule. The results satisfy the requirements of [Section 93.116](#). *Attach a copy of the analysis.*
- 7. A PM-10 project-level air quality analysis was completed meeting the requirements of [Section 93.123](#) of the conformity rule. The results satisfy the requirements of [Section 93.116](#). *Attach a copy of the analysis.*
- 8. Summarize air quality impacts, mitigation, and agency coordination, if any. *Include any commitments or mitigative measures in Section V.*

The project is within the boundaries of a Non-Attainment area for PM-2.5 and a Maintenance Area for Carbon Monoxide (Attachment 3A). The 2018-2021 STIP includes the Railroad Grade Separated Facility project (#28069) and the non-motorized pathway (#2130). Therefore, the requirements for the Transportation Conformity Rule are met (Attachment 3B).

According to 40 CFR 93126, railroad/highway crossing improvements are exempt from the interagency coordination requirement to determine conformance with adopted air quality plans (Attachment 3C). Pedestrian facilities are also exempt. As for project level conformity, the project does not include any signalized intersections, and is therefore exempt from CO hotspot analysis.

M. Floodplain Impacts (23 CFR 650, Subpart A)

YES NO

1. Project encroaches into the base (100 year) flood plain in fresh or marine waters. Identify floodplain map source and date : *
<https://msc.fema.gov/portal/search> (Accessed: July 27, 2020)

If yes, attach documentation of public involvement conducted per [E.O. 11988](#) and [23 CFR 650.109](#). Consult with the regional or Statewide Hydraulics/Hydrology expert and attach the required location hydraulic study developed per [23 CFR 650.111](#). Answer questions M.1.a through d.

If no, skip to M.2.

- a. Is there a longitudinal encroachment into the 100-year floodplain? *
- b. Is there significant encroachment as defined by [23 CFR 650.105\(q\)](#)? *If yes, attach a copy of FHWA's finding required by 23 CFR 650.115.* *
- c. Project encroaches into a regulatory floodway. *
- d. The proposed action would increase the base flood elevation one-foot or greater. *
2. Project conforms to local flood hazard requirements.
3. Project is consistent with [E.O. 11988](#) (Floodplain Protection). *If no, the project cannot be approved as proposed.*
4. Summarize floodplain impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section V](#).*

The FEMA Flood Insurance Rate Maps, dated 03/17/2014, shows most of the project is in Zone X, an area with a one-percent annual chance or greater flood hazard by a levee system (Attachments 4A and 4B). There is a small portion of the project area on the south side of the Richardson Highway that falls within Special Flood Hazard area 'Zone A' (Attachments 4A and 4B). The Special Flood Hazard area Zone A is an area where no base flood elevations have been determined; the risks associated with this project are low (Location Hydraulic Study is Attachment 4C). Notification of potential floodplain encroachment included in January 2019 Online Public Notice (Attachment 7). Measures to minimize flood plain impacts include maintaining the existing flow distribution and minimizing the footprint of the project to the extent practicable. Erosion and sediment control measures will also be implemented during construction. The project will not involve significant encroachments and should not support incompatible floodplain development. Proposed work will improve water conveyance and no adverse flood plain impacts are anticipated.

N. Noise Impacts (23 CFR 772)

YES NO

1. Does the project involve any of the following? *If yes, complete N.2.*
If no, a noise analysis is not required. Skip to section O.
- a. Construction of highway on a new location.
- b. Substantial alteration in vertical or horizontal alignment as defined in [23 CFR 772.5](#).
- c. An increase in the number of through lanes.
- d. Addition of an auxiliary lane (except a turn lane).
- e. Addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange.
- f. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane.
- g. Addition of a new or substantial alteration of a weigh station, rest stop, ride-

share lot or toll plaza.

2. 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 studios.

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.*

3. Does the noise analysis identify a noise impact? *If yes, explain in N.4*

4. Summarize the findings of the attached noise analysis and noise abatement worksheet, if applicable: The Richardson Highway MP 359 Railroad Grade Separated Facility project does not meet the federal and state threshold requirements for preparing a quantitative highway noise impact and mitigation analysis. Vertical alteration did not meet criteria described in the DOT&PF Noise Policy (2018) for further noise analysis. Attachment 5 presents data to support the conclusion that a noise analysis is not warranted.

This determination was made for the grade-separated railroad overpass. The Activity Categories present in the vicinity of the project area include both B (3,600 feet to 4,350 feet) and C (1,800 feet).

O. Water Quality Impacts

N/A YES NO

1. Project would involve a public or private drinking water source. *If yes, explain in O.7*

2. Project would result in a discharge of storm water to a Water of the U.S. (per [40 CFR 230.3\(s\)](#))

3. Project would discharge storm water into or affect an ADEC designated Impaired Waterbody. *If any of the Impaired Waterbodies have an approved or established Total Maximum Daily Load, describe project impacts in O.7*

a. List name(s), location(s), and pollutant(s) causing impairment:

N/A

4. Estimate the acreage of ground-disturbing activities that will result from the project?

Approximately 50 acres.

O. Water Quality Impacts

N/A YES NO

- 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?

 - a. If yes, list APDES permit number and type: AKS053406
- 6. Would the project discharge storm water to a water body within a national park or state park; a national or state wildlife refuge?
- 7. Summarize the water quality impacts and mitigation, if any. *Include any commitments or mitigative measures in [Section V](#).*

The project is located within the Fairbanks MS4 boundary, but there are no MS4 storm water conveyances in the project area and no discharges to MS4 or Waters of the U.S. To aid in storm water management, CGP coverage will be obtained and a SWPPP with BMPs will be developed.

P. Construction Impacts

N/A YES NO

- 1. There will be temporary degradation of water quality.
- 2. There will be a temporary stream diversion.
- 3. There will be temporary degradation of air quality.
- 4. There will be temporary delays and detours of traffic.
- 5. There will be temporary impacts on businesses.
- 6. There will be temporary noise impacts.
- 7. There will be other construction impacts (e.g. TCEs/TCPs, utility relocates, staging areas, etc.).
- 8. Summarize construction impacts and mitigation for each 'yes' above. *Include any commitments or mitigative measures in [Section V](#).*

Air quality: Temporary degradation of air quality may occur from the use of heavy equipment through emissions and airborne particulates. To mitigate for air quality, watering of dust-prone areas during construction will minimize impacts.

Access: Traffic access will be maintained during construction; however, there could be temporary access delays from flagging operations.

Noise: Minor and temporary increase of noise levels would occur due to operation of construction equipment. The use of construction equipment producing excessive noise (e.g., pile driver) will conform to local noise ordinances.

Utility relocates: There are 2 transmission line crossings and a communication line that will need to be adjusted or relocated.

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

YES NO

- 1. Section 4(f) ([23 CFR 774](#))
 - a. Was detailed Section 4(f) resource identification conducted for this project, other than that required for Section 106 compliance? *If no, attach consultation with the NEPA Program Manager stating further Section 4(f) resource identification was not required.* *
 - b. Does a Section 4(f) resource exist within the project area; or is the project adjacent to a Section 4(f) resource? *If yes, attach consultation with the NEPA Program Manager to determine applicability of Section 4(f). If no, skip to Q.2.* *

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

YES NO

- c. Does an exception listed in [23 CFR 774.13](#) apply to this project? *If yes, attach consultation with the NEPA Program Manager, and documentation from the official with jurisdiction, if required.* *
 - d. Does the project result in the “use” of a Section 4(f) property? “Use” includes a permanent incorporation of land, adverse temporary occupancy, or constructive use. If no, attach consultation with the NEPA Program Manager and skip to Q.2. *
 - e. Has a *de minimis* impact finding been prepared for the project? *If yes, attach the finding.* *
 - f. Has a Programmatic Section 4(f) Evaluation been prepared for the project? *If yes, attach the evaluation.* *
 - g. Has an Individual Section 4(f) Evaluation been prepared for the project? *If yes, attach the evaluation.* *
2. Section 6(f) (36 CFR 59)
- 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?
 - b. Is the use of the property receiving LWCFA funds a “conversion of use” per Section 6(f) of the LWCFA? *Attach the correspondence received from the ADNR 6(f) Grants Administrator.*
3. Summarize Section 4(f)/6(f) involvement, if any:
There are no 4(f)/6(f) properties in the proposed project area.

III. Permits and Authorizations

N/A YES NO

- 1. USACE, Section 404/10 Includes Abbreviated Permit Process, Nationwide Permit, and General Permit
- 2. Coast Guard, Section 9
- 3. ADF&G Fish Habitat Permit ([Title 16.05.871](#) and [Title 16.05.841](#))
- 4. Flood Hazard
- 5. ADEC Non-domestic Wastewater Plan Approval
- 6. ADEC 401
- 7. ADEC APDES
- 8. Noise
- 9. Eagle Permit
- 10. Other. If yes, list below.

See the project file for documentation regarding the non-domestic wastewater plan.

IV. Comments and Coordination

N/A YES NO

- 1. Public/agency involvement for project. *Required if protected resources are involved.*

2. Public Meetings. Date(s): Online Open House December 19, 2018- January 25, 2019 (Attachment 6) <http://dot.alaska.gov/nreg.rich369/>
3. Newspaper ads. *Attach certified affidavit of publication as an appendix.*
 Name of newspaper and date: Fairbanks Daily News-Miner December 26, 2018, January 6, 2019 and January 16, 2019 (Attachment 7)
4. Alaska Online Public Notice date: January 2, 2019 (Attachment 8)
5. Agency scoping letters. Date sent: February 8, 2019 (Attachment 9A)
6. Agency scoping meeting. Date of meeting: N/A
7. Field review. Date: N/A
8. Summarize comments and coordination efforts for this project. Discuss pertinent issues raised. *Attach correspondence that demonstrates coordination and that there are no unresolved issues.*
 Comments were received in response to the agency scoping letters and responses were sent (Attachment 9B). There are no unresolved issues.

 A meeting was held to coordinate with stakeholders (Attachments 10A and 10B). Comments were submitted by stakeholders and members of the public (Attachment 10C). There are no unresolved issues.

V. Environmental Commitments and Mitigation Measures

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

- No mechanical vegetation clearing during the USFWS recommended nesting window of May 1st to July 15th.

Mitigation Measures:

- Cost-efficient mitigation measures (e.g., wash equipment) are recommended to minimize the transport of propagules off-site. Prevention measures to reduce the risk of introducing additional species include using certified weed-free seed mixes for revegetation and washing equipment.

VI. Environmental Documentation Approval

N/A YES NO

1. Do any unusual circumstances exist, as described in [23 CFR 771.117\(b\)](#)? *If yes, attach consultation with the NEPA Program Manager demonstrating that a CE is appropriate.* *
2. The project meets the criteria of one of the following [DOT&PF Programmatic Approvals](#) authorized in the Nov. 13, 2017 "[Chief Engineer Directive – Programmatic Categorical Exclusions](#)".
- *If yes, select the appropriate Programmatic Approval below, and the CE documentation form may be approved by the Regional Environmental Manager.*
 - *If no, the CE documentation form must be approved by a NEPA Program Manager.*
- a. Programmatic Approval 1
- b. Programmatic Approval 2
- c. Programmatic Approval 3

VII. Environmental Documentation Approval Signatures

Prepared by: Holly J. McKinney Date: 09/14/2020
[Signature] Environmental Impact Analyst

Holly McKinney
[Print Name] Environmental Impact Analyst

Reviewed by: Colleen Ackiss Date: 09.15.2020
[Signature] Engineering Manager

Colleen Ackiss
[Print Name] Engineering Manager

Programmatic CE

Approved by: **Brett Nelson** Digitally signed by Brett Nelson
DN: cn=Brett Nelson, o=DOT&PF, ou=Northern
Region, email=brett.nelson@alaska.gov, c=US
Date: 2020.09.21 14:52:11 -08'00' Date: 9/21/2020
[Signature] Regional Environmental Manager

Brett Nelson
[Print Name] Regional Environmental Manager

Non-Programmatic CE

Approval Recommended by: _____ Date: _____
[Signature] Regional Environmental Manager

[Print Name] Regional Environmental Manager

Approved by: _____ Date: _____
[Signature] NEPA Program Manager

[Print Name] NEPA Program Manager

Attachment 1

Figures

1A - Study Area Map

1B – Project Overview Map



- DOT Milepost
- - Railroad
- Study Area

Figure 1A
 Study Area
 Richardson Highway
 Richardson Highway MP 359, Fairbanks, Alaska

↑
 N
 not to scale



- - - - - BICYCLE AND PEDESTRIAN PATH
- - - - - EXISTING RAILROAD
- TROOP ACCESS

not to scale

Figure 1B

PROJECT IMPROVEMENTS OVERVIEW



Attachment 2

Section 106 Documents

2A – Section 106 Initiation

2B – Section 106 Findings

2C- Section 106 Concurrence

2D- PA Update

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Ms. Judith Bittner
State Historic Preservation Officer
Alaska Office of History and Archaeology
550 W. 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

Dear Ms. Bittner:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

We request your input on our proposal so that we can incorporate your concerns into project development. Your timely response will greatly assist our compliance efforts and the preparation of any required environmental documentation. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



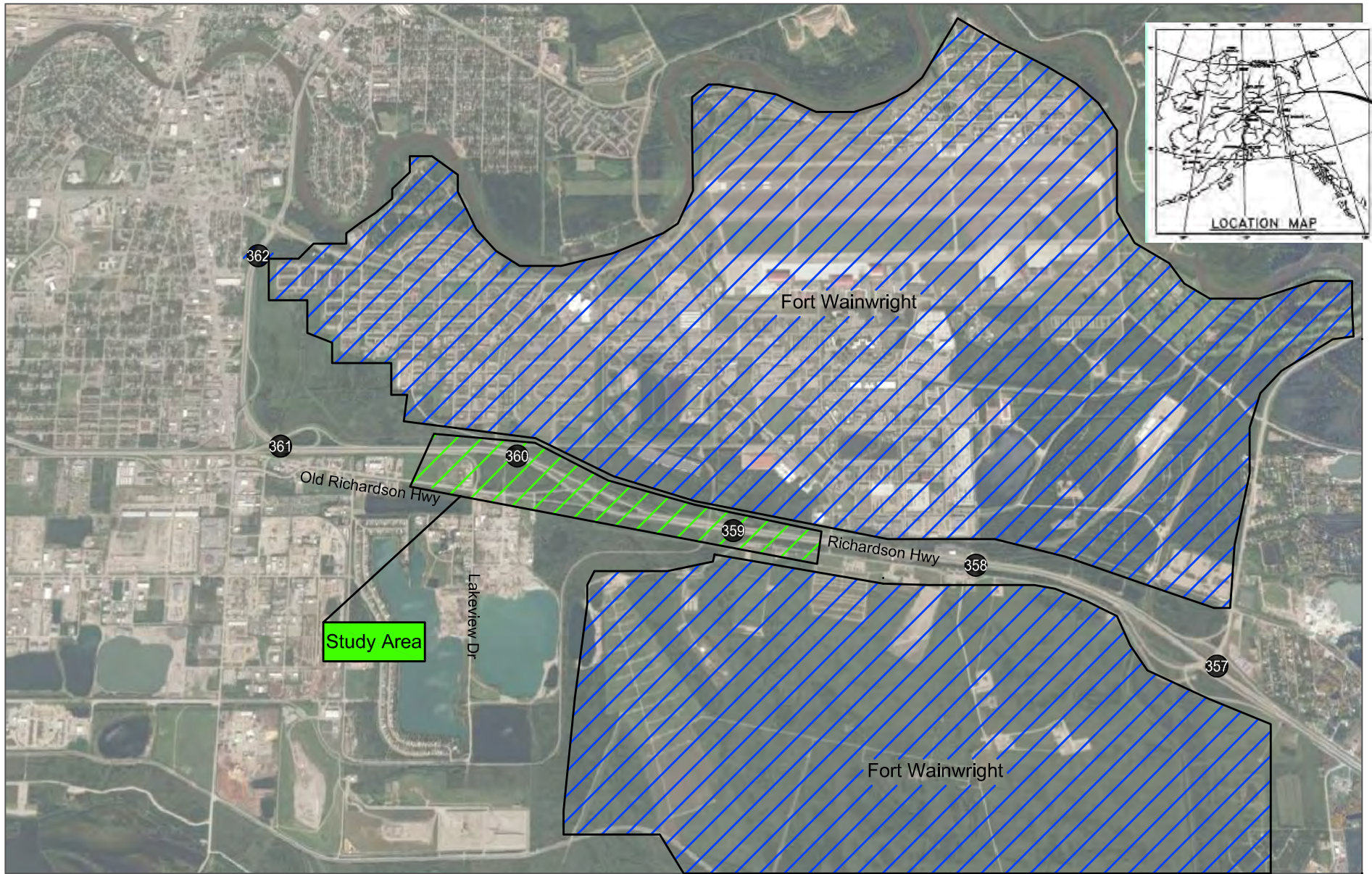
Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

- Figure 1 Location & Vicinity
- Figure 2. Study Area

Electronic cc w/ enclosures:

- Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
- Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
- Kathy Price, DOT&PF, Statewide Cultural Resources Manager
- Alan Skinner, DOT&PF Northern Region, Design Engineer



- Approximate Milepost Locations

Study Area Vicinity Fairbanks, Alaska

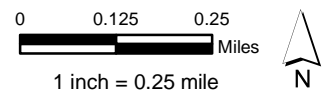
Figure
1

Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project, Project Location Map

K:\H_Anchorage\projfile\19230 - Richardson Hwy MP 359 Interchange Study\dwg\figs\19230_Figures.dwg Jun 01, 2017 - 4:45pm - jmakosian Layout Tab: Study Area



Figure 2
Study Area
Richardson Highway
Richardson Highway MP 359, Fairbanks, Alaska



DRAFT 1/15/2019

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Melissa Kellner, Liaison
FNSB-Commission on Historic Preservation
Fairbanks-North Star Borough-Borough Administrative Center
809 Pioneer Road
Fairbanks, Alaska 99701

Dear Ms. Kellner:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

The Honorable Jim Matherly, Mayor
City of Fairbanks
800 Cushman Avenue
Fairbanks, Alaska 99701

Dear Mayor Matherly:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

The Honorable Bryce J. Ward, Mayor
Fairbanks-North Star Borough
P.O. Box 71267
Fairbanks, Alaska 99707-1267

Dear Mayor Ward:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the *2017 First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.


Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Ron Inouye, President
Tanana-Yukon Historical Society
PO Box 71336
Fairbanks, Alaska 99707-1336

Dear Mr. Inouye:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the *2017 First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Victor Joseph, President/Chairman
Tanana Chiefs Conference
122 First Avenue, Suite 600
Fairbanks, Alaska 99701

Dear Mr. Joseph:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Aaron Schutt, President
Doyon, Limited
1 Doyon Place
Fairbanks, Alaska 99701

Dear Mr. Schutt:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
Consultation Initiation

January 18, 2019

Sharon McConnell, Executive Director
Denakkanaaga
101 Dunkle Street, Suite 135
Fairbanks, Alaska 99701

Dear Ms. McConnell:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019 which resulted in the identification of four (4) AHRS sites within the Study Area which are shown in Table 1 below:

Table 1: AHRS Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
Consultation Initiation

January 18, 2019

Elizabeth Cook
USAG FWA Cultural Resources Manager/Native Liaison
Directorate of Public Works
IMFW-PWE(COOK)
1060 Gaffney Rd #4500
Fort Wainwright, AK 99703-4500

Dear Ms. Cook:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the near MP 359 of the Richardson Highway. The project location is legally described T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

For purposes of the National Historic Preservation Act, the DOT&PF, acting as a Federal agency, is initiating this consultation with you to assist us in identifying historic properties that may be affected by the proposed project. Consultation is being conducted in accordance with the 2017 *First Amended Programmatic Agreement...for the Federal-Aid Highway Program in Alaska*.

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/ Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Study Area

The proposed Study Area includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 2).

The Area of Potential Effect (APE) will be defined after comments are received from your agency and other consulting parties.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRs) database on January 16, 2019 which resulted in the identification of four (4) AHRs sites within the Study Area which are shown in Table 1 below:

Table 1: AHRs Sites within the Study Area

Site Number	Site Name	Site Comments	Eligibility Determination?
FAI-01752	Alaska Military Highway Telephone and Telegraph Line	Historic Euroamerican site. The portion of the line shown on Fort Wainwright lands was not located during a 2015 survey.	Segment within Study Area not located during Ft. Wainwright Inventory.
FAI-01778	Building 3483: Vehicle Wash Facility	Rectangular building with garage bay doors on either end for entering and exiting vehicles and separate personnel entrances. Built in the 1990’s or later.	None-Does not meet Criteria for Evaluation, Criteria G or 50 year threshold.
FAI-02137	Sign 3	Richardson Gate sign. A wood sign embossed “U.S. Army Fort Wainwright” set in rough-cut stone with an aluminum cap.	Determined not eligible 5/4/2012.
FAI-02328	Richardson Highway	Historic Euroamerican Interstate Highway System. Portion of highway within the Study area is not Treated as Eligible.	Segment part of Interstate Highway Route (2005) exempt from Section

Site Number	Site Name	Site Comments	Eligibility Determination?
			106 review.

Under the Alaska Historic Roads Programmatic Agreement Interim Guidance, a group of Alaska roads has been identified which are being treated as eligible for the NRHP. The Richardson Highway (FAI-02328/XBD00409) is one of these roads but the segment currently being considered for eligibility (Milepoint 132.491-269.312) is not within this project Study Area.

Consultation Efforts

The following consulting parties are being contacted regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you have questions or comments related to this proposed project, I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location & Vicinity
Figure 2. Study Area

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
No Historic Properties Affected
ATTENTION: This finding contains one (1) DOE

March 14, 2019

Ms. Judith E. Bittner
State Historic Preservation Officer
Alaska Office of History and Archaeology
550 W. 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

Dear Ms. Bittner:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National

Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

Please direct your concurrence or comments to me at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

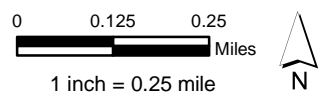
Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer



- DOT Mileposts
- Road
- + Railroad
- Area of Potential Effect (APE)
- FAI-01752 AMHT&TL Route

Figure 1
 Location, Vicinity & Area of Potential Effect (APE)
 with AHRS Site Locations
 Richardson Highway MP 359, Fairbanks, Alaska



Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

Victor Joseph, President/Chairman
Tanana Chiefs Conference
122 First Avenue, Suite 600
Fairbanks, Alaska 99701

Dear Mr. Joseph:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/0A24033
No Historic Properties Affected

March 14, 2019

Aaron Schutt, President
Doyon, Limited
1 Doyon Place
Fairbanks, Alaska 99701

Dear Mr. Schutt:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

Sharon McConnell, Executive Director
Denakkanaaga
101 Dunkle Street, Suite 135
Fairbanks, Alaska 99701

Dear Ms. McConnell:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:
Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

The Honorable Jim Matherly, Mayor
City of Fairbanks
800 Cushman Avenue
Fairbanks, Alaska 99701

Dear Mayor Matherly:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology's (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

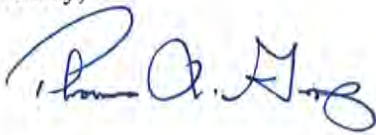
The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

The Honorable Bryce J. Ward, Mayor
Fairbanks-North Star Borough
P.O. Box 71267
Fairbanks, Alaska 99707-1267

Dear Mayor Ward:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

Melissa Kellner, Liaison
FNSB-Commission on Historic Preservation
Fairbanks-North Star Borough-Borough Administrative Center
809 Pioneer Road
Fairbanks, Alaska 99701

Dear Ms. Kellner:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

Ron Inouye, President
Tanana-Yukon Historical Society
PO Box 71336
Fairbanks, Alaska 99707-1336

Dear Mr. Inouye:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer

Department of Transportation and Public Facilities



THE STATE
of **ALASKA**
GOVERNOR MIKE DUNLEAVY

Northern Region
Design and Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5316
Main: 907-451-2273
Toll free: 800-451-2363
Dot.alaska.gov

In Reply Refer To:

Richardson Highway MP 359 Railroad Grade Separated Crossing
State/Federal Project Number: Z607340000/OA24033
No Historic Properties Affected

March 14, 2019

Elizabeth Cook
USAG FWA Cultural Resources Manager/Native Liaison
Directorate of Public Works
IMFW-PWE(COOK)
1060 Gaffney Rd #4500
Fort Wainwright, AK 99703-4500

Dear Ms. Cook:

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration (FHWA) under 23 U.S.C. 327, and is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing near MP 359 of the Richardson Highway. The project location is legally described as T.001S, R.001E Section 19, and T.001S, R.001W, Section 24, Fairbanks Meridian, USGS Quadrangle Fairbanks D-2 and is shown on Figure 1.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Consultation for this project is being conducted in accordance with the 2017 *First Amended Programmatic Agreement... for the Federal-Aid Highway Program in Alaska*. The DOT&PF, acting as a Federal agency, finds that no historic properties would be affected by the proposed project pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National

Historic Preservation Act. This submission provides documentation in support of this finding, as required at 36 CFR 800.11(d).

Project Description

The DOT&PF is proposing to construct an interchange at the Richardson Highway/Old Richardson Highway intersection and a railroad grade separation at the existing railroad crossing to the east. Bridges will be constructed for the interchange and railroad grade separation. The interchange will be designed to accommodate future access needs for Ft. Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway. Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential separated pathway.

Area of Potential Effect (APE)

The APE includes the direct footprint of the new interchange and new railroad grade separation, associated new roadways, roadway realignments, the entire width of Richardson Highway right-of-way from approximately 1650 feet east of MP 359 to 2600 feet west of MP 360, and the entire width of right-of-way of the Old Richardson Highway from its intersection with the Richardson Highway to 600 feet west of the Lakeview Drive/Old Richardson Highway intersection (Figure 1). Potential visual effects created by the project ground disturbing activities on adjacent potential historic properties/AHRS sites were considered when determining the boundaries of the APE. None were identified.

Identification Efforts

Initial identification efforts consisted of a review of the Office of History Archaeology’s (OHA) Alaska Heritage Resources Survey (AHRS) database on January 16, 2019. A March 13, 2019 review of the AHRS resulted in the identification of two (2) AHRS sites within the APE which are shown in Table 1 below:

Table 1: AHRS Sites within the APE

Site Number	Site Name	Site Comments	Eligibility Determination
FAI-01752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Built in 1942-43 in support of the U.S. Military during WWII providing a secure dedicated set of communication lines. It extended from Edmonton, Alberta, Canada running adjacent to the Alaska Highway and continuing up the Richardson Highway to Fairbanks, Alaska.	Segment potentially within the APE MP 358 & 362 on Fort Wainwright lands was not located during a 2015 survey. Segment determined not eligible pending SHPO concurrence.
FAI-02328	Richardson Highway	357 mile road that extends from Valdez to Fairbanks. The portion of highway within the APE is not a part of the road considered eligible for the NRHP under Criterion A it is part of the Interstate Highway System.	Segment part of Interstate Highway Route (2005) exempt from Section 106 review and does not require a Determination of Eligibility (DOE).

Determination of Eligibility

FAI-01752- Alaska Military Highway Telephone & Telegraph Line (AMHT&TL)

Linear Feature; Built 1942-43. The AMHT&TL was built in fifteen months mainly by civilian construction workers; a small detachment of the 255th Signal Corps also worked on the line which ran from Edmonton, Alberta, Canada and Fairbanks, Alaska along the Alaska Highway corridor. It was built in response to increased need of secure military lines during World War II and included civilian lines as well. It consisted of seven telephone channels and fourteen telegraph-teletype lines. When the line reached Fairbanks it was connected to new and existing telephone and telegraph lines and ran along the Alaska Railroad corridor.

No portions of the AMHT&TL were identified during the 2015 NLURA Interior Gas Utility Survey inventory or any of the U.S. Army Garrison Alaska-Fort Wainwright facilities inventories 2004-2015. The original line was an overhead powerline that consisted of ten-pin cross arms on local timber poles. Updates to utilities over the past 75 years include capacity upgrades, fiber-optics and relocation of some utilities both above and underground. The current power poles are located on the south southwestern side of the Richardson Highway and not in the corridor adjacent to Ft. Wainwright as shown on the AHRS. Current installations consist of modern pole top style on pressure-treated wooden poles.

FAI-01752 is no longer extant between MP 358 & 362 and the Criteria for Evaluation (36CFR§60.4) cannot be applied to this segment of the AMHT&TL as it has no integrity. Therefore, the DOT&PF has determined that this portion of the AMHT&TL is not eligible for the National Register of Historic Places (NRHP) and seeks the SHPO's concurrence.

Finding of Effect

Overall, the DOT&PF has determined that the project activities will not have an effect on historic properties as no NRHP eligible properties have been located within the project APE and seeks the Alaska SHPO concurrence with a **no historic properties affected** finding for the project activities as presented.

Consultation Efforts

The following consulting parties were sent Initiation of Consultation Letters on January 18, 2019 regarding this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

The Alaska SHPO office responded to the letter via email on January 28, 2019 stating that they had no objection to the Study Area/APE. The Fairbanks North Star Borough Commission on Historic Preservation responded via email on March 4, 2019 stating that they "made an unanimous motion to support the crossing, but felt no action was needed on their part". No other responses were received.

The following parties will be receiving Findings Letters for this project: the State Historic Preservation Officer (SHPO); The Fairbanks North Star Borough; the Fairbanks North Star

Borough Commission on Historic Preservation; the Tanana-Yukon Historical Society, U.S. Army Garrison Alaska-Fort Wainwright, Tanana Chiefs Conference; Doyon, Limited; and Denakkanaaga, Inc. No federally recognized tribes or communities have been identified within 50 miles of the Study Area.

If you wish to comment on this finding I can be reached at the address above, by telephone at 907-451-5293, or by e-mail at thomas.gamza@alaska.gov.

Your timely response will greatly assist us in incorporating your concerns into project development. For that purpose, we respectfully request that you respond within thirty days of your receipt of this correspondence.

Sincerely,



Thomas A. Gamza
Cultural Resource Specialist-Archaeologist (PQI)
State of Alaska DOT&PF, Northern Region

Enclosures:

Figure 1 Location, Vicinity & Area of Potential Effect with AHRS Site Locations

Electronic cc w/ enclosures:

Colleen Ackiss, P.E. DOT&PF Northern Region, Project Manager
Brett Nelson, DOT&PF Northern Region, Regional Environmental Manager
Kathy Price, DOT&PF, Statewide Cultural Resources Manager
Alan Skinner, DOT&PF Northern Region, Design Engineer



THE STATE
of ALASKA

GOVERNOR MICHAEL J. DUNLEAVY

April 4, 2019

Department of Natural Resources

DIVISION OF PARKS & OUTDOOR RECREATION
Office of History & Archaeology

550 West 7th Avenue, Suite 1310
Anchorage, AK 99501-3561
907.269-8700

<http://dnr.alaska.gov/parks/oha>

File No.: 3130-1R FHWA/2019-00057

Subject: Richardson Highway MP 359 Railroad Grade Separated Crossing,
Z607340000/0A24033

Thomas Gamza
Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, AK 99709-5316

SENT BY E-MAIL
DATE 4/5/19

Dear Mr. Gamza,

The Alaska State Historic Preservation Office (AK SHPO) received your letter (dated March 14, 2019) on March 18, 2019. Following our review of the documentation provided, we have the following comments on the determination of eligibility (Table 1) for listing on the National Register of Historic Places (NRHP).

Table 1. Determination of Eligibility

No.	AHRS#	Site Name	DOT&PF Determination	SHPO Comment
1	FAI-1752	Alaska Military Highway Telephone and Telegraph Line (AMHT&TL)	Not Eligible	There is no need to evaluate FAI-1752 (AMHT&TL) because it is evident from your research that the AMHT&TL segment (MP 358-362 of the Richardson Highway) has been destroyed. Therefore, there is nothing to evaluate. We will update the AHRS card for FAI-1752 with this information.

Additionally, we reviewed the subject undertaking pursuant to Section 106 of the National Historic Preservation Act. Following our review, we concur with your finding of no historic properties affected for the subject undertaking.

Please note that as stipulated in *36 CFR § 800.3*, other consulting parties such as the local government and Tribes are required to be notified of the undertaking. Additional information provided by the local government, Tribes or other consulting parties may cause our office to re-evaluate our comments and recommendations. Please note that our comment letter does not end the 30-day review period provided to other consulting

parties. Should unidentified cultural resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the NRHP eligibility criteria (36 CFR § 60.4) in consultation with our office.

Thank you for the opportunity to review and comment on the subject undertaking. Please contact Mark Rollins at 269-8722 or mark.rollins@alaska.gov if you have any questions or if we can be of further assistance.

Sincerely,



Judith E. Bittner
State Historic Preservation Officer

JEB:mwr

106 PA Streamlined Project Review Screening Record *for project updates*

Form version
2-23-19

*This form is required when Programmatic Allowances are being considered.
It is not needed when circumstances lead directly to Sec 106 consultation under Appendix D.*

Project Name: Yes No
State Project #: **Federal Project #:** **Assignable:** Yes No

Project Description:

The project as a whole, which was previously reviewed on April 5, 2019, consists of replacing the existing at-grade railroad crossing and signal infrastructure with a new grade-separated bridge that raises the Richardson Highway main line over the railroad. Additional project activities include connecting to a separated-pathway along the northern right-of-way line, creating a troop access tunnel under the Richardson Highway, and improving: pavement markings, signage, drainage, and highway illumination (Figures 1A and 1B). This project update adjusts the project description to include relocating utility and overhead transmission lines, and removing the proposed highway interchange. The removal of the highway interchange from the project description, will result in a reduction in the overall size of the project APE. All project activities are listed below.

Project Activities (please list individually; continue on next page if needed)	Indicate which Programmatic Allowance applies (Ex: Tier 1.a or Tier 2.b)	Are all conditions met, including Historic Rds Analysis if applicable?*	
		Yes	No
Utility relocates	2.1	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Overhead transmission line relocates	2.1	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No

** If yes, attach documentation of identification efforts that support this decision. This documentation must be sufficient to allow any reviewing party to understand the basis for the decision. The Area of Potential Effect (APE) must be included in this documentation for Tier 2 allowances. If Historic Roads Analysis applies, also document which HRA option was used, and how it was applicable.*

Description of APE (attach figures): *If all activities above are Tier 1, an APE is not required*

The APE for this project is shown on Figure 1A, and includes the entire right-of-way of the Richardson and Old Richardson Highways, which parallel each other around mile point 359. This UPDATE reduces the size of the APE, as the proposed highway interchange has been removed from the project APE.

Screening Results: This is an addendum to a previously reviewed project. See Comments Section for details.

Does this update include any activities which are not covered under the Appendix B Programmatic Allowances and/or which do not meet the conditions? Yes No
If yes, conduct standard Section 106 review for the entire project in accordance with PA Appendix D.

I have screened this update and determined that it Does Does Not qualify for processing as a Programmatic Allowance.

Holly McKinney

Holly McKinney

Date:

DOT&PF PQI (printed name and signature)

Continuation Sheet- 106 PA Screening Review Record

Project Activities-Continuation	Indicate which Programmatic Allowance applies	Are all conditions met, including Historic Rds Analysis if applicable?*	
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No
		<input type="checkbox"/> Yes	<input type="checkbox"/> No

Additional comment space: (include Historic Roads Analysis if applicable)

This 106 PA UPDATE reduces the APE in size as the proposed highway interchange has been removed from the project description. This UPDATE also adds utility and overhead transmission line relocations to the project description.

This project meets all of the Tier 2 Allowance General conditions (1-6) as outlined in the Programmatic Agreement (PA) Appendix B October 2018.

1. The UPDATED project activities are occurring adjacent to existing transportation facilities (the Richardson and Old Richardson Highways).
2. The APE is not within a National Historic Landmark.
3. The Project is not within or adjacent to a Historic District (AHRs Database (08/03/2020)).
4. There are not standing buildings or structures within the APE that are more than 45 years of age. Therefore, the project qualifies for streamlined review under general conditions 4.c.
- 5.a. The project UPDATE activities are occurring within previously disturbed ground by initial road and path construction and subsequent maintenance activities.
6. The project has no known tribal concerns or public controversy related to historic preservation.

this determination only applies to the project as it has been presented as of August 3, 2020. Any modification to the project APE or other specifics will require further cultural resources review.

Attachment 3

Air Quality Conformity Documentation

3A – FNSB Air Quality Boundaries and Exhibits

3B – Conformity Analysis for the 2040

Metropolitan Transportation Plan

3C- Air Quality Conformity Memorandum

FNSB Air Quality Boundaries

Fairbanks Portion of Air Quality Control Zone

 95.915884

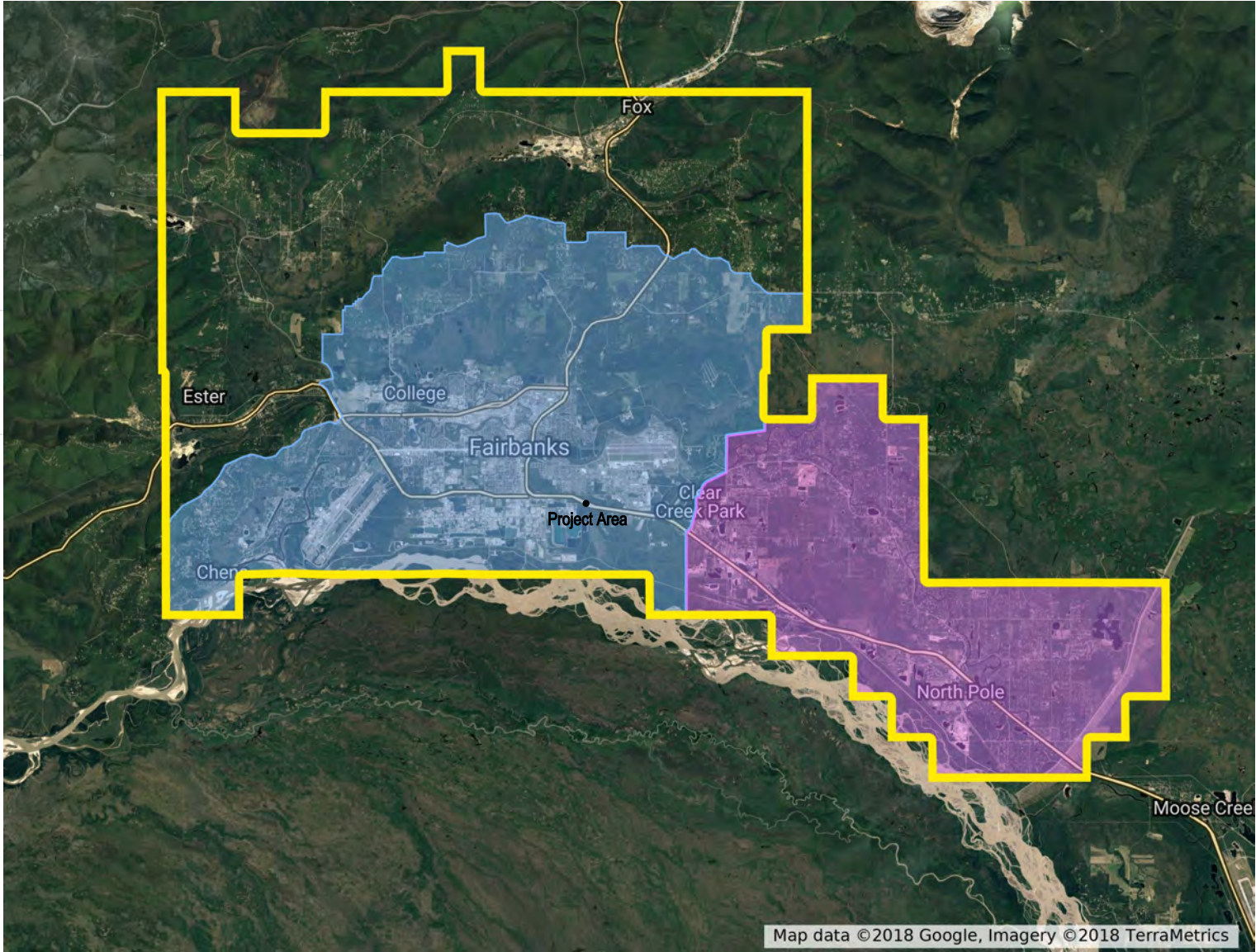
North Pole Portion of Air Quality Control Zone

 62.996234

PM 2.5 Nonattainment Area

 PM 2.5 Non-Attainment Area

The different boundaries for air quality regulations in the Fairbanks North Star Borough as of October 2017.





U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION
ALASKA DIVISION
709 W. 9TH STREET, ROOM 851
P.O. BOX 21648
JUNEAU, ALASKA 99802-1648

FEDERAL TRANSIT ADMINISTRATION
915 SECOND AVENUE, SUITE 3142
SEATTLE, WASHINGTON 98174

January 30, 2019

Mr. Jackson Fox
Executive Director
Fairbanks Metropolitan Area Transportation System
2301 Peger Road
Fairbanks, AK 99709

In Reply Refer To:

Subject: FMATS 2045 Metropolitan Transportation Plan Air Quality Conformity

Dear Mr. Fox:

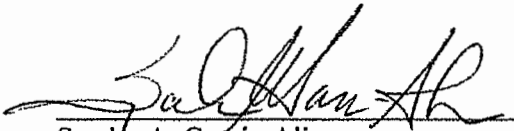
The air quality conformity analysis for the Fairbanks Metropolitan Area Transportation System (FMATS) 2045 Metropolitan Transportation Plan (MTP) submitted with your letter of January 23, 2019 has been reviewed. We find that:

- Total regional vehicle-related PM 2.5 and NO_x precursor emissions for the required analysis years of 2019, 2025, 2035, and 2045 are below the applicable motor vehicle emission budgets in the moderate State Implementation Plan (SIP).
- All CO conformity requirements for the limited maintenance plan are met.
- Interagency consultation was conducted in accordance with Federal requirements.

The Federal Highway Administration and Federal Transit Administration approve the conformity determination for the FMATS 2045 Metropolitan Transportation Plan.

If you have any questions, please contact Mr. John Lohrey, FHWA Transportation Planner at (907) 586-7428, or Mr. Ned Conroy, FTA Community Planner at (206) 220-4318.

Sincerely,



Sandra A. Garcia-Aline
Division Administrator
Federal Highway Administration

LINDA M
GEHRKE

Digitally signed by LINDA M
GEHRKE
Date: 2019.01.30 11:58:10
-08'00'

Linda M. Gehrke
Regional Administrator
Federal Transit Administration

Electronically cc:

Ned Conroy, FTA
Judy Chapman, AK DOT&PF Northern Region

MEMORANDUM

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

TO: Colleen Ackiss, P.E.
Engineering Manager
Northern Region

DATE: 04/26/2019

FILE NO: Projects\Rich_Hwy\60734_Rich_359_GradeSepFac\07
Environmental\00 Env General\Air quality\TS Conformity

PHONE NO: 451-2283

FAX NO: 451-5390

FROM: Pam Golden, P.E. *PWG*
Traffic & Safety Engineer
Northern Region

SUBJECT: Richardson Hwy MP 359
Interchange and RR Grade Sep
Z7607340000/0A24033
Air Quality Conformity

40 CFR 93.126, Table 2, line #1 indicates railroad/highway crossing improvements are exempt from the requirement to determine conformance to adopted air quality plans, which applies to the railroad grade separation portion of subject project.

Line #2 of that same table indicates projects that correct, improve, or eliminate a hazardous location or feature are also exempt. It is the opinion of the Traffic & Safety office that this project eliminates a hazardous location. In the existing configuration, northbound Richardson Highway traffic wishing to exit the highway to access the Old Richardson Highway area crosses the southbound prism of the Richardson Highway at grade. Northbound drivers must exit to the left, which violates driver expectation. Further, trucks wishing to use the exit must weave across all northbound lanes of traffic due to being required to stop in the truck/bus lane at the railroad crossing that is also a part of this project. Posted highway speed in this area is 60 mph. Sight distance at the crossing is good; however this is the only at grade street crossing in the first 5.8 miles of the southbound prism of the Richardson Highway.

Crashes with vehicles traveling at 60 mph generally have more severe outcomes than those at lower speeds, making this an inherently high consequence location should crashes occur. This project aligns with Strategy 2 of Alaska's Strategic Highway Safety Plan as elimination of this at-grade intersection would remove the high speed conflict point.

pkg/kgb *kgb*

Attachment 4

Flood Zones

4A – Flood Zone A Figure

4B – Flood Zone A Map

4C - Location Hydraulics Study



USGS The National Map, Orthoimagery. Data refreshed April 2020

POWERED BY
esri

<p>PIN</p> <ul style="list-style-type: none"> Approximate location based on user input and does not represent an authoritative property location <p>MAP PANELS</p> <ul style="list-style-type: none"> Selected FloodMap Boundary Digital Data Available No Digital Data Available Unmapped <p>OTHER AREAS</p> <ul style="list-style-type: none"> Area of Minimal Flood Hazard Zone X Effective LOMRs Area of Undetermined Flood Hazard Zone D Otherwise Protected Area Coastal Barrier Resource System Area 	<p>SPECIAL FLOOD HAZARD AREAS</p> <ul style="list-style-type: none"> Without Base Flood Elevation (BFE) Zone A, V, A99 With BFE or Depth Regulatory Floodway Zone AE, AD, AH, VE, AR <p>OTHER AREAS OF FLOOD HAZARD</p> <ul style="list-style-type: none"> 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D 	<p>OTHER FEATURES</p> <ul style="list-style-type: none"> Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature <p>GENERAL STRUCTURES</p> <ul style="list-style-type: none"> Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
--	---	---

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly areas along drainage routes of small size. The community map regularly should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **Floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded, not exact, elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 0.0 foot from nearest vertical datum of 1988 (NAVD 88). Users of this product should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for the jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

Accreted Levee Height to Users: Check with your local community to obtain more information such as the estimated level of protection provided which may exceed the 1 percent annual chance level and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/basemapinfo.cfm>.

The projection used in the preparation of this map was Alaska State Plane 3 Zone (FIS zone 3003). The horizontal datum was NAD 83 GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structures and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA NGS12
National Geodetic Survey
SSMVC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3342

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3342, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from multiple sources. Base map files were provided in digital format by Fairbanks Storm Drainage, AK DNR, road USGS and BLM. This information was cleaned from various map scales during the time period 2001-2005.

The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the profile baseline, in some cases, may deviate significantly from the channel centerline or appear outside the channel.

Based on updated topographic information, this map reflects more detailed and up-to-date stream channel configurations and floodplain delineations than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel, distance that differ from what is shown on the map; also, the road to floodplain relationships for unreviewed streams may differ from what is shown on previous maps.

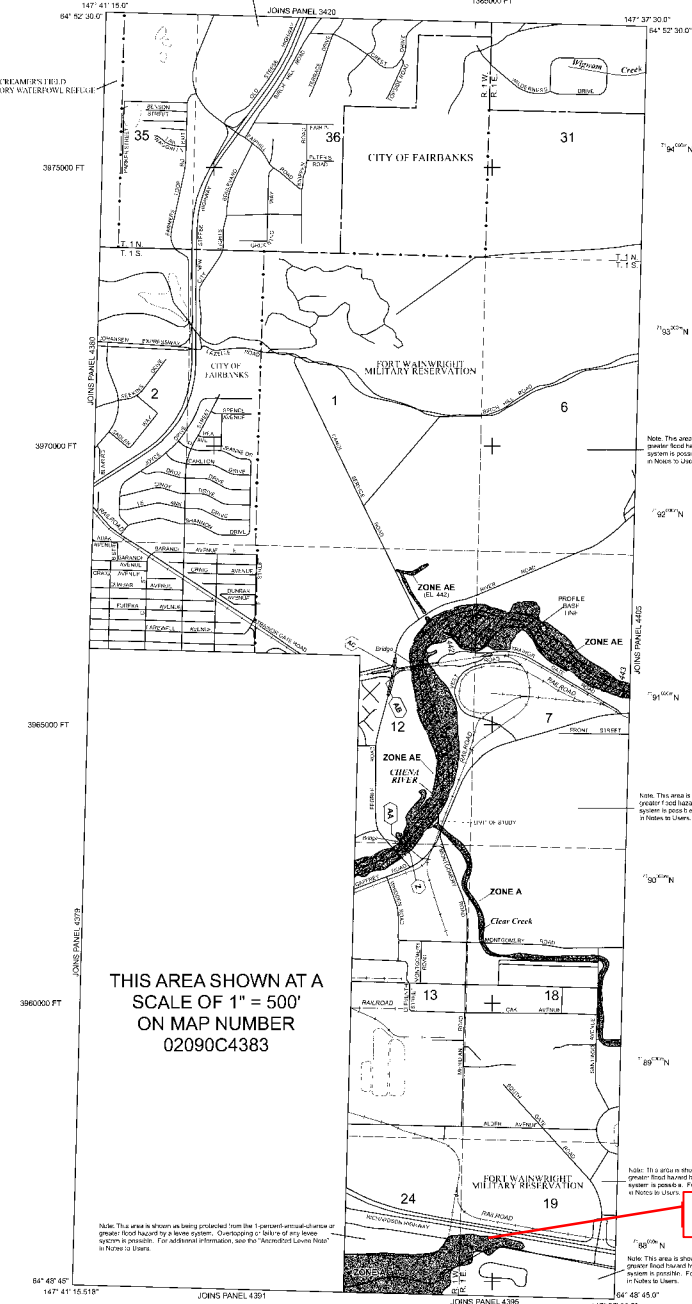
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels, community map repository addresses, and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://flooddata.gov>. Available products include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products or the National Flood Insurance Program in general please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-358-6277) or visit the FEMA website at <http://www.fema.gov/basemapinfo>.

FAIRBANKS-NORTH STAR BOROUGH
136000 FT 025009



THIS AREA SHOWN AT A SCALE OF 1" = 500' ON MAP NUMBER 02090C4383

Rich MP 359

Note: This area is shown as being protected from the 1 percent annual chance or greater flood hazard by a levee system. Overlapping or failure of any levee system is possible. For additional information, see the "Accreted Levee Height" Notes to Users.

Note: This area is shown as being protected from the 1 percent annual chance or greater flood hazard by a levee system. Overlapping or failure of any levee system is possible. For additional information, see the "Accreted Levee Height" Notes to Users.

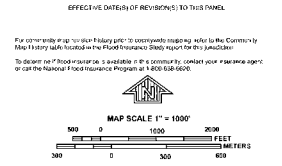
Note: This area is shown as being protected from the 1 percent annual chance or greater flood hazard by a levee system. Overlapping or failure of any levee system is possible. For additional information, see the "Accreted Levee Height" Notes to Users.

LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD**
The 1% annual chance flood (ACF) is the height of the water surface elevation of the flood. The 1% annual chance flood (ACF) is the height of the water surface elevation of the flood. The 1% annual chance flood (ACF) is the height of the water surface elevation of the flood.
- ZONE A** No Base Flood Elevation Determined
- ZONE AE** Base Flood Elevation Determined
- ZONE AR** Flood depths of 1 to 3 feet (usually areas of ponds); Base Flood Elevation Determined
- ZONE AR9** Flood depths of 1 to 3 feet (usually areas of ponds); Base Flood Elevation Determined
- ZONE AR** Special Flood Hazard Areas for protection from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the flood control system was not selected for protection from the 1% annual chance or greater flood. Zone AR9 indicates that the flood control system was selected for protection from the 1% annual chance or greater flood.
- ZONE V** Coastal Flood Hazard Areas for protection from the 1% annual chance or greater flood by a levee system.
- ZONE VE** Coastal Flood Hazard Areas for protection from the 1% annual chance or greater flood by a levee system.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that flood the peak of maximum flow so that the 1% annual chance flood can be carried without substantial increases in flood heights.

- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood, peak of 1% annual chance flood with average depths of six feet or less, or with design storm less than 1 square mile and based on a 100-year return period.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood depths are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway Boundary
- Zone Boundary
- CBRS and OPA Boundary
- Boundary of other Special Flood Hazard Areas of different return periods, flood depths or flood heights
- Base Flood Elevation and/or value reduction in feet
- Base Flood Elevation value where no form with height is shown is in feet



*Referenced to the North American Vertical Datum of 1988

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) unless otherwise noted.

3100004 1 500-foot contour map State Plane 3 Zone (FIS zone 3003) Transverse Mercator projection

1000-meter Universal Transverse Mercator grid is used, zone 6

Bench marks (see explanation in Notes to Users section of this FIRM report)

Map Symbols and Abbreviations

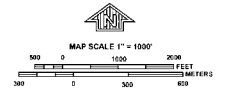
Refer to Map Repository for an Map Index

EFFECTIVE DATE OF COMMUNITY FLOOD INSURANCE RATE MAP: March 17, 2014

EFFECTIVE DATES OF REVISIONS: To this Panel

For community map users only: go to www.flooddata.gov to download community maps for the Community Map Repository located on the Flood Insurance Study report for this jurisdiction.

To obtain the Flood Insurance Study Report for this jurisdiction, contact your nearest office or the National Flood Insurance Program at 1-800-685-8600.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
FAIRBANKS NORTH STAR BOROUGH, ALASKA

PANEL 4385J

PANEL 4385 OF 7300
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY: FAIRBANKS NORTH STAR BOROUGH, ALASKA
COMMUNITY NUMBER: 02090C
PANEL NUMBER: 4385
SUFFIX: J

Map Service Center (MSC)
1-877-FEMA-MAP (1-877-358-6277)
<http://www.fema.gov/basemapinfo>

Map Scale: 1" = 1000'
Map Number: 02090C4385J
Effective Date: MARCH 17, 2014
Federal Emergency Management Agency

MEMORANDUM

State of Alaska
Department of Transportation & Public Facilities
Northern Region Materials

TO: Holly McKinney, PhD
Environmental Analyst
Northern Region

DATE: August 10, 2020

TELEPHONE NO: 451-5389

FROM: Jeff Stutzke, P.E.
Regional Hydraulics Engineer
Northern Region

SUBJECT: Rich Hwy MP 359 Railroad
Grade Separated Facility
Z607340000/A024033
Location Hydraulic Study

Introduction

This Location Hydraulics Study (LHS) was prepared to assess the impacts from the proposed railroad grade separation project near Milepost (MP) 359 on the Richardson Highway. The proposed work for this project has been determined to encroach onto a mapped 100-year floodplain.

Project Description

The project will replace the existing at-grade railroad crossing and signal infrastructure with a new grade-separated bridge(s) that raises the Richardson Highway main line over the railroad (Figure 1).

Additional work consist of:

- Grading
- Highway resurfacing
- Drainage improvements
- Utility relocations.
- Guardrail and end treatments.
- Highway illumination
- Replace all signs.
- Pavement highway markings.

Floodplain Encroachment

If a proposed action involves an encroachment, the impacts must be assessed in a location hydraulic study (LHS), as required under 23 CFR 650.111. An encroachment is any action (highway construction, reconstruction, rehabilitation, repair or improvement) within the limits of the base floodplain. The LHS is an assessment of floodplain hazards that usually does not require extensive engineering analysis. The LHS identifies and describes the floodplain context of the project and describes how the ADOT&PF will address risks and floodplain-related design objectives.

There are two specific types of floodplain encroachments to be considered in an LHS:

Longitudinal encroachment: An encroachment that is parallel to the direction of flow, such as a highway that runs along the edge of a river.

Significant Encroachment: A highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction- or flood- related impacts:

- A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
- A significant risk to life or property.
- A significant adverse impact on natural and beneficial floodplain values.

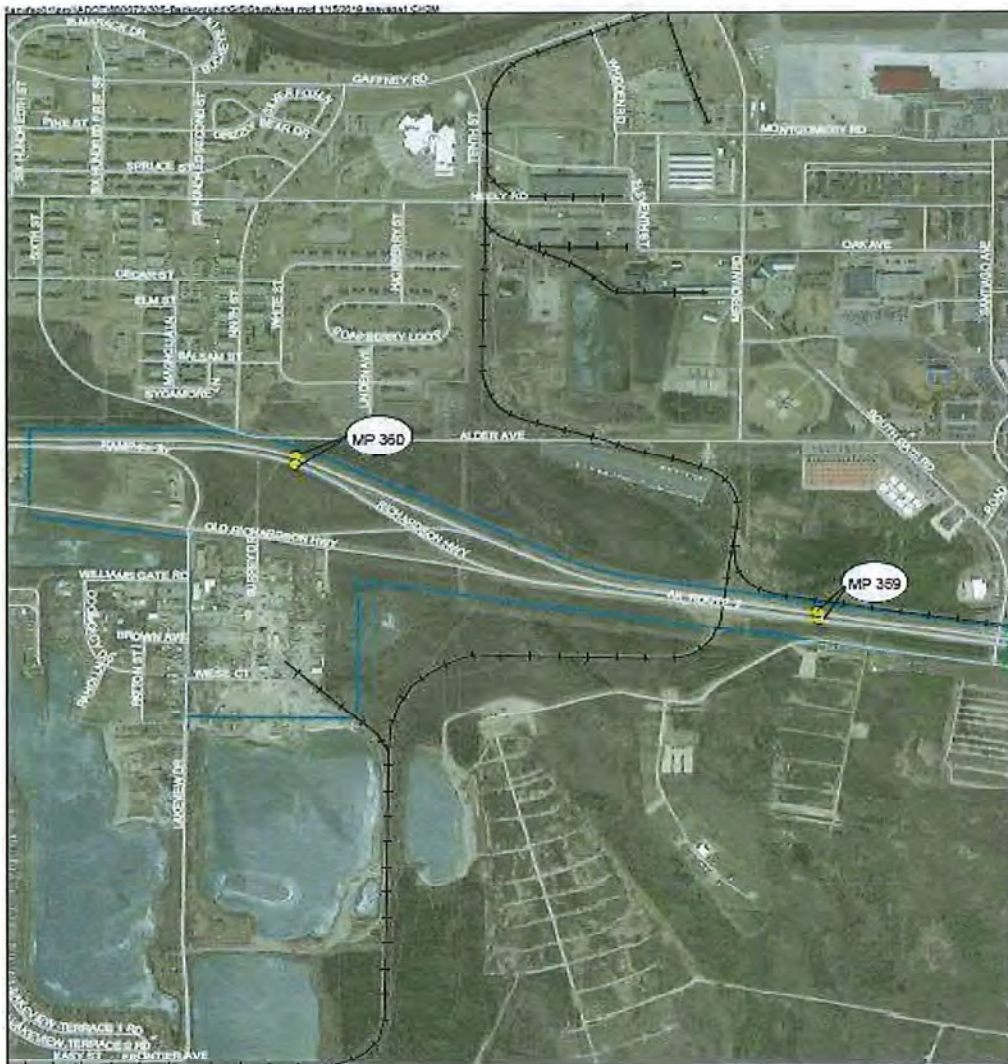


Figure 1 Project Site

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by FHWA and DOT&PF.

Floodplains

Federal Highway Administration (FHWA) regulations in 23 CFR 650 apply to encroachments in all base floodplains (1% annual chance flood hazard), not just those that are mapped and regulated by the Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP). Unmapped base floodplains are often called unregulated floodplains. This Richardson Highway project occurs in areas that have regulated (mapped) floodplains.

The FEMA Flood Insurance Rate Maps, dated 3/17/2014, shows most of the project in Zone X, the area of being protected from the 1-percent annual chance or greater flood hazard by a levee system.). In the project corridor, there is a Special Flood Hazard area 'Zone A' on the south side of the Richard Highway, including the railroad track area (Figure 2). The Special Flood Hazard area Zone A is an area where no base flood elevations have been determined.

Project Area

Rich Hwy MP 359 corridor

Flood Zone(s)

X and A

Map Panel(s)

02090C4385J & 02090C4383



Figure 2. FIRM Panel of Project Site

Risks Associated with the Implementation of the Action

The risks associated with this project are low. In this context, “risk” means the consequences associated with the probability of flooding attributable to the encroachment, proposed work will improve or maintain existing water conveyance. The bridge work in Zone X will be performed without raising the base flood elevation minimizing risk of significant damage or hazard to people and property for conditions up to the design flood. Complete avoidance of the floodplain is not possible due to the large extents of the floodplain around and adjacent to the project area, therefore no practicable alternatives exist that would avoid or further minimize impacts to the floodplain.

Impacts on Natural and Beneficial Flood Plain Values

Natural and beneficial floodplain values include, but are not limited to: fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural moderation of floods, water quality maintenance, and groundwater recharge. This project should not significantly impact the natural and beneficial floodplain values. The design will minimize the footprint of the project to the extent practicable. Any riparian vegetation will be preserved or established and roadway drainage will be improved. The proposed project should preserve, and may even enhance, the natural and beneficial floodplain values.

Measures to Minimize Flood Plain Impacts Associated with the Action

Measures to minimize floodplain impacts will be incorporated into the design and construction of this project. They include the following:

- Maintain the existing flow distributions to the extent practicable.
- Minimize the footprint of the project to the extent practicable.
- Erosion and sediment control measures will be implemented during construction.

The project will not involve significant encroachments and should not support incompatible floodplain development. Proposed work will improve water conveyance and no adverse flood plain impacts are anticipated.

Support of Probable Incompatible Floodplain Development

“Support of base floodplain development” means to encourage, allow, serve, or otherwise facilitate additional base floodplain development. Direct support results from an encroachment, while indirect support results from the action out of the base floodplain.

This project is subject to local, state, and federal floodplain regulations. The project is located within a NFIP regulated floodplain. Other non-DOT&PF projects within the Fairbanks North Star Borough jurisdictional boundary are also subject to the FNSB floodplain ordinance. Hence, it is improbable that incompatible floodplain development would receive support from this project.

Consistency with existing watershed and flood plain management programs.

DOT&PF will contact the FNSB Flood Plain Administrator to fulfill submittal requirements that is consistent with local flood plain management interests. A Non-Structural Development Floodplain Permit Application will be required if work encroaches south of the Richardson Highway into Zone A.

Submittal requirements of the permit will adhere to the checklist as outlined in the permit application that include, but are not limited to; final grading plans, show any changes in water flow, fill elevations and show areas of potential stockpiled materials. The project will not involve significant encroachments and as discussed above, should not support incompatible flood plain development. Work will be within existing right-of-way. There will be no loss of flow conveyance to carry base flood and storage capacity will not be affected by proposed improvements in this project's final condition.

If you have questions, I am available to discuss.



Jeff P. Stutzke, P.E.
Regional Hydraulics Engineer
Northern Region

References

Alaska Department of Transportation and Public Facilities, 1995, "Alaska Highway Drainage Manual", Juneau, AK.

Alaska Department of Transportation and Public Facilities, 2005, "Alaska Highway Preconstruction Manual", Juneau, AK.

Federal Emergency Management Agency, 2014, "Flood Insurance Rate Map - Fairbanks North Star Borough, Alaska", Map Number 02090C4385J dated March 17, 2014. . Accessed via FEMA Map Service Center website (<http://msc.fema.gov/portal/>) on December 18, 2017.

Attachment 5
Noise Memorandum

MEMORANDUM

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

TO: Brett Nelson
EIA Manager I
Northern Region

DATE: November 2, 2018

FILE NO: H:\Projects\Rich_Hwy\60734_Rich_359_GradeSepFac\10 Reports\Noise Memo

PHONE NO: 907-451-5331

FAX NO: 907-451-5126

FROM: Alan F. Skinner, P.E.
Engineer I *AF*
Northern Region

SUBJECT: Richardson Highway MP 359
Interchange and Railroad Grade
Separated Facility
Z607340000/0A24033
**Highway Noise Impact and
Mitigation Analysis**

Summary

The Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility project (Z607340000/0A24033) does not meet the federal and state threshold requirements for preparing a quantitative highway noise impact and mitigation analysis. This memorandum presents data to support the conclusion that a noise analysis is not warranted or required.

Project Description

The project is located between MP 358.75 and MP 360.25 on the Richardson Highway. The at-grade railroad crossing (at MP 359.2) and at-grade left turn from the northbound Richardson Highway to the Old Richardson Highway (at MP 359.6) introduce consecutive obstacles for traffic, particularly large commercial trucks accessing the industrial areas of South Fairbanks via the Old Richardson. The project will improve operations by:

- Constructing an interchange at the Richardson Highway and Old Richardson Highway to replace the existing left turn intersection at MP 359.6.
- Grade separating highway traffic to pass over the railroad facility at MP 359.2.

Both grade separations will require new, individual bridges. These raised structures introduce vertical elements that are not present in the existing condition and could lead to potential noise and visual impacts to neighboring properties.

Project Area Description

Refer to the *Existing and Background Traffic Conditions and Safety Analysis Technical Memorandum #1*, dated June 2, 2017 and located in the Environmental Project File, for a detailed description of the project area and current traffic and safety concerns.

Alaska DOT&PF Noise Policy

Traffic noise evaluations conducted in Alaska use the technical guidance outlined in the DOT&PF *Noise Policy* (DOT&PF, 2011) for state- and federally-funded highway projects. This policy and outlined procedures are based on the FHWA federal noise criteria and standards (23 CFR 772).

The DOT&PF *Noise Policy* applies to all Type I federal highway projects in the State of Alaska, that is, any project that receives federal-aid funds or are otherwise subject to FHWA approval. This also includes federal projects that are administered by DOT&PF. The DOT&PF *Noise Policy* lists 8 kinds of Type I projects. Because the proposed project is physically altering an existing highway, of relevance to this project is the applicable Type I project description:

“(2) The physical alteration of an existing highway where there is either:

- (i) **Substantial Horizontal Alteration.** A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
- (ii) **Substantial Vertical Alteration.** A project that removes shielding therefore exposing the line-of-sight between the receptor and traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor.”

The proposed project includes changes to the horizontal and vertical alignment of the existing highway. If the project does not cause the edge of the pavement of the outside lane of the highway to move 50% or more closer to the adjacent receptors, then the threshold for requiring a noise analysis under the “substantial horizontal alteration” qualifier would not be met. Likewise, if the project does not remove shielding and thereby exposing the line-of-sight between the receptor and the traffic noise, then the threshold for requiring a noise analysis under the “substantial vertical alteration” qualifier would not be met.

The applicable Activity Categories found in the study area are residential (Activity Category B), recreational (Activity Category C), and industrial (Activity Category F). The 23 CFR Section 772.11(c)(vi) defines Category F as including “developed lands that are not sensitive to highway traffic noise. There are no impact criteria for the land use facilities in this activity category and no analysis of noise impacts is required.” Table 1 includes the applicable Activity Categories and corresponding noise abatement criteria (NAC) from 23 CFR 772.

Table 1: Applicable Noise Abatement Criteria

Activity category	FHWA Noise Abatement Criteria Leq(h) ¹	DOT&PF Noise Abatement Criteria Leq(h) ²	Evaluation location	Land use activity description
B	67	66	Exterior	Residential.
C	67	66	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care 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.
F	-	-		Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.

¹The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures

²DOT&PF noise abatement “approach”

Requirement to Perform a Noise Analysis

To accommodate the interchange, the northbound Richardson Highway will be realigned approximately 200 feet to the south to become parallel to the southbound lane bringing northbound and southbound traffic together under the new overpass. The over-height vehicle bypass will likely follow the existing horizontal alignment for the northbound Richardson Highway with the vertical profile being raised at the bridge and lowering back to existing ground at the ramp ends. The bridge will be within 200 feet north or south of the existing at-grade intersection depending on final design. To be conservative, this memo assumes the bridge will be located 175 feet north or as close as possible to the more sensitive Category B and C receptors.

For the railroad overpass, there will be no lateral shift at the railroad crossing. The overpass will be constructed in place.

Horizontal alteration

To determine whether the proposed improvements would cause the edge of the pavement of the outside lane of the highway to move 50% or more closer to the receptor, the distances between the receptors adjacent to the highway under the existing and future proposed conditions were measured. Measurements were made using aerial photography, GIS and AutoCAD project design files.

Figure 1 shows the distances between the existing edge of pavement for the outside highway lane and the future proposed edge of pavement for nearby receptors for both grade separated crossings. For all improvements, the distance from the highway to the Category B and C receptors either remains the same or only slightly decreases. The interchange location will move turning traffic about 140 to 175 feet (9% to 11%) closer horizontally from the Category B receptors while remaining roughly the same distance (3100 feet) away from Category C receptors. Northbound highway traffic will move further away from Category B receptors by up to 200 feet. The railroad overpass will follow the existing alignment, resulting in no shift to the 3600 feet horizontal distance from the nearest Category B receptors or the 1800 feet to Category C receptors.

Category F receptors do not require mitigation from highway noise.

The roadway would not move 50% or closer to receptors as a result of the project; therefore, **no substantial horizontal change would occur.**

Vertical alteration

Based on the available design details at this time, the roadway adjacent to the specifically identified receptors would be raised approximately 25 feet above the existing grade at the interchange and 28 feet at the railroad overpass. Changes in vertical grade would occur at a distance of between 1300 feet and 1850 feet from identified Category B and C receptors; and in all cases, between 250 and 400 feet of forested areas would exist between residences and the new highway alignment.

Despite the generally flat topography and lack of topographic shielding, there is currently no clear line of sight between receptors and the highway due to mature treed areas. Direct topographic shielding would not be eliminated as a result of raising the grade and there would be no new line of sight established because of the continued presence of forested areas between the highway and receptors. The effects of ground attenuation would be reduced to a degree as turning traffic for the highway is raised, but at a distance of 1300 feet to 1850 feet, it is not likely that this would cause a perceptible increase in noise (i.e. 3 dBA or more), especially in cases where the highway is moving away from receptors as a result of the project. Overall highway noise may actually decrease due to the direct screening of the mainline Richardson Highway by the over-height vehicle bypass embankment as well as continuous turning traffic rather than braking and rapid starting of heavy vehicles.

The railroad overpass is 3600 feet from the nearest Category B receptors and 1800 feet from Category C receptors. Each of these receptors are separated from the railroad overpass by mature trees without a direct line-of-sight to the proposed facility.

In summary, it is concluded that:

- The generally flat topographic terrain would not result in shielding being removed as a result of raising the grade of the highway.
- No new direct lines of sight would result from raising the grade of the highway or constructing the interchange ramps and overcrossing because the forested nature of the terrain shields the view of the highway from nearby receptors.

- The effects of reduced ground attenuation would be minimal at distances of 1300 to 1800 feet and would not result in significant changes in noise levels, especially where the highway is moving away from receptors.
- The proposed vertical changes to the highway at the railroad crossing and interchange would not be substantial and would not classify the project as a Type I project.

Conclusion

Based on the proposed highway changes at the railroad crossing and grade-separated interchange, the project would not result in substantial vertical or horizontal alteration. The project does not meet the definition of a Type I project.

A quantitative technical noise analysis is not required to satisfy the procedural requirements in 23 CFR 772 or DOT&PF's 2011 *Noise Policy*.

References

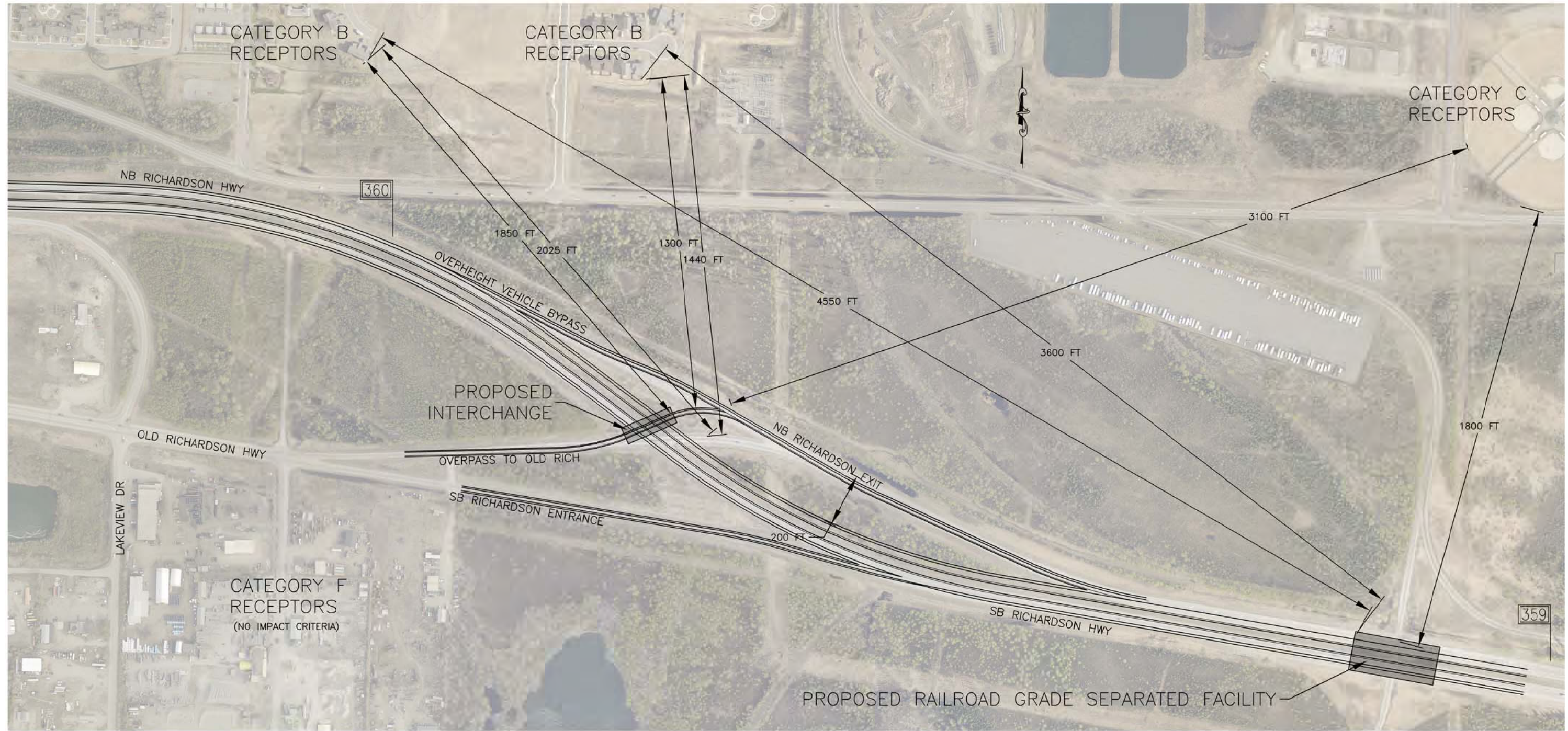
23 CFR 772. Federal Highway Administration, Procedures for Abatement of Highway Traffic Noise and Construction Noise. US Code of Federal Regulations.

Alaska DOT&PF *Noise Policy*, Apr 2011.

Kittleson & Associates, Inc., *Existing and Background Traffic Conditions and Safety Analysis Technical Memorandum #1*, Jun 2017.

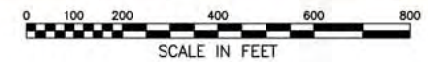
afs/vzb
AB

cc: Figure 1



LEGEND

-  APPROXIMATE BRIDGE LOCATION
-  MILEPOST



STATE OF ALASKA Department of Transportation and Public Facilities	
2301 Peger Rd, Fairbanks, AK 99709	
PROJECT # 0A24033/Z607340000 RICHARDSON HIGHWAY MP 359 INTERCHANGE AND RAILROAD GRADE SEPARATED FACILITY	
NOISE ANALYSIS MEMO	
DATE: OCT 2018	FIGURE 1

Attachment 6
Website Content for Online Open House



Alaska Department of Transportation and Public Facilities

NORTHERN REGION

You are here: [DOT&PF](#) > [Northern Region](#) > [Projects](#) > [Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility](#)

Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility

project number: Z607340000 / OA24033

WELCOME TO OUR ONLINE OPEN HOUSE!

The Alaska Department of Transportation and Public Facilities (DOT&PF) would like your feedback on the preliminary design concepts developed for the *Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility* project. With this project, the DOT&PF intends to accomplish the following goals:

- Improve corridor safety and operations by grade separating at-grade crossing maneuvers.
- Improve connectivity with the Old Richardson Highway, particularly for freight vehicles.

This Open House will run **December 19, 2018 to January 25, 2019**. All comments must be submitted no later than January 25, 2019 to be considered in the final evaluation and design. The following opportunities are available for submitting any feedback, concerns, or personal preferences:

- [CLICK HERE](#) to print a comment sheet that you can fill out and **MAIL** directly to:
Colleen Ackiss, Project Manager
Department of Transportation & Public Facilities
2301 Peger Road
Fairbanks, AK 99709
- **Call** us directly at:
 - DOT&PF Project Manager – Colleen Ackiss, (907) 451-5179 (TDD) (907) 451-2363
 - CH2M Project Manager - Jim Potts, (907) 762-1518
- **E-MAIL** us directly at:
 - colleen.ackiss@alaska.gov
 - James.Potts@jacobs.com

Project information is provided below in the following sections:

PURPOSE AND NEED

BACKGROUND

DESIGN CONCEPTS

PROJECT TIMELINE

Looking for more information? A project stakeholder meeting will be held **January 24, 2019** from 2pm-4pm in the Main Conference Room at the Fairbanks DOT&PF offices (2301 Peger Rd) for members of the trucking industry, the military, nearby businesses, and other potentially affected users of this important corridor. Engineering drawings and project team members will be present at that time.

PURPOSE AND NEED

Between 2008-2012 a total of 24 crashes have occurred on the Richardson Highway in the proposed project vicinity. Studies indicate that safety improvements are needed due to the frequency and potential severity of crashes at highway speeds. The proposed project promotes safe access and supports the continued transition of the segment of the Richardson Highway between Fairbanks and the Eielson Air Force Base to a controlled-access freeway. Additional detail for the purpose and need for safety and access improvements at these critical intersections can be found in the [Richardson Highway MP 359 Grade Separated Facility: Interchange Concept Development Memo](#).

Project Information

- [Flyover Concept](#)
- [Modified Diamond Concept](#)
- [Comment Sheet](#)
- [Comment Sheet](#)

Contact Information

For more information, contact:

Colleen Ackiss, P.E.

DOT&PF Project Manager
2301 Peger Rd Fairbanks, AK
99709-5316

☎ 451-5179

✉ colleen.ackiss@alaska.gov

To correspond by text
telephone

(TDD) (907) 451-2363

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017, and executed by FHWA and DOT&PF.

Please note: You must have Acrobat Reader to open any **PDF** documents on this page. If you do not have Acrobat Reader, [click to download the FREE](#)

[software.](#)



Existing At-Grade Railroad Crossing Conditions

When active, the existing at-grade railroad crossing causes traffic delays; when not active, it still requires some vehicles to stop at the crossing utilizing the pullout lanes. These vehicles, often freight traffic hauling hazardous materials, must accelerate and merge with traffic after stopping. Due to the northbound exit's proximity to the railroad crossing, some of the same vehicles stopping at the railroad crossing have difficulty maneuvering through three lane changes in less than a half mile to make the existing left-hand exit.

Existing Northbound Exit At-Grade Intersection Conditions

The northbound left-hand exit from the Richardson Highway to the Old Richardson Highway causes safety issues and delays to traffic. The existing intersection configuration serves two movements; Old Richardson Highway to southbound Richardson Highway and northbound Richardson Highway to Old Richardson Highway via at-grade ramps.

The proposed project would construct a northbound exit to the Old Richardson Highway. The left-hand exit would be converted to a right-hand exit to meet driver expectation for freeway exits. Replacing the at-grade northbound exit with an interchange would allow northbound traffic to access the Richardson Highway from the Old Richardson and eliminate delays for southbound traffic. This would serve the purpose of improved freight mobility due to the new interchange ramps and the new accommodations for over height and overweight trucks.

BACKGROUND

The Richardson Highway is the main route for users to travel between Fairbanks and Fort Wainwright, North Pole, Eielson Air Force Base, and beyond. It is classified as an interstate highway and the speed limit on this study segment is 60 mph. Old Richardson Highway is classified as a minor arterial and connects the Richardson Highway with the Cushman Business Area. Land uses along Old Richardson Highway are mainly commercial with some industrial. Lakeview Drive is a local road that serves a small residential area to the south of the study area, as well as several commercial and industrial facilities.

The Richardson Highway is a critical freight corridor and is a part of the National Highway Freight Network (NHFN), connecting Fairbanks and North Pole with communities in eastern Alaska, Canada and the contiguous 48 states. This road has a large percentage of truck traffic and is designated as an official route for long-combination vehicles. The Richardson Highway supports military operations at both Fort Wainwright Army and Eielson Air Force bases and is considered part of the National System of Interstate Defense Highways and the Strategic Highway Network (STRAHNET).

Multiple planning documents have officially called for improvements on the Richardson Highway:

- The Fairbanks Metropolitan Area Transportation System (FMATS) Policy Committee adopted a resolution (1984) that stated the Richardson Highway should be designated as a freeway between Fairbanks and Eielson Air Force Base.
- The preliminary Planning and Environmental Linkage (PEL) study (2017) recommends the construction of a high mobility intersection that includes grade separation at MP 359 for both the Richardson Highway and the Alaska Railroad crossing.
- The Alaska State Rail Plan (ASRP) calls for the removal of at-grade railroad/highway crossings throughout the state to enhance safety.

DESIGN CONCEPTS

The Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility project consists of two primary components for which we are requesting feedback 1) the Railroad Crossing and 2) the Highway Interchange. Both components would include roadside hardware, drainage improvements, and utility relocations. Additional detail on the engineering analysis of the design concepts can be found in the [Richardson Highway MP 359 Grade Separated Facility: Interchange Concept Development Memo](#).

1. Railroad Crossing

The design concept recommended by the engineering team to address the safety issues at the at-grade railroad crossing is a proposed grade separated railroad crossing that would raise the highway mainline over the railroad about 30-feet to provide clearance over the tracks. Reconstruction of approximately 1600' of highway on each side of the crossing will be required to achieve the separation. The concept would maintain the existing railroad routes and no realignment of the railroad tracks is required.

Adjacent to the railroad crossing overpass, a troop access underpass facility is under consideration. This would allow for troops to cross under the highway from Fort Wainwright to access the small arms range on the south side of the highway. The exact location and design specifications for this project component would be determined during a later design phase based on the needs of the military.

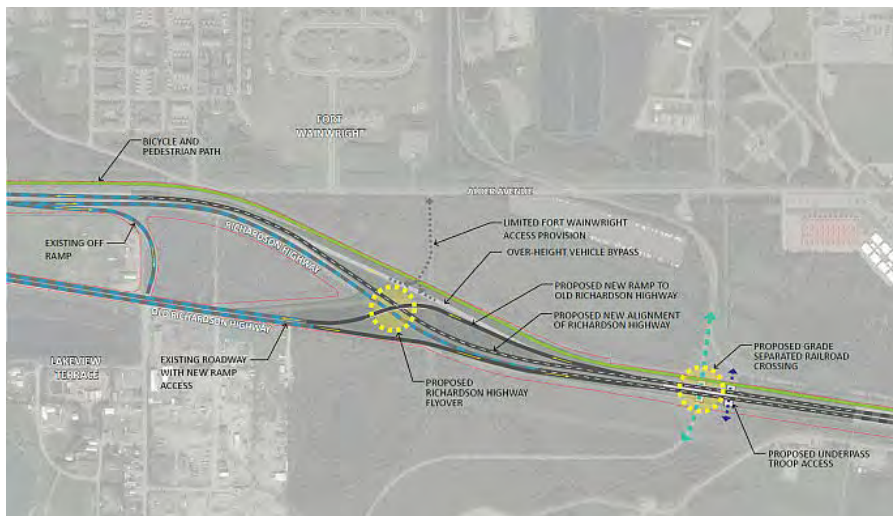
2. Highway Interchange

Two design concepts have been forwarded by the engineering team to address the safety and connectivity issues identified at the intersection of the Richardson and Old Richardson Highways: A) the flyover concept and B) the modified diamond concept.

Both design concepts improve traffic safety along the mainline, reduce vehicle delay, and accommodate the planned north side pathway. Additionally, both design concepts would improve roadway operations by eliminating the two primary vehicle conflict points. One major difference between the two design concepts is the level of future access provided to Fort Wainwright.

1. *Flyover design concept*

The northbound Richardson Highway lanes would be reconstructed to parallel the existing southbound lanes to provide space for the new exit ramp within the existing ROW, which would cross over the mainline with a bridge. Over height vehicles could bypass the overcrossing utilizing the interchange ramps. If in the future, Fort Wainwright were to require an additional access point at the interchange, this concept would maintain the degree of access as is present at the existing 3-Mile Gate (right-in, right-out access to northbound highway).



2. *Modified diamond design concept*

The northbound Richardson Highway lanes would be realigned into the existing median to parallel the existing southbound lanes; both the northbound and southbound mainline lanes would be elevated over the northbound exit ramp with a bridge. Over height vehicles would not have to reroute from the mainline to pass through the MP 359 area. The Old Richardson Highway would be extended under the elevated Richardson Highway to connect to the

northbound ramps. Along with the reconstructed northbound exit ramp, a new northbound entrance ramp would be added. Any future Fort Wainwright access would be accommodated by a full degree of access, with only a minor grade adjustment for the southbound entrance ramp.



PROJECT TIMELINE



Attachment 7
Fairbanks Daily News-Miner Ad

AFFIDAVIT OF PUBLICATION

UNITED STATES OF AMERICA }
 STATE OF ALASKA } SS.
 FOURTH DISTRICT }

Before me, the undersigned, a notary public, this day personally appeared Jenny Nance, who, being first duly sworn, according to law, says that he/she is an Advertising Clerk of the Fairbanks Daily News-Miner, a newspaper (i) published in newspaper format, (ii) distributed daily more than 50 weeks per year, (iii) with a total circulation of more than 500 and more than 10% of the population of the Fourth Judicial District, (iv) holding a second class mailing permit from the United States Postal Service, (v) not published primarily to distribute advertising, and (vi) not intended for a particular professional or occupational group. The advertisement which is attached is a true copy of the advertisement published in said paper on the following day(s):

December 26, 2018 _____
 January 6, 16, 2019 _____
 Jacobs _____ Acct # 241376
 Ad # 40536956 _____ Rich Hwy MP 359
 15" Ad _____

and that the rate charged thereon is not excess of the rate charged private individuals, with the usual discounts.

Jenny Nance

Subscribed and sworn to before me on this 17 day of Jan, 2019

M. Burnell

Notary Public in and for the State Alaska.

My commission expires Dec 7, 2021

DOT&PF Online Open House
DECEMBER 19, 2018 - JANUARY 25, 2019
 Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project

Comment online TODAY!
<http://dot.alaska.gov/nreg/rich359/>

or CALL/EMAIL us directly with questions at:
 Colleen Ackiss, (907) 451-5179 or (TDD) (907) 451-2363 or colleen.ackiss@alaska.gov

NOTARY PUBLIC
 M. BURNELL
 STATE OF ALASKA
 My commission Expires December 7, 2021

Attachment 8
Online Public Notice

Notice of Intent to Begin Engineering and Environmental Studies

Alaska Department of Transportation and Public Facilities
Notice of Intent
to
Begin Engineering and Environmental Studies:

Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility
Project No: Z607340000

The Alaska Department of Transportation and Public Facilities (DOT&PF) has assumed the responsibilities of the Federal Highway Administration under 23 U.S.C. 327 and is soliciting comments and information on a proposal to construct a new interchange at the intersection of the Richardson and Old Richardson Highways and grade-separate the existing at-grade railroad crossing near MP 359 in Fairbanks.

The proposed work would include:

- An interchange at the intersection of the Richardson Highway and the Old Richardson Highway;
- A railroad grade separated facility near MP 359;
- Removal of the existing Richardson Highway at-grade southbound left-turn intersection;
- Installation of new bridges, retaining walls, guardrails, lighting, striping, and signage; and,
- Roadside drainage improvements and utility relocations.

This proposed project will comply with Section 106 of the National Historic Preservation Act; Executive Orders: 11990 (Wetlands Protection), 11988 (Floodplain Protection), 12898 (Environmental Justice), Clean Air Act, Clean Water Act, Fish and Wildlife Coordination Act, and U.S. DOT Act Section 4(f).

Construction of the proposed project is anticipated to begin in 2022. To ensure that all possible factors are considered, please provide written comments to the following address by January 25, 2019:

Brett Nelson, Regional Environmental Manager
Alaska Department of Transportation and Public Facilities
2301 Peger Road
Fairbanks, AK 99709

Or you can comment on line to today at: <http://dot.alaska.gov/nreg/rich359/>

If you have any questions or require additional information, please contact Colleen Ackiss, P.E., Project Manager, at 451-5179.

It is the policy of the DOT&PF that no person shall be excluded from participation in, or be denied benefits of, any and all programs or activities we provide based on race, religion, color, gender, age, marital status, ability, or national origin, regardless of funding source including Federal Transit Administration, Federal Aviation Administration, Federal Highway Administration and State of Alaska Funds.

The DOT&PF complies with Title II of the Americans with Disabilities Act of 1990. Individuals with a hearing impairment can contact DOT&PF at our Telephone Device for the Deaf (TDD) at (907) 269-0473.

[Attachments, History, Details](#)

Attachments

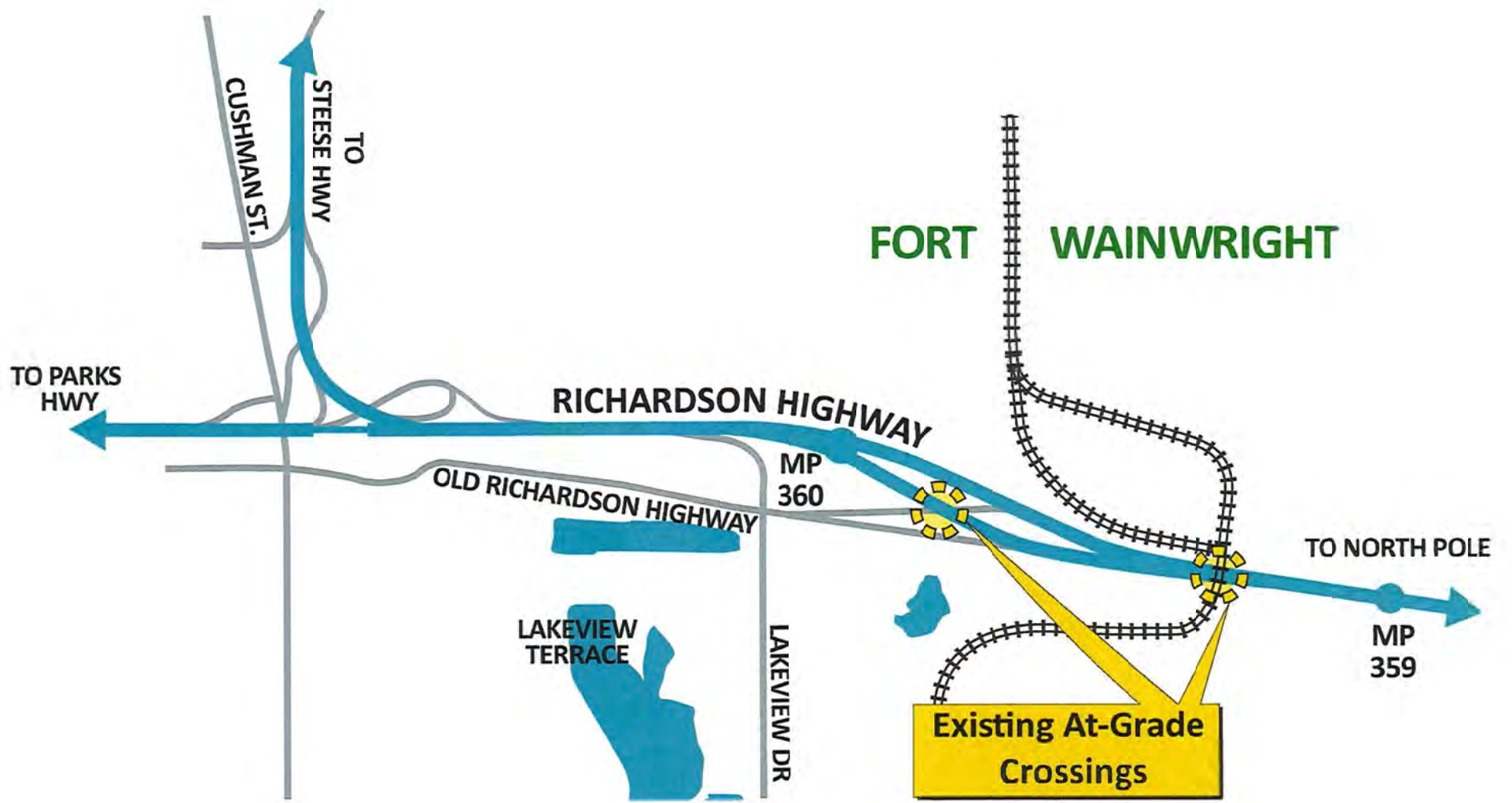
[Alaska_MP359ConceptualMap-02.pdf](#)

Revision History

Created 1/2/2019 2:48:44 PM by vzboyd
Modified 1/2/2019 3:08:23 PM by vzboyd

Details

Department:	Transportation and Public Facilities
Category:	Public Notices
Sub-Category:	
Location(s):	Northern Region
Project/Regulation #:	Z607340000
Publish Date:	1/2/2019
Archive Date:	1/26/2019
Events/Deadlines:	



Create Notice		Submitter's Guide		Active	Future	Archived	All
Title	Status	Publish Date	Archive Date	Last Modified	Comments	Actions	
Notice of Intent Tok Cutoff MP 38-50 Rehabilitation	Active	1/28/2019	2/11/2019	1/28/2019	0		
Notice of Intent to Begin Engineering and Environmental Studies <i>Richardson Hwy MP 359 Interchange and Railroad Grade Separation</i>	Archived	1/2/2019	1/26/2019	1/2/2019	0		
Notice of Proposed Vacation of a Portion of Highway Right of Way	Archived	12/24/2018	1/29/2019	12/24/2018	0		
Notice of Intent Nulato Airport Access Road Improvements Project	Archived	12/10/2018	1/11/2019	12/10/2018	0		
Public Open House North Pole Street Lighting Standardization and Improvements	Archived	11/2/2018	12/6/2018	10/10/2018	0		
Northern Region Deep Culverts Stage III Project-Notice of Proposed de minimis Section 4(f) Finding	Archived	11/1/2018	12/7/2018	11/1/2018	0		
Notice of Intent Richardson Highway MP 18-24 Resurfacing	Archived	10/30/2018	11/16/2018	10/30/2018	0		
Request for Comments Alaska Highway MP 1235-1268 Rehabilitation	Archived	10/30/2018	11/23/2018	10/30/2018	0		
Public Notice Whitshed Road and Pedestrian Improvements	Archived	10/22/2018	11/2/2018	10/22/2018	0		
Open House Old Richardson Highway Intersection Improvements	Archived	10/22/2018	11/30/2018	10/22/2018	0		
Public Open House Airport Way/Steese Expressway Interchange Project	Archived	9/28/2018	10/26/2018	10/17/2018	1		
Notice of Intent Richardson Highway MP 148-173 Reconstruction	Archived	9/18/2018	10/19/2018	9/18/2018	0		
Notice of Intent to Northern Region River Encroachment Repairs-Cordova Eyak Lake Road	Archived	7/31/2018	8/15/2018	7/30/2018	0		
Public Open House Airport Way West Improvements	Archived	6/29/2018	7/29/2018	6/29/2018	0		
Purpose & Need State Request for Public Comment-Steese Expressway/Johansen Expressway Interchange	Archived	5/30/2018	6/15/2018	5/30/2018	0		
Public Meeting-Richardson Highway MP 159-173 Reconstruction	Archived	5/18/2018	6/15/2018	5/18/2018	0		
Open House Yankovich Rd/Miller Hill Rd Reconstruction and Multi-Use Path	Archived	4/29/2018	6/5/2018	5/3/2018	1		
Public/Planning Meeting Nulato Airport Access Road Realignment	Archived	4/23/2018	5/14/2018	4/23/2018	0		
Open House St. Mary's Airport Improvements	Archived	4/12/2018	5/18/2018	4/10/2018	0		
Public Meeting Northern Region Deep Culverts Stage III	Archived	4/6/2018	5/18/2018	4/2/2018	0		
Chena River Walk Stage III, Segment I- Public Open House	Archived	3/14/2018	4/23/2018	3/14/2018	1		
Public Meeting Holy Cross Airport Resurfacing and Lighting Rehabilitation Project	Archived	11/29/2017	1/10/2018	11/29/2017	0		
Public Meeting White Mountain Airport Resurfacing and Lighting Rehabilitation	Archived	11/29/2017	1/13/2018	11/29/2017	0		
Notice of Intent Carlson Center Motor Plug Ins, Fairbanks and North Pole Libraries and Big Dipper Motor Plug Ins	Archived	10/12/2017	11/1/2017	10/12/2017	0		
Notice of Intent/Request for Public Comments-Northern Region Encroachment Repairs	Archived	9/27/2017	10/6/2017	9/27/2017	0		
Notice of Intent/Request for Public Comments-Parks Highway MP 356-362 Resurfacing	Archived	9/27/2017	10/15/2017	9/27/2017	0		
Open House HSIP: Richardson Highway MP 351 Interchange	Archived	9/8/2017	10/31/2017	9/8/2017	0		
Notice of Intent McCarthy Road MP 27 Chokosna Bridge #1193 Replacement	Archived	8/28/2017	9/29/2017	8/28/2017	2		
Notice of Intent Richardson Highway MP 65-80 Rehabilitation	Archived	8/28/2017	9/29/2017	8/28/2017	0		
Notice of Intent Aurora Drive Noyes Slough Bridge #0209 Replacement	Archived	8/24/2017	9/29/2017	8/24/2017	0		

No comments received

Attachment 9
Agency Scoping Documentation

9A- Agency Scoping Letter and Distribution List

9B- Agency Comments and Responses

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, February 08, 2019 11:08 AM
To: Aaron Schutt - Doyon, LTD (admin@doyon.com); Bailey, Meadow P (DOT); Benjamin.N.Soiseth@usace.army.mil; Donald Galligan; Frye, Caitlin S (DOT); Heil, Cynthia L (DEC); Henszey, Bob USF&WS; Kellen Spillman; Molly Vaughan (vaughan.molly@epamail.epa.gov); Nancy Durham; Sonafrank, Nancy B (DEC); McCabe, Gene C (DEC); Fish, James T (DEC); Leinberger, Dianna L (DNR); Fox, Jackson G (DOT); Schacher, Daniel L (DOT); Weinberger, John S CIV USARMY IMCOM PACIFIC (USA)
Cc: Ackiss, Colleen M (DOT); Fischer, David K (DOT); Nelson, Brett D (DOT); Gamza, Thomas A (DOT)
Subject: Richardson Highway MP 359 Grade Separated Facility Agency Scoping
Attachments: RichHwyMP359_AgencyScoping_Form327_020818.pdf

Hello,

The attached scoping letter and accompanying figure are to provide you with an overview of the proposed project, Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734). Please review and return any comments you have on the project so that we may evaluate and consider them in our environmental document.

Thank you for your efforts in reviewing and responding,
Brett



Brett Nelson

Northern Region Environmental Manager
Alaska Dept. of Transportation & Public Facilities
2301 Peger Road / Fairbanks, AK 99709
Office (907)451-2238
Fax (907)451-5126



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Transportation and
Public Facilities

NORTHERN REGION
Design and Engineering Services
Preliminary Design and Environmental

2301 Peger Road
Fairbanks, AK 99709-5316
Main: 907-451-2237
TDD: 907-451-2363
FAX: 907-451-5126

**AGENCY SCOPING
REQUEST FOR EARLY COORDINATION**

Project Name: Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Project Number: Z607340000/ A024033
Project Website: <http://dot.alaska.gov/nreg/rich359/>
Comments Due Date: February 22, 2019
Anticipated Level of Documentation: Categorical Exclusion

Dear Agency Staff:

The Alaska Department of Transportation and Public Facilities (DOT&PF) is proposing to reconstruct the Richardson Highway near Milepost 359. The work would include an interchange at the intersection of the Richardson Highway and the Old Richardson Highway, a railroad grade separated facility near MP 359, roadside hardware, drainage improvements, and utility relocations.

We are soliciting your comments on a proposed project. Please comment on the project including your knowledge of resources in the project under the jurisdiction of your agency or organization and the potential need for permits and approvals from your agency or organization. To ensure that your comments are addressed in the project's design and environmental documentation, please refer to the project by the above name or number, and send or e-mail your comments to:

Brett Nelson/ Northern Region Environmental Manager
Alaska Department of Transportation and Public Facilities
2301 Peger Road
Fairbanks, AK 99709
Email: brett.nelson@alaska.gov Phone: 907-451-2238

Brett Nelson 2/8/19
Brett Nelson/Regional Environmental Manager Date

Figures: Figure 1. Study Area Map

"Keep Alaska Moving through service and infrastructure."

I. Purpose and Need of Project:

The highway supports military operations at both Fort Wainwright Army and Eielson Air Force bases, Richardson Highway and is therefore considered part of the National System of Interstate Defense Highways and the Strategic Highway Network (STRAHNET). The proposed project supports the continued transition of the segment of the Richardson Highway between Fairbanks and the Eielson Air Force Base to a controlled-access freeway (FMATS Policy Committee resolution, 1984). Studies indicate that safety improvements are needed due to the frequency and potential severity of crashes at highway speeds (Kittleson and Associates, June 2017).

Ultimately, the interchange concepts would eliminate two primary vehicle conflict points that do not meet driver expectations for a freeway facility: the at-grade railroad crossing and the at-grade northbound exit intersection. Removing the at-grade railroad crossing would also improve operations by reducing delays. Replacing the at-grade northbound exit with an interchange would allow northbound traffic to access the Richardson Highway from the Old Richardson. Additionally, the Richardson Highway is a critical freight corridor and is a part of the National Highway Freight Network (NHFN), connecting Fairbanks and North Pole with communities in eastern Alaska, Canada and the contiguous 48 states. This road has a large percentage of truck traffic and is designated as an official route for long-combination vehicles (17 AAC 25.014). With the industrial district to the southwest, there are trucks that travel to and from the Old Richardson. Freight mobility would be improved by new interchange ramps and considerations for over height and overweight trucks.

II. Project Description and Location:

The proposed project location is milepost 359 of the Richardson Highway. The Richardson Highway is bordered by federal military land to the north and south, with private, mostly industrial land to the south west.

The project proposes to construct an interchange at the Richardson Highway/Old Richardson Highway intersection. This would remove the existing intersection of southbound Richardson Highway and the off ramp to the Old Richardson Highway. It would reconstruct the northbound exit ramp as a grade separation. Additionally, bridges would be constructed for the interchange and railroad grade separation. The project would also replace the existing at-grade railroad crossing and signal infrastructure with a new grade separated bridge that raises the Richardson Highway mainline over the railroad.

Other minor work includes: pavement markings, signage, drainage improvements, highway illumination, and potential reconstruction for a planned (but not yet constructed) separated pathway. This separated pathway concept is part of the Richardson Highway MP 356-362 Bicycle and Pedestrian Facility project, which will construct a new pathway along the northern Richardson Highway right-of-way line. The future potential exists for the construction of new ramp connections to the northbound entrance from and the southbound exit to the Old Richardson Highway. This would accommodate future access needs for Fort Wainwright. In addition, troop access will be provided to connect Ft. Wainwright lands located both north and south of the Richardson Highway.

III. Agency Review (TO BE COMPLETED BY THE RESOURCE OR REGULATORY AGENCY):

1. Responding Agency:
2. Is the information provided herein consistent with agency knowledge?
3. Does this scoping request adequately identify resources and permit needs under your agency's jurisdiction?

Please provide any additional project-related comments, recommendations, or resource information below:

IV. Anticipated Environmental Consequences

A. Right-of-Way (ROW)

1. Additional ROW required. NO
2. Estimated number of parcels impacted. N/A
3. Property transfer from local, state, or federal agency. NO
4. Business or residential relocations. NO
5. Property acquisition from Tribe or ANCSA Corporation. N/A

6. Describe:

The project footprint is completely within the existing right-of-way. Both proposed interchange concepts use existing right-of-way and avoid the need for acquisition of adjacent private or federal land.

B. Socio-Economic

1. Project could affect community cohesion, neighborhoods, or other community facilities. NO
2. Project could affect economic development, such as established area businesses. NO
3. Project could affect travel patterns and accessibility. YES
4. Project could disproportionately affect minorities or disadvantaged persons. NO
5. Project will result in adverse economic impacts. NO

6. Describe:

There would be no negative effects to neighborhoods or community. The proposed project would benefit overall travel patterns and accessibility by reducing delays at the railroad crossing and eliminating the need for out-of-direction travel patterns for northbound access from the Old Richardson to the Richardson Highway. Both concepts would improve freight mobility with new interchange ramps and provisions for over height and overweight trucks. Improved mobility for freight has the potential to contribute to economic growth in the adjacent industrial areas that utilize the corridors. The proposed project would not have adverse economic impacts.

C. Land Use and Transportation Plans

1. Project is consistent with land use plans. YES
2. Project is consistent with transportation plans. YES
3. Describe:

The proposed project would be consistent with existing transportation and land use plans and will not introduce indirect or cumulative effects. The 2018-2021 STIP includes the Railroad Grade Separation Project (#28069) and the non-motorized pathway (#2130). The interchange is a project in the approved 2040 FMATS Metropolitan Transportation Plan (#VLR-20).

D. Historic Properties

1. National Register listed eligible/potentially eligible historic properties in project area. N/A
2. Places of traditional religious or cultural importance to Tribes are present in the project area. N/A
3. Historic Properties survey may be required to identify if sites are present. N/A

4. Possible adverse effect on historic properties. N/A
5. Describe:
There are no historic properties or places of traditional religious or cultural importance to Tribes in the vicinity of the proposed project, therefore there would be no impacts.

E. Fish and Wildlife Impacts

1. Project could affect anadromous or resident fish species. NO
2. Problem fish pass culverts within the project area. NO
3. Essential Fish Habitat (EFH) present in the project area. NO
4. Project in area of high wildlife/vehicle accidents. NO
5. Project could affect migration corridors or segment habitat. NO
6. Eagle nesting tree(s) or ledge(s) in the project area. NO
7. Construction activities could affect migratory bird nests. YES

Describe:

There are no known occurrences of fish or wildlife species documented directly within the project area. There is no suitable habitat in the project area. Suitable habitat for migratory bird species exists at the lakes and ponds located in the industrial area to the south west.

The following migratory bird species were identified (based on liberal estimates) as possibly occurring within the 10km grid cells that intersect the project area. The birds listed are of particular concern either because they 1) occur on the USFWS Birds of Conservation Concern (BCC) list or 2) otherwise warrant special attention due to vulnerability of the species.

1) BCC Rangewide: American Golden Plover (May 20 to Aug 15), Hudsonian Godwit (May 15 to Jul 31), Lesser Yellowlegs (May 1 to Aug 15), Olive-sided Flycatcher (May 20 to Aug 31), Whimbrel (May 10 to Aug 20)

2) Non-BCC Vulnerable: Bald Eagle, Golden Eagle

Standard conservation measures for transportation activities are recommended in order to avoid impacts to migratory birds that incidentally may breed in the area (e.g., survey tall grasses for nesting sites). Such conservation measures would include:

All vegetation removal, trimming, and grading of vegetated areas would be scheduled outside of the peak bird breeding season to the maximum extent practicable. No mechanized vegetation clearing will be allowed from May 1-July 15. If the proposed project activities cannot occur outside the bird nesting season, surveys would be conducted no more than five days prior to scheduled activity. If any active nests or breeding bird behavior are detected within the area of impact during surveys, no vegetation removal activities should be conducted until nestlings have fledged or the nest fails or breeding behaviors are no longer observed. If the activity must occur, establish a buffer zone around the nest and no activities will occur within that zone until nestlings have fledged and left the nest area.

F. Threatened and Endangered (T&E) Species

1. Listed T&E species present. NO
2. T&E species migrate through the project area. NO
3. Proposed or Candidate species present in project area. NO

4. Designated Critical Habitat in the project area. **NO**
5. Describe:
There are no known occurrences of listed threatened or endangered species within the project area.

G. Wetlands and Waterbodies

1. Project involves Waters of the U.S. and/or wetlands. **NO**
2. Wetlands survey/delineation may be needed. **NO**
3. USACE authorization anticipated. **NO**
4. Rough estimate on acreage impacted. **NO**
5. U.S. Coast Guard bridge permit anticipated. **NO**
6. Designated Wild & Scenic River in project area. **NO**
7. Describe:
The proposed project would not impact wetlands or waterbodies.

H. Invasive Species

1. Known invasive species infestation in project area. **YES**
2. Describe:
Among the 16 non-native species present in the project vicinity, five have a USDA invasiveness rank of greater than 70 and are may pose an invasive threat due to the high propensity for spread to areas outside the project area (Alaska Exotic Plant Information Clearinghouse). Although the documented density and extent of these populations are limited, cost-efficient mitigative measures (e.g., wash equipment) are recommended to minimize the transport of propagules off-site. Prevention measures to reduce the risk of introducing additional species would be the use of certified weed-free seed mixes for revegetation.

Below is a list of the non-native species in the vicinity and the associated USDA invasiveness ranking: *Lepidium densiflorum* Schrad. (common pepperweed - 25); *Plantago major* (common plantain - 44); *Hieracium umbellatum* (narrowleaf hawkweed - 51); *Crepis tectorum* (narrowleaf hawkbeard - 56); *Trifolium hybridum* (alsike clover - 57); *Taraxacum officinale* (common dandelion - 58); *Elymus repens* (quackgrass - 59); *Bromus inermis* (smooth brome - 62); *Hordeum jubatum* (foxtail barley - 63); *Medicago sativa* (yellow alfalfa - 64); *Linaria vulgaris* (butter and eggs - 69); *Sonchus arvensis* (field sowthistle - 73); *Vicia cracca* (bird vetch - 73); *Caragana arborescens* (Siberian peashrub - 74); *Prunus padus* (European bird cherry - 74); *Melilotus albus* (white sweetclover - 81)

I. Hazardous Waste/Contaminated Sites

1. Known or potentially contaminated sites along project corridor. **NO**
2. Existing and/or proposed ROW is contaminated. **NO**
3. Potential for encountering hazardous waste during construction. **NO**
4. Describe:
There are no known contaminated sites documented in the area of the proposed project.

J. Air Quality

1. Project is located in an air quality nonattainment or maintenance area (i.e. – CO or PM-2.5). YES
2. Listed in the Transportation Improvement Plan (TIP). NO
3. Project exempt from air quality analysis (Table 2 and Exempt Projects). SEE BELOW
4. Describe:

The project is within the boundaries of a Non-Attainment area for PM2.5 and a Maintenance Area for Carbon Monoxide (See Attachment 7A) The pedestrian facilities and the railroad crossing improvements are exempt in accordance with the Clean Air Act and Transportation Conformity Regulations. The 2018-2021 STIP includes the Railroad Grade Separation Project (#28069) and the non-motorized pathway (#2130). The interchange is a project in the approved 2040 FMATS Metropolitan Transportation Plan (#VLR-20). Based on this, the requirements for the Transportation Conformity Rule are met (See Attachment 7B). For project level conformity, the project does not include any signalized intersections, and therefore is exempt from CO hotspot analysis. The project does not meet the requirements for a PM2.5 hotspot analysis because it does not have a significant number of diesel vehicles (estimated at 7% in project traffic analysis) and it would not affect an intersection operation at Level of Service D, E or F.

K. Floodplains

1. Project encroaches (including material sites) into a 100-year floodplain. NO
2. Project involves a regulatory floodway. NO
3. Project is located within an area protected by local flood hazard ordinances. NO
4. Flood hazard permit is required from local government. NO
5. Describe:

The proposed project area falls within areas of "minimal flood risk" or "reduced flood risk" due to the presence of a levee and therefore avoids, to the extent possible, any long and short term adverse impacts associated with the modification of a floodplain.

L. Noise

1. The project is located on new location, would result in substantial changes in vertical or horizontal alignment, or would increase the number of through lanes? NO
2. There are noise-sensitive receivers/land uses adjacent to the proposed project? YES
3. Describe:

The Activity Categories present in the vicinity of the project area include both B (1,200 ft - 2,000 ft) and F (10,000 ft -15,000 ft). Vertical alteration did not meet criteria described in the ADOT&PF Noise Policy (2018) for further noise analysis. Despite the adjacent noise-sensitive receivers/land use and vertical alteration, the proposed project does not meet the federal and state threshold requirements for preparing a quantitative highway noise impact and mitigation analysis. This determination was made for both the highway interchange and the grade-separated railroad overpass.

M. Water Quality

1. Project could involve a public or private drinking source. NO
2. Project could result in a discharge of storm water to Waters of the U.S. NO

- 7 -

- | | |
|---|-----|
| 3. Project could affect a designated impaired water body. | NO |
| 4. Storm water discharges to a Municipal Separate Storm Sewer System (MS4). | YES |
| 5. Runoff may mix with discharges from an APDES permitted industrial (MSGP) facility. | YES |
| 6. Excavation dewatering is anticipated within 1,500 feet of a contaminated site. | NO |

7. Describe:

The project is located within the FNSB MS4 boundary and the contractor will provide a SWPPP to the FNSB for review.

N. Section 4(f)/6(f)

- | | |
|--|-----|
| 1. There would be a "use" of land from 4(f) properties. | NO |
| 2. Section 6(f) properties affected by the proposed action. | N/A |
| 3. List agency(s) with jurisdiction: | |
| 4. Describe: | |
| For the proposed project, there would be no 4(f)/6(f) involvement. | |

O. Material Source(s) and Staging Areas

- | | |
|---|----|
| 1. Potential sites needed for project have been identified. | NO |
| 2. Describe: Materials are expected to come from sites in the Fairbanks area. | |

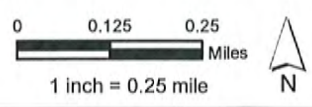
P. Permits and Authorizations

- | | |
|---|-----|
| 1. USACE, NWP or IP: | N/A |
| 2. USCG, Bridge Permit: | N/A |
| 3. ADF&G, Fish Habitat Permit: | NO |
| 4. Material Site(s) Sales Agreements/Permits: | N/A |
| 5. Floodplain Permit: | N/A |
| 6. ADEC, 401 Cert.: | NO |
| 7. ADEC, Storm Non-domestic Storm Water Disposal Plan Approval: | YES |
| 8. APDES, CGP: | YES |
| 9. ADNR, Land Use Permit: | NO |
| 10. Borough/City, Development Permit: | NO |
| 11. ADEC, Excavation Dewatering Permit: | N/A |
| 12. ADNR, Temp. Water Use Permit: | NO |
| 13. ADF&G, Special Area Permit: | NO |
| 14. Other(s): | |



- DOT Mileposts
- Road
- + Railroad
- ▭ Study Area
- ▭ Parcel

Figure 1
Study Area
Richardson Highway
Richardson Highway MP 359, Fairbanks, Alaska



DRAFT 1/15/2019



Agency Comment & Response Summary

Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project No. Z607340000/0A24033

The following document summarizes the agency scoping comments received by email from 2/8/2019 to 3/12/2019.

Agency	Comment	Response
FNSB Community Planning Flood Plain Administrator	A Split-Zone Floodplain Permit and a Non-Structural Floodplain Permit are needed.	None needed.
FMATS	The project is included in the recently approved 2045 MTP (Project #MR-52) and Air Quality Conformity Determination, which are valid for a period of 4 years starting January 30, 2019.	None needed.
U. S. Fish and Wildlife Service (Service)	<p>There are no threatened or endangered species in the project area. Preparation of a Biological Assessment or further consultation regarding the project is not necessary at this time.</p> <p>The Service is not aware of any eagle nests in the proposed project area. If an eagle nest is discovered within a half-mile of the project site, contact the Service for further assistance.</p> <p>Concur with avoiding land-disturbing activities from May 1 through July 31 and proposed pre-construction nest surveys in the project area to avoid impacts to migratory birds.</p> <p>Appreciate the plans to manage the introduction and spread of invasive species during project implementation.</p>	None needed.

FNSB Mayor Ward	Concerned that the current design is not consistent with the following plans: Fairbanks Area Rail Line Relocation Project, FNSB Comprehensive Plan and the Alaska State Rail Plan. (This letter is very similar to the one sent during the On-Line Public Open House commenting period.)	NR Director Anderson discussed the project and comments with Mayor Ward prior to the DOT&PF Engineering Manager responding. A formal letter response was sent identifying how the current design elements are consistent with the three plans. (See the On-line Public Open House documents for the letter.)
USAG Alaska IMFW-PWE NEPA and Water Program	The multi-use path will need to be separate from the troop crossing; they should be designed at different levels so that path users cannot access the small arms range via the troop crossing.	None needed.
DEC Air Quality Division	DEC agrees that the project is exempt from project-level conformity under 40 CFR 93.126 but recommends that an interagency consultation take place to confirm the exemption and ensure no conformity determination, hot spot analysis, or project-level conformity analysis is required.	DOT&PF coordinated with the FMATS Director to be placed on the agenda for the next interagency consultation meeting.
FMATS Interagency Consultation Meeting Summaries		
4-10-2019	Meeting Summary	
5-8-2019	Meeting Summary	
4-26-2019	DOT&PF Traffic & Safety Air Quality Conformity Memo	

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, February 08, 2019 1:08 PM
To: Ackiss, Colleen M (DOT)
Subject: FW: Richardson Highway MP 359 Grade Separated Facility Agency Scoping
Attachments: RichHwyMP359-360_FZMap.pdf

FYI

From: Nancy Durham <NDurham@fnsb.us>
Sent: Friday, February 8, 2019 11:41 AM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Subject: RE: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Brett,

There is special flood hazard areas in the project area (see attached map), which requires a Split-Zone Floodplain Permit. If you are doing any development around MP359 on the south side of the Richardson Highway including the railroad track area, you will need a Non-Structural Floodplain Permit as this area is located in Flood Zone A.

Kind Regards,

Nancy Durham, MURP, CFM
Flood Plain Administrator
FNSB Community Planning
ndurham@fnsb.us
(907) 459-1263

**** Any property can flood! Flood insurance is recommended.**

From: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Sent: Friday, February 8, 2019 11:08 AM
To: Aaron Schutt - Doyon, LTD (admin@doyon.com) <admin@doyon.com>; Bailey, Meadow P (DOT) <meadow.bailey@alaska.gov>; Benjamin.N.Soiseth@usace.army.mil; Donald Galligan <DGalligan@fnsb.us>; Frye, Caitlin S (DOT) <caitlin.frye@alaska.gov>; Heil, Cynthia L (DEC) <cindy.heil@alaska.gov>; Henszey, Bob USF&WS <Bob_Henszey@fws.gov>; Kellen Spillman <KSpillman@fnsb.us>; Molly Vaughan (vaughan.molly@epamail.epa.gov) <vaughan.molly@epamail.epa.gov>; Nancy Durham <NDurham@fnsb.us>; Sonafrank, Nancy B (DEC) <nancy.sonafrank@alaska.gov>; McCabe, Gene C (DEC) <gene.mccabe@alaska.gov>; Fish, James T (DEC) <james.fish@alaska.gov>; Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>; Fox, Jackson G (DOT) <jackson.fox@alaska.gov>; Schacher, Daniel L (DOT) <daniel.schacher@alaska.gov>; Weinberger, John S CIV USARMY IMCOM PACIFIC (USA) <john.s.weinberger.civ@mail.mil>
Cc: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>; Fischer, David K (DOT) <david.fischer@alaska.gov>; Nelson, Brett D (DOT) <brett.nelson@alaska.gov>; Gamza, Thomas A (DOT) <thomas.gamza@alaska.gov>
Subject: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Hello,

The attached scoping letter and accompanying figure are to provide you with an overview of the proposed project, Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734). Please review and return any comments you have on the project so that we may evaluate and consider them in our environmental document.

Thank you for your efforts in reviewing and responding,
Brett



Brett Nelson

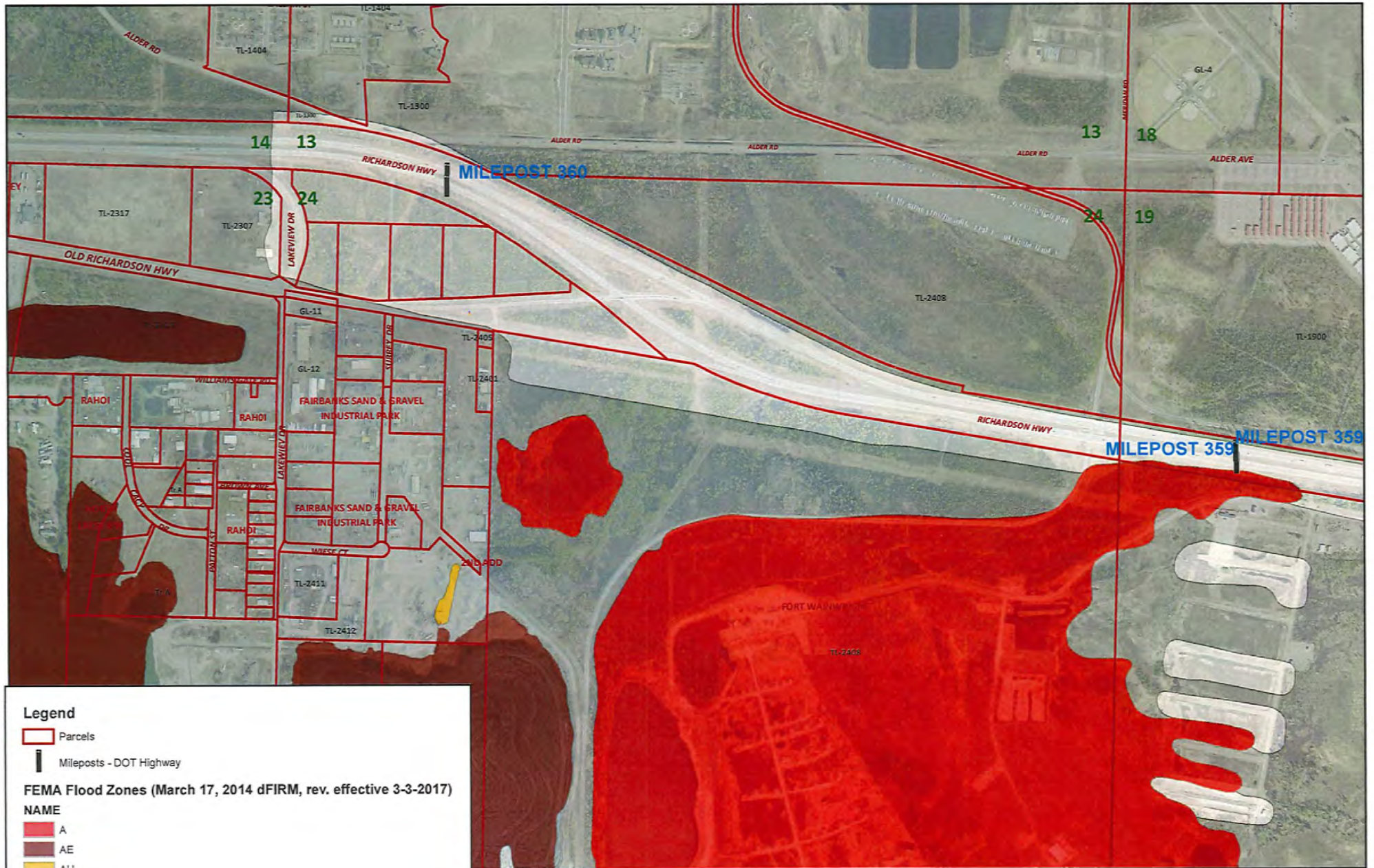
Northern Region Environmental Manager
Alaska Dept. of Transportation & Public Facilities

2301 Peger Road / Fairbanks, AK 99709

Office (907)451-2238

Fax (907)451-5126

RichHwyMP359-360 Project Area Flood Zone Map



Legend

- Parcels
- Mileposts - DOT Highway

FEMA Flood Zones (March 17, 2014 dFIRM, rev. effective 3-3-2017)

NAME

- A
- AE
- AH
- AO
- FLOODWAY
- X
- X: 0.2% ANNUAL CHANCE FLOOD
- X: PROTECTED BY LEVEE



Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, February 08, 2019 1:10 PM
To: Ackiss, Colleen M (DOT)
Subject: FW: Richardson Highway MP 359 Grade Separated Facility Agency Scoping
Attachments: FMATS Air Conformity Analysis Fox Gehrke Garcia-Aline 013019.pdf

FYI

From: Fox, Jackson G (DOT) <jackson.fox@alaska.gov>
Sent: Friday, February 8, 2019 12:53 PM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Subject: RE: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Brett,

Our new 2045 MTP was adopted on December 19, and on January 30 we received approval of the Air Quality Conformity Determination from FHWA and FTA. See letter attached. The Richardson Hwy MP 359 project was included in both our 2045 MTP (Project #MR-52) and Air Quality Conformity Determination, which are valid for a period of 4 years starting January 30, 2019.

Thanks, Jackson

From: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Sent: Friday, February 8, 2019 11:08 AM
To: Aaron Schutt - Doyon, LTD (admin@doyon.com) <admin@doyon.com>; Bailey, Meadow P (DOT) <meadow.bailey@alaska.gov>; Benjamin.N.Soiseth@usace.army.mil; Donald Galligan <DGalligan@fnsb.us>; Frye, Caitlin S (DOT) <caitlin.frye@alaska.gov>; Heil, Cynthia L (DEC) <cindy.heil@alaska.gov>; Henszey, Bob USF&WS <Bob_Henszey@fws.gov>; Kellen Spillman <kspillman@fnsb.us>; Molly Vaughan (vaughan.molly@epamail.epa.gov) <vaughan.molly@epamail.epa.gov>; Nancy Durham <ndurham@fnsb.us>; Sonaf Frank, Nancy B (DEC) <nancy.sonaf Frank@alaska.gov>; McCabe, Gene C (DEC) <gene.mccabe@alaska.gov>; Fish, James T (DEC) <james.fish@alaska.gov>; Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>; Fox, Jackson G (DOT) <jackson.fox@alaska.gov>; Schacher, Daniel L (DOT) <daniel.schacher@alaska.gov>; Weinberger, John S CIV USARMY IMCOM PACIFIC (USA) <john.s.weinberger.civ@mail.mil>
Cc: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>; Fischer, David K (DOT) <david.fischer@alaska.gov>; Nelson, Brett D (DOT) <brett.nelson@alaska.gov>; Gamza, Thomas A (DOT) <thomas.gamza@alaska.gov>
Subject: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Hello,

The attached scoping letter and accompanying figure are to provide you with an overview of the proposed project, Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734). Please review and return any comments you have on the project so that we may evaluate and consider them in our environmental document.

Thank you for your efforts in reviewing and responding,
Brett



Brett Nelson

Northern Region Environmental Manager

Alaska Dept. of Transportation & Public Facilities

2301 Peger Road / Fairbanks, AK 99709

Office (907)451-2238

Fax (907)451-5126



U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION
ALASKA DIVISION
709 W. 9TH STREET, ROOM 851
P.O. BOX 21648
JUNEAU, ALASKA 99802-1648

FEDERAL TRANSIT ADMINISTRATION
915 SECOND AVENUE, SUITE 3142
SEATTLE, WASHINGTON 98174

January 30, 2019

Mr. Jackson Fox
Executive Director
Fairbanks Metropolitan Area Transportation System
2301 Peger Road
Fairbanks, AK 99709

In Reply Refer To:

Subject: FMATS 2045 Metropolitan Transportation Plan Air Quality Conformity

Dear Mr. Fox:

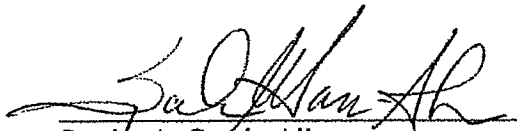
The air quality conformity analysis for the Fairbanks Metropolitan Area Transportation System (FMATS) 2045 Metropolitan Transportation Plan (MTP) submitted with your letter of January 23, 2019 has been reviewed. We find that:

- Total regional vehicle-related PM 2.5 and NO_x precursor emissions for the required analysis years of 2019, 2025, 2035, and 2045 are below the applicable motor vehicle emission budgets in the moderate State Implementation Plan (SIP).
- All CO conformity requirements for the limited maintenance plan are met.
- Interagency consultation was conducted in accordance with Federal requirements.

The Federal Highway Administration and Federal Transit Administration approve the conformity determination for the FMATS 2045 Metropolitan Transportation Plan.

If you have any questions, please contact Mr. John Lohrey, FHWA Transportation Planner at (907) 586-7428, or Mr. Ned Conroy, FTA Community Planner at (206) 220-4318.

Sincerely,



Sandra A. Garcia-Aline
Division Administrator
Federal Highway Administration

LINDA M
GEHRKE

Digitally signed by LINDA M
GEHRKE
Date: 2019.01.30 11:58:10
-08'00'

Linda M. Gehrke
Regional Administrator
Federal Transit Administration

Electronically cc:

Ned Conroy, FTA
Judy Chapman, AK DOT&PF Northern Region

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, February 22, 2019 7:26 PM
To: Ackiss, Colleen M (DOT)
Subject: Fwd: Scoping Richardson Highway MP 359 Interchange and RR Grade - USFWS Comments

FYI - I haven't heard back from Ft Wainwright yet. will be out Monday and Tuesday.

Brett

Begin forwarded message:

From: "Buncic, Charleen" <charleen_buncic@fws.gov>
Date: February 22, 2019 at 5:11:24 PM AKST
To: "Nelson, Brett D (DOT)" <brett.nelson@alaska.gov>
Subject: Scoping Richardson Highway MP 359 Interchange and RR Grade - USFWS Comments

Dear Brett,

This email constitutes the U.S. Fish and Wildlife Service (Service) response to your request for Agency Scoping on Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project (Project No. Z607340000/A024033). The Service is specifically responding to the three questions in Section III of the scoping packet.

1. **Responding Agency:** USFWS
2. **Is the information provided herein consistent with agency knowledge?** The information provided in the project overview is consistent with the Service's general knowledge of the project area given the level of detail provided in the scoping packet.
3. **Does this scoping request adequately identify resources and permit needs under your agency's jurisdiction?** Yes.

Threatened and Endangered Species: There are no threatened or endangered species in the project area, thus the Service does not expect project-related activities to adversely impact listed species. This email constitutes informal consultation under the Endangered Species Act. Preparation of a Biological Assessment or further consultation regarding this project is not necessary at this time.

Eagles and their Nests: The Bald and Golden Eagle Protection Act protects eagles from take, as well as from disturbance to their nests, roosts, and foraging sites. The Service is unaware of any eagle nests in the proposed project area. Ultimately, the project proponent is responsible for preventing disturbance to

eagles. If an eagle nest is discovered within a half-mile of the project site, please contact our office for further assistance.

Migratory Birds: We appreciate the level of detail provided in the scoping packet regarding migratory birds that may be present in the project area, including the conservation status of those birds. We assume ADOT&PF utilized the USFWS IPaC planning tool to obtain this information. For future reference, it would be helpful to cite the data source. We also appreciate ADOT&PF's plans to avoid impacts to migratory birds during the nesting season by avoiding land-disturbing activities from May 1 through July 31 in the project area. This is the the most effective BMP for bird conservation prior to project construction.

Additionally, we appreciate the proposed pre-construction nest surveys, which may help reduce impacts to nesting birds when prior clearing or construction during the nesting season cannot be avoided. Please be aware, adequate buffers for identified nests must be provided, and surveys and buffers will not provide a means to completely avoid loss of nests or young. The Service encourages innovative ideas for conserving birds and their habitat when avoiding impacts during the nesting season is not practical. For your consideration, additional BMPs are provided in our document titled "Nationwide Standard Conservation Measures", which can be found at: <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures/nationwide-standard-conservation-measures.php>

Invasive Species: The Service appreciates ADOT&PF's plans to manage for the introduction and spread of invasive species during project implementation. To ensure on-the-ground knowledge of invasive species management, we recommend project contractors review a free self-paced training course on invasive species control, which can be found at <http://weedcontrol.open.uaf.edu>

Thank you for this opportunity to provide early comment. Should you have any questions, please feel free to contact me.

Sincerely,

Charleen Buncic

--

Charleen Buncic

U.S. Fish and Wildlife Service

101 12th Ave., Room 110

Fairbanks, AK 99701

907.456.0276

907.456.0208 (F)

"Whether you think you can or think you can't, you're right" - Henry Ford

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, March 01, 2019 4:04 PM
To: Ackiss, Colleen M (DOT); Skinner, Alan F (DOT)
Subject: FW: Richardson Highway MP 359 Grade Separated Facility Agency Scoping
Attachments: DOT Letter 2019.pdf

From: Donald Galligan <DGalligan@fnsb.us>
Sent: Friday, March 1, 2019 3:49 PM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Subject: RE: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Brett, please find attached the FNSB's scoping comments for the Richardson Highway 359 Interchange and Railroad Grade Separated Facility Agency Scoping opportunity. We understand that this submittal is 1 week late, however we are already on record for the comments included here, and feel that an error was made when stating that the project as proposed is consistent with local planning. Based on this we wanted to be very judicious with our reply and this created a slight delay in our response.

Thank you for this opportunity to provide comment.

Donald C. Galligan, Jr. AICP | Planner IV—Transportation
[Fairbanks North Star Borough](#) | [Community Planning](#)
907.459.1272 (direct) | 907.459.1260 (department)
dgalligan@fnsb.us |

From: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Sent: Friday, February 8, 2019 11:08 AM
To: Aaron Schutt - Doyon, LTD (admin@doyon.com) <admin@doyon.com>; Bailey, Meadow P (DOT) <meadow.bailey@alaska.gov>; Benjamin.N.Soiseth@usace.army.mil; Donald Galligan <DGalligan@fnsb.us>; Frye, Caitlin S (DOT) <caitlin.frye@alaska.gov>; Heil, Cynthia L (DEC) <cindy.heil@alaska.gov>; Henszey, Bob USF&WS <Bob_Henszey@fws.gov>; Kellen Spillman <KSpillman@fnsb.us>; Molly Vaughan (vaughan.molly@epamail.epa.gov) <vaughan.molly@epamail.epa.gov>; Nancy Durham <NDurham@fnsb.us>; Sonafrank, Nancy B (DEC) <nancy.sonafrank@alaska.gov>; McCabe, Gene C (DEC) <gene.mccabe@alaska.gov>; Fish, James T (DEC) <james.fish@alaska.gov>; Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>; Fox, Jackson G (DOT) <jackson.fox@alaska.gov>; Schacher, Daniel L (DOT) <daniel.schacher@alaska.gov>; Weinberger, John S CIV USARMY IMCOM PACIFIC (USA) <john.s.weinberger.civ@mail.mil>
Cc: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>; Fischer, David K (DOT) <david.fischer@alaska.gov>; Nelson, Brett D (DOT) <brett.nelson@alaska.gov>; Gamza, Thomas A (DOT) <thomas.gamza@alaska.gov>
Subject: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Hello,

The attached scoping letter and accompanying figure are to provide you with an overview of the proposed project, Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734). Please review and return any comments you have on the project so that we may evaluate and consider them in our environmental document.

Thank you for your efforts in reviewing and responding,

Brett



Brett Nelson

Northern Region Environmental Manager

Alaska Dept. of Transportation & Public Facilities

2301 Peger Road / Fairbanks, AK 99709

Office (907)451-2238

Fax (907)451-5126



Fairbanks North Star Borough

Mayor's Office

907 Terminal Street P.O. Box 71267 Fairbanks, AK 99707-1267 T.(907)459-1300 F.(907)459-1102

March 1, 2019

Brett Nelson
State of Alaska Department of Transportation & Public Facilities
2301 Peger Rd
Fairbanks, AK 99709

Re Comments on the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Agency Scoping Request.

Dear Mr. Nelson:

The Fairbanks North Star Borough (FNSB) appreciates the opportunity to submit comments regarding the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Agency Scoping request. Please accept these as the official scoping comments from the FNSB Administration.

The FNSB attended the January 24, 2019 Stakeholders Meeting at DOT Northern Region offices including review of the two alternatives that are currently under consideration for further development. At that time the FNSB brought up several concerns about the alternatives presented, and the findings of this Cat Ex document are equally concerning. The FNSB has worked diligently over the last 12 years to ensure that Alaska Railroad (ARRC) projects are planned and developed consistent with the goal of re-routing the ARRC to a southerly alignment around the heart of Fairbanks. This effort began in earnest with a June 25, 2007 MOU between the FNSB and the ARRC (Attached) agreeing in principal to preserving a corridor for future railroad realignment.

Our concern is that the current design for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility is inconsistent with the Fairbanks Area Rail Line Relocation Project, is inconsistent with the FNSB Regional Comprehensive Plan, and is inconsistent with the approved Alaska State Rail Plan.

The project is wrongly identified as consistent with local plans in Section IV Anticipated Environmental Consequences, C Land Use and Transportation Plans, Items 1 and 2. These inconsistencies are identified below. The project as designed is inconsistent with the following sections of the FNSB Regional Comprehensive Plan:

Land Use, Goal 4, Strategy 11, Action C: *Pursue an appropriate realignment route for the Alaska Railroad that will meet both the needs of the military and the Borough;* and

Transportation and Infrastructure, Goal 1, Strategy 5, Action A: *Encourage a reroute of the railroad to reduce the number of at-grade railroad crossings; create separate grade crossings for the remainder, when possible.*

This inconsistency is relevant because local planning authority approval rests with the FNSB Planning Commission. This project as proposed does not incorporate and facilitate the long term vision for our community, and indeed recommends putting the infrastructure in place, that may preclude the achievement of our long-term vision.

The project is inconsistent with the approved Alaska State Rail Plan, which specifically calls out the Richardson Highway: MP 359 Railroad Crossing Overpass as an aspect of the Fairbanks Area Rail Line Relocation (1.2.3.2). This plan is "to serve as the basis for federal and state rail investments within the state," and as you are aware, AS 44.42 assigns the DOT the responsibility to plan for all modes of

transportation. The FNSB would not have actively supported this project over its history without the understanding that it was an aspect of the overall Fairbanks Area Rail Line Relocation project.

Finally, the Project may be inconsistent with the Fairbanks Area Rail Line Relocation Project because the geometry of the proposed crossing may preclude a transition with the rail line headed south towards North Pole.

In the past, the FNSB has supported this project in multiple comments to the State with the understanding that it would be an aspect of the Fairbanks Area Rail Line Relocation project. On at least three separate occasions, the FNSB submitted comments supporting the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility to the DOT.

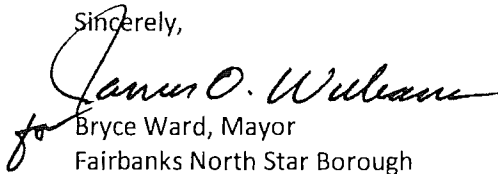
In a May 7, 2014 letter signed by Mayor Hopkins, the FNSB expressed appreciation with the inclusion of this project in the State Transportation and Improvement Program (STIP) and asked for a secure funding source for the project. On August 7, 2014, Mayor Hopkins commented again with concern for funding of this project. Then, on August 18, 2016 in a letter signed for Mayor Kassel, the FNSB commented on how funding for the project had been moved out past 2019 and reiterated the importance of this "priority project" in the State Rail Plan as an aspect of the Fairbanks Area Rail Relocation Stage II Project. Then, most recently, in a letter dated January 31, 2019 to the Project Manager Colleen Ackiss FNSB Mayor Ward stated concerns for the project as designed after the stakeholder working group meeting and the alternatives were presented for the first time.

The 2007 MOU between the ARRC and the FNSB demonstrates the long term goal of both parties to move rail traffic out of the core of the community and relocate it south of town. MP 359 of the Richardson Highway is a key aspect of transitioning between phase 2 and phase 3 of this relocation and this overpass, as currently designed, appears to preclude using it as this approved transition point.

This project is very important to the FNSB not only for the safety improvements on the Richardson Highway, but also for the long-term viability of the rail relocation project. The FNSB requests that the DOT improve upon the design to demonstrate the long term rail realignment project was seriously considered and addressed through the environmental process, and that the overpass design can accommodate and, at a minimum, not preclude using this overpass as an aspect of the Fairbanks Area Rail Line Relocation project as envisioned and agreed to by all parties.

Thank you for your consideration. We hope that this project can move forward in a way that supports the longer term vision of realignment of the rail line around Fairbanks.

Sincerely,


Bryce Ward, Mayor
Fairbanks North Star Borough

Attachments (MOU)

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Friday, March 01, 2019 4:04 PM
To: Ackiss, Colleen M (DOT); Skinner, Alan F (DOT)
Subject: FW: Richardson Highway MP 359 Grade Separated Facility Agency Scoping
Attachments: 2007_ARRC_FNSB_MOU_Signed.pdf

FYI

From: Donald Galligan <DGalligan@fnsb.us>
Sent: Friday, March 1, 2019 3:52 PM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Subject: RE: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Brett, this is the attachment that goes with the letter. For some reason it was dropped when I sent my last correspondence.

Thanks and have a good weekend.
Don

Donald C. Galligan, Jr. AICP | Planner IV—Transportation
[Fairbanks North Star Borough](#) | [Community Planning](#)
907.459.1272 (direct) | 907.459.1260 (department)
dgalligan@fnsb.us |

From: Donald Galligan
Sent: Friday, March 1, 2019 3:49 PM
To: 'Nelson, Brett D (DOT)' <brett.nelson@alaska.gov>
Subject: RE: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Brett, please find attached the FNSB's scoping comments for the Richardson Highway 359 Interchange and Railroad Grade Separated Facility Agency Scoping opportunity. We understand that this submittal is 1 week late, however we are already on record for the comments included here, and feel that an error was made when stating that the project as proposed is consistent with local planning. Based on this we wanted to be very judicious with our reply and this created a slight delay in our response.

Thank you for this opportunity to provide comment.

Donald C. Galligan, Jr. AICP | Planner IV—Transportation
[Fairbanks North Star Borough](#) | [Community Planning](#)
907.459.1272 (direct) | 907.459.1260 (department)
dgalligan@fnsb.us |

From: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Sent: Friday, February 8, 2019 11:08 AM
To: Aaron Schutt - Doyon, LTD (admin@doyon.com) <admin@doyon.com>; Bailey, Meadow P (DOT) <meadow.bailey@alaska.gov>; Benjamin.N.Soiseth@usace.army.mil; Donald Galligan <DGalligan@fnsb.us>; Frye, Caitlin S (DOT) <caitlin.frye@alaska.gov>; Heil, Cynthia L (DEC) <cindy.heil@alaska.gov>; Henszey, Bob USF&WS <Bob_Henszey@fws.gov>; Kellen Spillman <KSpillman@fnsb.us>; Molly Vaughan (vaughan.molly@epamail.epa.gov) <vaughan.molly@epamail.epa.gov>; Nancy Durham <NDurham@fnsb.us>; Sonafrank, Nancy B (DEC)

<nancy.sonafrank@alaska.gov>; McCabe, Gene C (DEC) <gene.mccabe@alaska.gov>; Fish, James T (DEC) <james.fish@alaska.gov>; Leinberger, Dianna L (DNR) <dianna.leinberger@alaska.gov>; Fox, Jackson G (DOT) <jackson.fox@alaska.gov>; Schacher, Daniel L (DOT) <daniel.schacher@alaska.gov>; Weinberger, John S CIV USARMY IMCOM PACIFIC (USA) <john.s.weinberger.civ@mail.mil>
Cc: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>; Fischer, David K (DOT) <david.fischer@alaska.gov>; Nelson, Brett D (DOT) <brett.nelson@alaska.gov>; Gamza, Thomas A (DOT) <thomas.gamza@alaska.gov>
Subject: Richardson Highway MP 359 Grade Separated Facility Agency Scoping

Hello,

The attached scoping letter and accompanying figure are to provide you with an overview of the proposed project, Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734). Please review and return any comments you have on the project so that we may evaluate and consider them in our environmental document.

Thank you for your efforts in reviewing and responding,
Brett



Brett Nelson

Northern Region Environmental Manager
Alaska Dept. of Transportation & Public Facilities
2301 Peger Road / Fairbanks, AK 99709
Office (907)451-2238
Fax (907)451-5126

MEMORANDUM OF UNDERSTANDING #1
FAIRBANKS NORTH STAR BOROUGH
ALASKA RAILROAD CORPORATION

FNSB CLERK'S OFFICE

RECEIVED

DATE

TIME

8/8

4:00 PM

25 June 2007

THE PURPOSE OF THIS MOU

Alaska Railroad Corporation (ARRC) and Fairbanks North Star Borough (FNSB) desire to optimize the alignment of the Alaska Railroad within the Fairbanks-North Pole area to improve safety, customer response, and minimize transportation conflicts within the adjacent communities. ARRC and FNSB agree to commence defining a new rail corridor from the west side of Fairbanks near Sheep Creek to the east side of North Pole near Moose Creek. This effort is hereby named the Fairbanks - North Pole Rail Realignment (F-NPR). Additionally, ARRC and FNSB will pursue a study to determine possible passenger transit services for the communities along the route.

OVERVIEW

Several major engineering studies have thoroughly investigated alternatives for rail realignment through the Fairbanks-North Pole area. One such segment, commonly known as the Ft. Wainwright Bypass, has been approved to provide Independent Utility and is proceeding with Department of Defense funding. It should be considered an interim route around Ft. Wainwright until such time as the F-NPR is completed.

The overall size and cost of the F-NPR is considerable and will almost certainly require that engineering, funding and construction be accomplished in phases, although these phases would be worked as simultaneously as possible. In recognition of the need for project clarity and considering that "phases" were used in previous studies over years past, a re-naming of proposed F-NPR segments is in order. The Richardson Highway Mile Post 9-North Pole project is clearly the least complex from both a financial and engineering point of view, and shall be called **Phase 1**. The safety benefits resulting from the Richardson Highway Mile Post 9 to North Pole phase are very substantial. Public transit is a distinct possibility for Phase 1. The NEPA process for Phase 1 can be accomplished expediently by relying on the engineering effort and environmental studies conducted to date. Securing independent utility in order to set the scope of study for NEPA looks to be a possible strategy for proceeding with Phase 1 and if determined to be viable will be supported by the FNSB.

ARRC will continue the alternative analysis engineering study for the area from Richardson Highway Mile Post 3 to Richardson Highway Mile Post 9 (**Phase 2**) and for the remaining realignment segment west of Phase 2 past the Chena River (**Phase 3**). Phase 1 should be first priority among the three phases.

Phase 1 Considerations

The existing Tanana River Levee provides a feasible realignment corridor for the railroad that the partners believe would improve safety, minimize traffic conflicts and optimize freight/transit through the area. The Tanana River Levee was constructed by the US Army Corps of Engineers (COE) and is now the responsibility of the FNSB. As part of Phase 1 the FNSB and the ARRC will develop a no-fee "exclusive use easement" right of way and work cooperatively with permitting authorities to ensure use of the area on or near the levee as a rail corridor through a right-of-way agreement. Maintaining

the structural integrity of the rail/levee combination is essential, is in the vital interest of all parties, and must not be compromised. The addition of a railroad on or near the levee could also be used to improve the structural integrity of the levee. As the railroad is realigned to the levee, with the approval of the COE where necessary, the ARRC could assume the FNSB's responsibility for maintenance of the levee in accordance with the COE agreements.

Once the railroad and engineering design for the levee commences, the ARRC and FNSB will seek public input and identify opportunities to enhance recreational trails. The FNSB has a designated recreational trail in the levee area that is largely undeveloped and its upgrade could be an integral part of the project. ARRC would provide access to the river-side of the levee where appropriate. ARRC and FNSB will cooperate to mitigate personal and vehicle access issues arising from the new railroad location. Access is expected to be approved for certain designated locations and will generally coincide with section lines and/or major roadway alignments. FNSB will support ARRC efforts to obtain required Federal approvals, such as "4(f)", which addresses impacts to recreational trails.

Any railroad right-of-way to be completely vacated by F-NPR will trigger statutory evaluation for possible reversion, beginning with North Pole in Phase 1.

Phase 2 and Phase 3 Considerations

As the ARRC progresses on the design and construction of Phase 1, efforts will turn to the west. The FNSB and the ARRC will aggressively pursue funding for planning and design of Phases 2 and 3 of the F-NPR.

This MOU demonstrates that the long term goal of both parties is to move rail traffic out of the core of the community and relocate it south of town. The parties acknowledge that while a "no build" option will be considered under every phase, one purpose of this MOU is to articulate the parties' agreement that routes south of Fairbanks are preferred solutions over increasing speeds or elevating rail traffic through the Trainor Gate - New Steese - Old Steese areas of town.

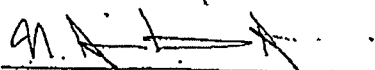
As each phase of railroad relocation develops, the ARRC and the FNSB can draw up further MOU's or right of way agreements as necessary to lock-in specific details for the subsequent project phases.

For the
ALASKA RAILROAD CORPORATION



Patrick K Gamble
President & Chief Executive Officer

For the
FAIRBANKS NORTH STAR BOROUGH



Jim Whitaker
Mayor

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Monday, March 04, 2019 11:29 AM
To: Ackiss, Colleen M (DOT); Skinner, Alan F (DOT)
Subject: FW: Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734) project (UNCLASSIFIED)

This should be the last of the comments.

Brett

-----Original Message-----

From: Petersen, Ida R CIV USARMY IMCOM PACIFIC (US) <ida.r.petersen.civ@mail.mil>
Sent: Monday, March 4, 2019 11:22 AM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Cc: Guo, Jerry P CTR USARMY IMCOM PACIFIC (US) <jerry.p.guo.ctr@mail.mil>
Subject: Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility (60734) project (UNCLASSIFIED)

CLASSIFICATION: UNCLASSIFIED

Brett,

As part of the early coordination process, the form was sent to all affected organizations at USAG Alaska. We received one comment during the review of the Richardson Highway MP 359 scoping review, below:

"The Document discusses the DOT maintaining a multi-use path within the land eased to DOT within federal military land. The multi-use path would need to be separate from the troop crossing. It needs to be designed and constructed at different levels so the path users do not gain access to FWA's cantonment area and/or small arms range."

No other comments on this project.

Thank you,

Ida Petersen, P.E.
NEPA & Water Program Manager
USAG Alaska IMFW-PWE
(907) 361-6220
ida.r.petersen.civ@mail.mil

Check out the updated Fort Wainwright Storm Water website at: https://urldefense.proofpoint.com/v2/url?u=https-3A__www.wainwright.army.mil_index.php_about_environmental_compliance_storm-2Dwater&d=DwIFAg&c=teXCf5DW4bHgLDM-H5_GmQ&r=uh3tS-3Ecxbjy4ZjwZnyq4hZJ8KDyt6jYZ7Nk8gGFJM&m=YQJNZFGawNtUQB1t4A3XRS3LQ-xKaJc1UBENM4e26JY&s=ki0vZyL_8M-d6uXigoArvSGBq2S7CQsp9rbyAZU_AYk&e=

CLASSIFICATION: UNCLASSIFIED

Ackiss, Colleen M (DOT)

From: Nelson, Brett D (DOT)
Sent: Tuesday, March 12, 2019 3:37 PM
To: Ackiss, Colleen M (DOT)
Subject: FW: Air Quality Division Response to the Proposed Richardson Highway Milepost (MP) 359 Interchange and Railroad Grade Separated Facility (60734) project

Hi Colleen,

This just rolled in as well. DEC is suggesting that we do an interagency consultation on this one, so I am checking with Jackson. Seems like this should have been taken care of already by including in the MTP project list, so I will let you know.

Thanks,
Brett

From: Alimi, Adeyemi S (DEC) <adeyemi.alimi@alaska.gov>
Sent: Tuesday, March 12, 2019 3:23 PM
To: Nelson, Brett D (DOT) <brett.nelson@alaska.gov>
Cc: Heil, Cynthia L (DEC) <cindy.heil@alaska.gov>
Subject: Air Quality Division Response to the Proposed Richardson Highway Milepost (MP) 359 Interchange and Railroad Grade Separated Facility (60734) project

Dear Brett Nelson,

The Alaska Department of Transportation and Public Facilities (DOT&PF) is soliciting for comments on the Proposed Richardson Highway Milepost (MP) 359 Interchange and Railroad Grade Separated Facility (60734) project. DOT&PF requests agency or organization to provide information on the following:

1. Responding Agency
2. Is the information provided herein consistent with agency knowledge?
3. Does this scoping request adequately identify resources and permit needs under your agency's jurisdiction?

1. Responding Agency

Thank you for the opportunity to comment on the proposed project. The following comments are limited to Air Quality. Other divisions within Alaska Department of Environmental Conservation (ADEC) will need to respond within their areas of expertise.

2. Is the information provided herein consistent with agency knowledge?

Yes, the proposed project is within the boundaries of Fairbanks nonattainment area for PM_{2.5} and Fairbanks maintenance area for carbon monoxide (CO). The Air Quality Division (AQ) of Alaska Department of Environmental Conservation (ADEC) agrees that the proposed pedestrian facilities and the railroad crossing improvements are exempt from project-level conformity under 40 CFR 93.126. Since the interchange is a project in the approved 2040 FMATS Metropolitan Transportation Plan (MTP)(#VLR-20) and the MTP has an approved determination, the project has demonstrated project-level conformity; in accordance with the provisions in 40 CFR 93.114 and 40 CFR 93.115, to demonstrate project-level conformity, a project must come from a conforming MTP and Transportation Improvement Program (TIP). In accordance with the provisions in 40 CFR 93.116(a), we agree that the proposed project is exempt from

CO hotspot analysis because it does not include any signalized intersections. Lastly, we believe that the project is exempt from PM_{2.5} hotspot analysis because it would not affect intersections at Level of Service D, E, or F, and would not increase traffic volumes from a significant number of diesel vehicles.

However, while we may agree the project is exempt, only an interagency consultation can confirm the exemptions and ensure no conformity determination, hot spot analysis, or project-level conformity analysis is required. Therefore, ADEC-AQ recommends an interagency consultation. The interagency consultation, which satisfies the provisions in 18 AAC 50.715(a)(2) and 40 CFR 93.105(c), should include the air quality staff of ADEC, the MPO (Fairbanks Metropolitan Area Transportation System (FMATS)), Fairbanks North Star Borough (FNSB), Environmental Protection Agency (EPA), and State and federal DOTs (ADOT/PF and the Federal Highway Administration (FHWA)/Federal Transit Administration (FTA) within the Department of Transportation (DOT)). The interagency consultation not only confirms exemptions but the documentation of an interagency consultation also provides protection for any air quality issues or challenges to this project in the future.

Please contact me if you would like any assistance. I can easily provide the names and contact information for an interagency consultation. Also, please include me in any future requests for agency comments on ADOT projects.

Sincerely,

Adeyemi Alimi (Yemi)
State of Alaska, Department of Environmental Conservation
Air Quality Division
Non-Point Mobile Sources Section
adeyemi.alimi@alaska.gov
907-269-6953 (Office)

FMATS
Interagency Consultation Meeting Summary
April 10, 2019 9 AM

Attendees

FMATS – Jackson Fox
DOT&PF – Brett Nelson, Alan Skinner, Holly McKinney
FNSB – Nick Czarnecki
ADEC – Cindy Heil, Adeyemi Alimi, Steven Hoke
EPA – Karl Pepple
FHWA – John Lohrey, George Noel
FTA – Ned Conroy

Summary

Jackson Fox (FMATS) led attendee introductions/roll call.

Alan Skinner (DOT&PF) introduced the Richardson Highway MP 359 Grade Separated Crossing project. He indicated that the project goal was to replace two at-grade intersections (railroad and highway traffic) with two grade-separated interchanges. Alan stated that the highway intersection is LOS C in the morning and LOS D in the afternoon. The intersection is anticipated to be LOS F in the long-range 2045 Metropolitan Transportation Plan (2040/2045 MTP).

Mr. Fox opened up the call to questions from agency participants.

Karl Pepple (EPA) asked for clarification about the project, specifically if it was HSIP funded. Brett Nelson (DOT&PF) answered that it was a potential high risk crossing, but that it was not funded by HSIP and covered under operations improvement with inclusion in the 2040/2045 MTP.

George Noel (FHWA) spoke up, suggesting that although this may not be a HSIP project, it may still qualify for an exemption from project-level conformity under 40 CFR 93.126, table 2, line #2 (Projects that correct, improve, or eliminate a hazardous location or feature). Mr. Nelson indicated that DOT&PF would contact Pam Golden (DOT&PF) and ask her to provide a brief justification that shows this project component qualifies as exempt under 40 CFR 93.126, table 2, line #2.

Mr. Noel asked if the intersection was an area of rapid growth and whether there would be an increase in diesel engines and pollution after the improvements were made. Mr. Skinner indicated that DOT&PF anticipates a 1.2% growth rate for all traffic, including diesel engine use. Because of weight restrictions on bridges through town, truckers are already required to use that intersection. The work at the intersection is not anticipated to significantly alter traffic patterns.

Mr. Noel mentioned that if we can't get the safety exemption, the other alternative is CO hot-spot analysis of LOS D, E, or F intersections as described in 40 CFR 93.123 (1)(ii).

Mr. Fox asked the attendees how they would like to handle further communications. They agreed that they would reconvene for another conference call after it was determined whether an exemption could be made under 40 CFR 93.126, table 2, line #2.

No further questions were asked regarding the Richardson Highway MP 359 Grade Separated Crossing project. The conference call concluded at 9:32am.

Interagency Consultation Meeting Summary
May 8, 2019 1:00 PM

Attendees

Fairbanks MPO – Jackson Fox
DOT&PF – Brett Nelson, Alan Skinner, Holly McKinney, Randi Baliey
FNSB – Nick Czarnecki
ADEC – Cindy Heil, Steven Hoke
EPA – Karl Pepple
FHWA – John Lohrey, George Noel, Leigh Oesterling

Summary

Jackson Fox (Fairbanks MPO) led attendee introductions/roll call for the second interagency consultation meeting for the Richardson Highway MP 359 Grade Separated Crossing project air quality conformity ruling. Mr. Fox stated that Ned Conroy (FTA) was not able to attend the meeting but that he would defer to whatever decision FHWA, EPA, and other consultation attendees made.

Mr. Fox began the meeting by asking members of the DOT&PF team to tell the agency members where the project stands. Brett Nelson (DOT&PF) asked the agency participants to look at the memorandum (dated 04/26/2019) from Pam Golden (Northern Region Traffic and Safety Engineer) which states that “40CFR 93.126, Table 2, line #1, indicates the railroad/highway crossing improvements are exempt from the requirements to determine conformance to adopted air quality plans, which applies to the railroad grade separation portion of the subject project. Line #2 of the same table indicates projects that correct, improve, or eliminate a hazardous location or feature are also exempt. It is the opinion of the Traffic & safety office that this project eliminates a hazardous location.” Mr. Fox asked the agency participants if they had any objections to Ms. Golden’s opinion, or if they agreed that the project met the criteria for an exemption.

John Lohrey (FHWA) stated that he felt that the project meets the criteria for an exemption. Leigh Oesterling (FHWA) also stated that she felt that the project meets the criteria for an exemption. Ms. Oesterling suggested that the exemption criterion under 40 CFR 93.126, Table 2, Line #2 was especially strong as the Richardson Highway MP 359 Grade Separated Facility: Interchange Concept Development Memo indicated that 24 crashes had occurred in the study area between 2008 and 2012.

Ms. Oesterling then asked Mr. Fox if air quality conformity exemptions were also included in the Transportation Improvement Plan (TIP). Mr. Fox indicated the Richardson Highway MP 350 project was included in an informational table in the TIP, but the TIP does not list project eligibility for air quality exemptions. Ms. Oesterling then suggested that if the project is exempt, there is no need to complete an individual conformity determination analysis.

Mr. Fox then confirmed that the FHWA did not feel that there was a need to complete project-level air quality conformity analyses for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility. Both Mr. Lohrey and Ms. Oesterling (FHWA) agreed that the project was exempt and no additional air quality conformity analyses were necessary. Mr. Fox then asked if any other agency representative had any objections to this project being exempt. George Noel (FHWA) and Cindy Heil (ADEC) agreed that the project met the criteria for an exemption.

Mr. Fox then asked if there was a need for an official letter concerning the air quality conformity determination. Ms. Oesterling indicated that an official document was not needed and that the teleconference memos would suffice as documentation; which should be added to the NEPA documents.

Mr. Fox asked if there were any other questions regarding the Richardson Highway MP 359 Grade Separated and Railroad Grade Separated Facility. Ms. Oesterling stated that she didn't have any further questions but she would recommend that in the future, that a statement about air quality conformity should be included in project descriptions to avoid the necessity of having more than one interagency consultation meeting. The teleconference concluded at 1:13PM.

MEMORANDUM

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

TO: Colleen Ackiss, P.E.
Engineering Manager
Northern Region

DATE: 04/26/2019

FILE NO: Projects\Rich_Hwy\60734_Rich_359_GradeSep\Fac07
Environmental\00 Env General\Air quality\TS Conformity

PHONE NO: 451-2283

FAX NO: 451-5390

FROM: Pam Golden, P.E. *PWG*
Traffic & Safety Engineer
Northern Region

SUBJECT: Richardson Hwy MP 359
Interchange and RR Grade Sep
Z7607340000/0A24033
Air Quality Conformity

40 CFR 93.126, Table 2, line #1 indicates railroad/highway crossing improvements are exempt from the requirement to determine conformance to adopted air quality plans, which applies to the railroad grade separation portion of subject project.

Line #2 of that same table indicates projects that correct, improve, or eliminate a hazardous location or feature are also exempt. It is the opinion of the Traffic & Safety office that this project eliminates a hazardous location. In the existing configuration, northbound Richardson Highway traffic wishing to exit the highway to access the Old Richardson Highway area crosses the southbound prism of the Richardson Highway at grade. Northbound drivers must exit to the left, which violates driver expectation. Further, trucks wishing to use the exit must weave across all northbound lanes of traffic due to being required to stop in the truck/bus lane at the railroad crossing that is also a part of this project. Posted highway speed in this area is 60 mph. Sight distance at the crossing is good; however this is the only at grade street crossing in the first 5.8 miles of the southbound prism of the Richardson Highway.

Crashes with vehicles traveling at 60 mph generally have more severe outcomes than those at lower speeds, making this an inherently high consequence location should crashes occur. This project aligns with Strategy 2 of Alaska's Strategic Highway Safety Plan as elimination of this at-grade intersection would remove the high speed conflict point.

pkg/kgb *kgb*

Attachment 10

Stakeholder and Public Involvement

10A- Stakeholder Meeting Agenda

10B- Stakeholder Meeting Sign-in Sheet

10C- Public and Stakeholder Comments and Responses



Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility Z607340000 / 0A24033
Project Website: www.dot.alaska.gov/nreg/rich359/
January 24, 2019
2:00 to 4:00 PM



STAKEHOLDERS' MEETING AGENDA

We welcome your input and ideas. Thank you for taking the time to be involved.

- I. Welcome and Introductions
 - a. Design Team and Roles
 - b. Stakeholders and Interests
- II. Project Background: Purpose and Need for Improvements near MP359
- III. Project Timeline
- IV. Presentation of Conceptual Design Solutions
- V. Discussion: Questions, Answers, Comments, New Ideas
- VI. PLEASE fill out a comment sheet today – or deliver by January 31, 2019.



*This information is voluntary. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.



STAKEHOLDERS' MEETING SIGN IN SHEET

Richardson Highway MP 359 Interchange and Railroad

Grade Separated Facility

Z607340000 / 0A24033

January 24, 2019



We welcome written input from the public. Thank you for taking the time to be involved.

PAGE 1 OF 5

NAME/ COMPANY/ AFFILIATION (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE OPTIONAL
Mike Harrod	170 E. Van Horn Rd 99741 Mike.Harrod@Crowley.com	347-3493	M	Caucasian
Colleen Ackiss	2301 Peger Rd	451-5179	—	—
James McCurtain	Jacobs/ jamesmccurtain@jacobs.com	301-4042	M	—
Jim Potts / Jacobs	james.potts@jacobs.com	907-830 0657	M	Caucasian
Joe Michel / Alaska Trucking association	joe@aktrucks.org	907 276 1149	M	Alaska Native
Josh Norum	jnorum@SourdoughExpress.com	907 977-4907	M	—
James McMillon	751 Old Richardson jmmillon@AKConstructors.com	322-6050	M	—

The environmental review, consultation, and other actions required by applicable Federal environmental laws are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 AAC 37 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

*This information is voluntary. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.



STAKEHOLDERS' MEETING SIGN IN SHEET

Richardson Highway MP 359 Interchange and Railroad

Grade Separated Facility

Z607340000 / 0A24033

January 24, 2019



We welcome written input from the public. Thank you for taking the time to be involved.

PAGE 5 OF 5

NAME/ COMPANY/ AFFILIATION (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE OPTIONAL
JACK BINDER ALASKA WEST EXPRESS	jbinder@lynden.com	907-347-4816	M	-
KATRINA Martolano Brenntag Pacific	martolano@ak.net	9073713393	F	
Karen Erickson	760 S Deep Cr. Rd.	907912775	F	C.
Craig Widdits DUPLICATE	4 (see pg 4 details)			
Jackson Fox	2301 Peger Rd Fbhs, AK 99709	451-5415	M	W

The environmental review, consultation, and other actions required by applicable Federal environmental laws are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

*This information is voluntary. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.



STAKEHOLDERS' MEETING SIGN IN SHEET

Richardson Highway MP 359 Interchange and Railroad

Grade Separated Facility

Z607340000 / 0A24033

January 24, 2019



We welcome written input from the public. Thank you for taking the time to be involved.

PAGE 4 OF 5

26' wide haul

NAME/ COMPANY/ AFFILIATION (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE OPTIONAL
Andrew Trujillo / Fairbanks Alaska Trucking Mte	Andrew.Trujillo@knifekiver.com	907 3786290	M	
Craig Widdis	4089 Pegor Rd 99709	452-4840	M	

The environmental review, consultation, and other actions required by applicable Federal environmental laws are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

*This information is voluntary. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.



STAKEHOLDERS' MEETING SIGN IN SHEET

Richardson Highway MP 359 Interchange and Railroad

Grade Separated Facility

Z607340000 / OA24033

January 24, 2019



We welcome written input from the public. Thank you for taking the time to be involved.

PAGE 3 OF 5

NAME/ COMPANY/ AFFILIATION (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE OPTIONAL
Thomas Benjamin DOT&PF	2301 Peger Rd	457-2262	M	-
Alicia Stevens FMATS	alicia.stevens@alaska.gov		F	W
Travis Malin HCC	1296 Old Rich Hwy	488-5983	M	W
Scott FRAZEE	855 OLD RICH	978-5500	M	W
Kellen Spillman	FMSB		M	W
Alan Hoza Lynden Logistics	246 Brightland Dr, Fairbanks	388-9411	M	W
Daniel Martolano	North Pole 1242 North Star Drive	322-1814	M	W

The environmental review, consultation, and other actions required by applicable Federal environmental laws are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

*This information is voluntary. Its purpose is to ensure fair and equal representation by the public in all projects and programs administered by the Alaska Department of Transportation and Public Facilities.



STAKEHOLDERS' MEETING SIGN IN SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / 0A24033
January 24, 2019



We welcome written input from the public. Thank you for taking the time to be involved.

PAGE 2 OF 5

NAME/ COMPANY/ AFFILIATION (PLEASE PRINT)	MAILING ADDRESS and *EMAIL	PHONE	*GENDER (M/F)	*RACE OPTIONAL
Arctic Fire & Safety	arcfire@mosquitonet.com 702 38th Ave	907 452-7800	F	White
Lori Bishop FS&G Redi-Mix / Paving Products Exclusive Paving	P.O. Box 20430 99708 lbishop@fsgrm.com	452-4903	F	AK Native
Don Gallagher / FNSB	mggray@alaska.com	385-5578	M	
Alan Skinner / DOT+PF	dgalligan@fnsb.us	459- 1272	M	
Michael Lund / DOT+PF	alan.skinner@alaska.gov	451- 5331	M	W
Marisa Sharrock	michael.lund@alaska.gov	451-5067	M	W
	marisa@fairbankschamber.org	374- 6200	F	W

The environmental review, consultation, and other actions required by applicable Federal environmental laws are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. §207 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

Create Notice		Submitter's Guide		Active	Future	Archived	All
Title	Status	Publish Date	Archive Date	Last Modified	Comments	Actions	
Notice of Intent Tok Cutoff MP 38-50 Rehabilitation	Active	1/28/2019	2/11/2019	1/28/2019	0		
Notice of Intent to Begin Engineering and Environmental Studies <i>Richardson Hwy MP 359 Interchange and Railroad Grade Separation</i>	Archived	1/2/2019	1/26/2019	1/2/2019	0		
Notice of Proposed Vacation of a Portion of Highway Right of Way	Archived	12/24/2018	1/29/2019	12/24/2018	0		
Notice of Intent Nulato Airport Access Road Improvements Project	Archived	12/10/2018	1/11/2019	12/10/2018	0		
Public Open House North Pole Street Lighting Standardization and Improvements	Archived	11/2/2018	12/6/2018	10/10/2018	0		
Northern Region Deep Culverts Stage III Project-Notice of Proposed de minimis Section 4(f) Finding	Archived	11/1/2018	12/7/2018	11/1/2018	0		
Notice of Intent Richardson Highway MP 18-24 Resurfacing	Archived	10/30/2018	11/16/2018	10/30/2018	0		
Request for Comments Alaska Highway MP 1235-1268 Rehabilitation	Archived	10/30/2018	11/23/2018	10/30/2018	0		
Public Notice Whitshed Road and Pedestrian Improvements	Archived	10/22/2018	11/2/2018	10/22/2018	0		
Open House Old Richardson Highway Intersection Improvements	Archived	10/22/2018	11/30/2018	10/22/2018	0		
Public Open House Airport Way/Steese Expressway Interchange Project	Archived	9/28/2018	10/26/2018	10/17/2018	1		
Notice of Intent Richardson Highway MP 148-173 Reconstruction	Archived	9/18/2018	10/19/2018	9/18/2018	0		
Notice of Intent to Northern Region River Encroachment Repairs- Cordova Eyak Lake Road	Archived	7/31/2018	8/15/2018	7/30/2018	0		
Public Open House Airport Way West Improvements	Archived	6/29/2018	7/29/2018	6/29/2018	0		
Purpose & Need State Request for Public Comment-Steese Expressway/Johansen Expressway Interchange	Archived	5/30/2018	6/15/2018	5/30/2018	0		
Public Meeting-Richardson Highway MP 159-173 Reconstruction	Archived	5/18/2018	6/15/2018	5/18/2018	0		
Open House Yankovich Rd/Miller Hill Rd Reconstruction and Multi-Use Path	Archived	4/29/2018	6/5/2018	5/3/2018	1		
Public/Planning Meeting Nulato Airport Access Road Realignment	Archived	4/23/2018	5/14/2018	4/23/2018	0		
Open House St. Mary's Airport Improvements	Archived	4/12/2018	5/18/2018	4/10/2018	0		
Public Meeting Northern Region Deep Culverts Stage III	Archived	4/6/2018	5/18/2018	4/2/2018	0		
Chena River Walk Stage III, Segment I- Public Open House	Archived	3/14/2018	4/23/2018	3/14/2018	1		
Public Meeting Holy Cross Airport Resurfacing and Lighting Rehabilitation Project	Archived	11/29/2017	1/10/2018	11/29/2017	0		
Public Meeting White Mountain Airport Resurfacing and Lighting Rehabilitation	Archived	11/29/2017	1/13/2018	11/29/2017	0		
Notice of Intent Carlson Center Motor Plug Ins, Fairbanks and North Pole Libraries and Big Dipper Motor Plug Ins	Archived	10/12/2017	11/1/2017	10/12/2017	0		
Notice of Intent/Request for Public Comments-Northern Region Encroachment Repairs	Archived	9/27/2017	10/6/2017	9/27/2017	0		
Notice of Intent/Request for Public Comments-Parks Highway MP 356-362 Resurfacing	Archived	9/27/2017	10/15/2017	9/27/2017	0		
Open House HSIP: Richardson Highway MP 351 Interchange	Archived	9/8/2017	10/31/2017	9/8/2017	0		
Notice of Intent McCarthy Road MP 27 Chokosna Bridge #1193 Replacement	Archived	8/28/2017	9/29/2017	8/28/2017	2		
Notice of Intent Richardson Highway MP 65-80 Rehabilitation	Archived	8/28/2017	9/29/2017	8/28/2017	0		
Notice of Intent Aurora Drive Noyes Slough Bridge #0209 Replacement	Archived	8/24/2017	9/29/2017	8/24/2017	0		

No comments received



Public Comment & Response Summary Date

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Project No. Z607340000/0A24033

The following document summarizes the public scoping comments received by email, comment sheet, in person, and phone from December 19, 2018 to January 25, 2019.

Name	Comment Submission Method	Comment	Response
Rachel Maddy ARRC, Manager of ROW and Public Projects	email	No objection to either alt granted that they both include a highway overpass over the railroad that meets ARRC Standards. Any ped crossing of tracks will need to be on the overpass.	None needed.
Katherine Hensley DOT&PF, CVE	phone	Requested clarification information so that she could explain the project to the trucking industry.	None needed.
Karl Reid	email	Looks forward to the proposed improvements at both locations. SWEET!	None needed. Did send a "thank you for your comments" response.
Martin Gray Exclusive Paving	email	Open to the project, and favors the flyover concept.	None needed. Did send a "thank you for your comments" response.
Alan Hoza Lynden Logistics	email	Favors the flyover concept. Would like a vertical clearance of 18'6" even though there is an over-height bypass and other height restrictors on the route (i.e. Big Delta Tanana River Bridge). Would like project to accommodate excessively wide loads - 28' wide.	None needed. Did send a "thank you for your comments" response.
Travis Malin HC Contractors	email	Appears to support the flyover over the modified diamond due to economics. Recommended many construction considerations to take into account during the design process.	None needed. Did send a "thank you for your comments" response.
Jack Binder Alaska West Express	email	Favors the flyover concept. Is a strong proponent of overhead clearance at 18'6". Believes 18' should be a minimum overhead clearance, with 18'6" being an even better option. Strongly concurs with Alan Hoza's thoughts and ideas.	None needed. Did send a "thank you for your comments" response.

Jackson Hurst	email	Would like to be added to the project mailing list.	Responded that there is no project mailing list and directed him to the project website as the best location to stay informed regarding the project.
Karen Erickson(?) and Craig Widdis	dropped off in-person	Submitted Alan Hoza's comments with a hand note stating that they agree with all of the notes and comments.	None needed. Did not supply their contact information.
Mayor Bryce Ward Fairbanks North Star Borough	email/letter	Concerned that the current design is not consistent with the following plans: Fairbanks Area Rail Line Relocation Project, FNSB Regional Comprehensive Plan, and the Alaska State Rail Plan	NR Director Anderson discussed the project and comments with Mayor Ward prior to the DOT&PF Engineering Manager responding. A formal letter response was sent identifying how the current design elements are consistent with the three plans.
The following correspondence was initiated/received following the receipt of comments to assist with the response to Mayor Ward.			
Brian Lindamood ARRC	email	Provided further information regarding the Fairbanks Area Rail Line Relocation Project.	Incorporated this information into the formal response letter to Mayor Ward.
Ryan Anderson DOT&PF NR Director	email	Summarized a meeting he had with Mayor Ward.	
Formal responses to comments (excluded the "thank you for your comments" response).			
Letter to Mayor Ward from Colleen Ackiss, DOT&PF Engineering Manager dated March 18, 2019.			



COMMENT SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / 0A24033
December 19, 2018 – January 25, 2019
On-Line Open House



We welcome written input and ideas from the public. Thank you for taking the time to be involved.
(If you need more space please use second sheet.)

COMMENTS:

ARRC has no objection to either proposed alternative granted that they both include a highway overpass over the railroad that meets the ARRC Technical Standards for Roadway, Trail, and Utility Facilities current at the time of design. Any pedestrian crossing of the tracks will need to be accommodated on the new overpass facility (ARRC will not allow a combination of at-grade and grade separated facilities at the same location for safety reasons).

How did you hear about this meeting?

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment –including your personal identifying information –may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

E-MAIL ADDRESS: MaddyR@akrr.com

NAME: Rachel Maddy, Manager of ROW and Public Projects, ARRC

MAILING ADDRESS: 327 W. Ship Creek Ave, Anchorage, AK 99501

For further information, please contact Colleen M. Ackiss, P.E., Engineering Manager, at (907) 451-5179 or email: colleen.ackiss@alaska.gov. To correspond by text telephone (TDD), please call (907) 451-2363.

Please return comments by January 25, 2019.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

DOT/PF

Name/Section _____

TELEPHONE/CONFERENCE DATA

PEOPLE INVOLVED	REPRESENTING	Date: <u>01/17/19</u>
<u>Katherine Henstey</u>	<u>Commercial Vehicle</u>	Time: <u>noon</u>
<u>907-365-1215</u>	<u>Enforcement</u>	Project No./Name
<u>Colleen Ackiss</u>	<u>Design & Engineering</u>	<u>Roch MP 359</u>
	<u>Services</u>	<u>Interchange &</u>
TOPICS: <u>Looking for Information</u>		<u>Railroad Grade</u>
		<u>Separation.</u>
		<u>Z 607340000</u>

walked her through the 2 alternatives and how trucks would be accommodated. Alt 1 - the ramp goes under the Rich with an over height vehicle by-pass parallel to the Rich. Alt 2 - the Rich goes over the ramp so no by-pass is needed.

She was looking for design plans - informed her that they were not available at this time.

The purpose of her call was to get information so that she could explain these concepts to the trucking industry.

ACTION ITEMS: None

Copies To: _____

Signature: Colleen Ackiss

Ackiss, Colleen M (DOT)

From: Karl Reid <krr1955@alaska.net>
Sent: Monday, January 21, 2019 6:34 PM
To: Ackiss, Colleen M (DOT)
Subject: MP359Interchange

Follow Up Flag: Follow up
Flag Status: Flagged

Hi. I have looked forward to a better intersection @ the old/new Richardson area. Was wondering what is purposed. A one lane,(wide), overpass from the North bound New Rich onto the Old Rich would work really well for me as a truck driver. Very unsafe trying to pull across with a single trailer let alone a set or doubles at the present way the intersection is. Not to mention time consuming especially during 5:00 pm go home traffic. And,,,, a possible over pass at the train tracks? SWEET! Both improvements I highly look forward to. Well worth putting up with the construction phase part of the plans.
Best of luck.

Ackiss, Colleen M (DOT)

From: GRAY, Martin (NORTP) <mgray@colaska.com>
Sent: Thursday, January 24, 2019 4:04 PM
To: Ackiss, Colleen M (DOT)
Cc: LEFEBVRE, Sarah (NORTP)
Subject: Richardson HWY MP 359 Interchange Comment

Colleen,

Exclusive Paving is open to the construction of Richardson Highway MP 359 interchange. I believe that the flyover concept would be a more ideal design due to the close proximity of the power lines near the Old Richardson off ramp. Due to oversized loads that we haul, these lines could come into conflict. Also the flyover concept appears to be less invasive and a more cost effective project for the time being.

Thanks,

Martin J. Gray

Project Engineer
Exclusive Paving
1570 Richardson Hwy, North Pole, AK 99705
Cell [907.385.5578](tel:907.385.5578)
Direct [907.490.1344](tel:907.490.1344)
Mgray@colaska.com | www.colaska.com

Ackiss, Colleen M (DOT)

From: Alan Hoza <ahoza@lynden.com>
Sent: Friday, January 25, 2019 3:02 PM
To: Ackiss, Colleen M (DOT); James.Potts@jacobs.com
Cc: John Binder; Justin Burgess, AES Transportation; Steve Willford; Karen Erickson; Michel, Joseph A (DOA sponsored); Aves Thompson, ATA; Norvell, Donald R; Schacher, Sarah E (DOT); rbaker@colvilleinc.com
Subject: Comments: Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility
Attachments: Rich359-comment-sheet_AH.doc; Vert Clearance Table 1130-1.pdf

Hi Colleen and Jim,

Thank you both for your time and commitment to communicating with industry during the design of these projects!!

I have attached my comments on the project in the attached to hopefully capture the concerns of both the many barely legal loads and of the mega-move type transports which, although not common, do indeed occur through the Fairbanks area. As one involved in the coordination of these types of moves, believe me, these can seriously impact the flow, attitude, actions, and safety of the general traffic – in spite of the traffic control measures in place to help control the impacts. That said ... we would be good to strive to minimize the limitations of these types of movements, as they occasionally do occur (ex: North Slope projects, potential natural gas projects, potential gas line project, potential large mine projects, etc. ...).

I have also attached the table referenced in the AK Reconstruction Manual.

I am copying some others, in hopes that this will encourage them to submit their own comments – now, vs. once your design has made more progress and is more expensive to alter.

Please – *others* – **do submit your comments** by January 31st: the link for the project is:

<http://dot.alaska.gov/nreg/rich359/>

Respectfully,
Alan

Alan Hoza
Lynden Logistics
C: 907-388-9411



COMMENT SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / 0A24033
December 19, 2018 – January 25, 2019
On-Line Open House



We welcome written input and ideas from the public. Thank you for taking the time to be involved.
(If you need more space please use second sheet.)

COMMENTS:

I (and most drivers I surveyed) favor the Flyover Concept). It appears to be the least impactful for truck flow – with minimized maneuvering, which can enhance oversize vehicle movements.

- We would like to see an 18'6" clearance under the Flyover. We realize there is an over-height bypass, however, having a higher clearance on the main route can minimize any accidental miss-measurements, or complacent driving – so why would we not build in a more reasonable height to aid in minimizing any strike potentials! This would allow the flow impact in/out of traffic in/out of the bypass to the extreme over-height loads only – which is more appropriate. There are more of these loads in the on the verge of exceeding 17'6" than perhaps even the permit office is aware of.
- This is the main route from the port terminal in Valdez to the Prudhoe Bay oilfields. I feel that it would be unwise to limit the height on this Flyover. I do realize there are other restrictions (Big Delta Tanana River bridge, etc.), however, there have been much discussion between DOT, big oil companies, and industry that perhaps some of those limiting structures should be improved for future projects (ex. Gas line or any other future). So why would we limit this main inbound route into Fairbanks (and on north) for a couple feet of height (my opinion is 18' min)?? This would also drastically decrease the potential for any future bridge strikes!!
- Note: in the AK Highway Preconstruction Manual, 1130-5 Cross Sections (Table 1130-1 Vertical Clearance): there is a footnote "***" which states "From the Port of Anchorage to the North Slope the clearance of roadways underpassing railroads shall be 18 ft.". This footnote was a result of discussions of transports which had caused intensive modifications to pass under the underpass just south of Riley Creek near the Denali Park entrance. The ARRC decided to set the clearance. Also note that the Denali Region also cut the clearance to nearly 19' under that RR overpass, due to these transports as well. Further note: The State Highway section of the table needs to be updated to a min. of 18' (min.) to account for the post 2005 legal height increase from 16'6" to 17'6" on main highways.
- Also: at least three of the largest carriers of oversize transports have blanket utility clearances with the permit office which allow for 18'0", reducible to 17'6", from Port of Anchorage and Port of Valdez to the North Slope. It is quite difficult for these 18' loads to be reduced all the way to 17'6", however, it is reasonable for them to be reduced to ~17'10" by simply releasing the air in their suspensions. To maintain an 18' min clearance would be reasonably acceptable to the industry – so why would we not target 18'6" to allow for snowpack, etc.?

- The Flyover (or underpass if Modified Diamond) needs to accommodate excessively wide loads (to 28' wide, ex: large boats, large haul truck beds) which are routed around via Van Horn Rd by the permit office.
- The Steese Chena River Bridge has been restricted for ANY overweight traffic for a few years now. Therefore, this bypass can be critically important to be designed as a bypass for oversize and overweight truck traffic: additionally, during any particular transport – the permit office can require bypass around the Steese or Mitchell Expwy for any reason (ex. Construction activities) ... so this route should be minimized for any restriction. This is an industrial area of Fairbanks. Note: there are definitely height restriction issues on Van Horn (low lights), but this should be improved as possible to maintain this as the industrial route that it is advertised and utilized.
- Please note that all high power overhead main power lines (100KV + ?) require a full 4' of electrical clearance between the load height clearance and the sagging line, so please explore this with the power utilities to reduce “clearance” issues for design clearance through this project.

Thank you to all for your work and consideration to this point on this project! Thank you for your communication!!

How did you hear about this meeting? Email forwarded by an ATA member.

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment –including your personal identifying information –may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

E-MAIL ADDRESS: ahoza@lynden.com C: 907-3889411

NAME: Alan Hoza, Lynden Logistics, Haul Road Safety Committee member

MAILING ADDRESS: 246 Brighton Dr., Fairbanks, AK 99712

For further information, please contact Colleen M. Ackiss, P.E., Engineering Manager, at (907) 451-5179 or email: colleen.ackiss@alaska.gov. To correspond by text telephone (TDD), please call (907) 451-2363.

Please return comments by January 25, 2019.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

VERTICAL CLEARANCE

Minimum vertical clearances for the entire roadway width, should be provided according to the following table.

RECOMMENDED VERTICAL CLEARANCE*

OVERPASSING FACILITY UNDERPASSING FACILITY	STATE HIGHWAY		LOCAL ROADS OR STREETS	RAILROAD	PEDESTRIAN STRUCTURES	SIGN BRIDGES	BOTTOM SIGNAL HOUSING	OVERHEAD UTILITIES
	INTERCHANGE	GRADE SEPARATION						
LOCAL ROADS OR STREETS	16 ft - 6 in.	16 ft - 6 in. **			17 ft - 6 in.	18 ft - 6 in.	17 ft - 6 in.	20 ft - 6 in.
STATE HIGHWAY	*	16 ft - 6 in. **			*		*	
RAILROAD				23 ft				27 ft - 6 in.
PEDESTRIAN FACILITY	8 ft - 6 in.							

* Clearance values shown include a 6 in. allowance for future resurfacing of the roadway.
 ** From the Port of Anchorage to the North Slope the clearance of roadways underpassing railroads shall be 18 ft.

18'6" per aw Alaska Traffic Manual

Table 1130-1
Vertical Clearance

** Need changed*

*Ken Fisher P.E.
 Chief Engineer - Juneau
 907-6958
 Kenneth.Fisher@alaska.gov*

1130. Cross Sections
 Effective January 1, 2005



COMMENT SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / OA24033
December 19, 2018 – January 25, 2019
On-Line Open House



We welcome written input and ideas from the public. Thank you for taking the time to be involved.
(If you need more space please use second sheet.)

COMMENTS:

<p>Modified Diamond Concept is not economically feasible. Over 700,000 ton of borrow went in to building moose creek overpass. You would over double that quantity and increase trucking/impacts to roads outside the project. The flyover will reduce the amount of borrow and trucking and reduce overall time to construct the project. I am not sure if there is enough real estate but planning or building a full bypass detour that would allow you to build both phases of the overpass at once will allow for the overpass to be done in one season. This would require the railroad building a temporary crossing with temporary signals but would eliminate phasing of the overpass, temp paint, a phasing wall for the MSE wall. If one side is built at a time only one bridge would be installed in a season, making it a two year process. A phasing wall would need to be planned to eliminate undermining the MSE wall straps when constructing phase 2. Consideration would also have to go into the toe of the phase 1 slope and temporary barriers probably needed to protect traffic below as it would probably be in the clear zone. Design in the temporary crossovers and excavation detail for the MSE wall footing in relationship to the railroad track. Based on the Moose Creek Overpass, if the wall is at least 27' away from center of track and not more than 13' below track elevation, then no shoring would be required. This would reduce costs for the project. Factor in soil on the slopes in order to obtain stabilization, otherwise the slopes will not retain any water/nutrients and will be a SWPPP nightmare and will result in calling the slopes low erodable. Watch guardrail for mainline and make sure it accounts for the overheight vehicle bypass. Look at using select B in the embankment where feasible. Would allow for closer material sources to possibly be used reducing costs. 3d model the design. We, as contractors model all projects once awarded. It allows us to catch design errors as well as plug the design into our rover and machines. Makes QA with the State really easy. I am sure a lot of this is already accounted for, but we have seen all these issues and would like to work to help reduce the amount of change orders on a project.</p>
--

How did you hear about this meeting? **E-mail**

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment –including your personal identifying information –may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

E-MAIL ADDRESS: travis.malin@hccontractors.net

NAME: Travis Malin

MAILING ADDRESS: PO Box 80688, Fairbanks, AK 99708

For further information, please contact Colleen M. Ackiss, P.E., Engineering Manager, at (907) 451-5179 or email: colleen.ackiss@alaska.gov. To correspond by text telephone (TDD), please call (907) 451-2363.

Please return comments by January 25, 2019.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.



COMMENT SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / OA24033
December 19, 2018 – January 25, 2019
On-Line Open House



We welcome written input and ideas from the public. Thank you for taking the time to be involved.
(If you need more space please use second sheet.)

COMMENTS:

<p>After hearing the presentation last Thursday. I believe the Flyover Concept makes the most sense. I think it allows for the smoothest flow of traffic, especially for the oversize loads that get routed to Van Horn Rd. via the Old Richardson Hwy. I am a strong proponent of overhead clearance at 18'6". I have personally moved quite a number of modules and large boats that exceeded 18' in height, and even though loads like that aren't necessarily common, they do exist. And while we do have structures in place right now that don't have that much overhead clearance, most of them are older and, in some cases, due to be replaced in a few years. In any case, it doesn't make good sense to construct anything new on the corridors between Anchorage or Valdez and the Prudhoe Bay oilfield that would restrict or limit the movement of essential items and equipment. I believe that 18' should be a minimum overhead clearance, with 18'6" being an even better option to help avoid costly bridge strikes.</p> <p>I am pleased that you have designed an overheight bypass. Any southbound overheight loads coming from the Mitchell Expressway do not have a bypass and the 18'6" clearance would be important in those cases.</p> <p>Alan Hoza and I have worked together on quite a few oversize movements over the years and have spent time going over your presentation for this project. Alan will no doubt go into a lot more detail on his comments, and I strongly concur with his thoughts and ideas.</p> <p>Thank you all for your efforts and for reaching out to those of us in the industry. We appreciate you!</p>
--

How did you hear about this meeting? Email from ATA

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment –including your personal identifying information –may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

E-MAIL ADDRESS: jbinder@lynden.com

NAME: Jack Binder, Alaska West Express, Special Projects/HSSE

MAILING ADDRESS: 1095 Sanduri St., Fairbanks, AK 99701

For further information, please contact Colleen M. Ackiss, P.E., Engineering Manager, at (907) 451-5179 or email: colleen.ackiss@alaska.gov. To correspond by text telephone (TDD), please call (907) 451-2363.

Please return comments by January 25, 2019.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

Ackiss, Colleen M (DOT)

From: Ackiss, Colleen M (DOT)
Sent: Tuesday, February 12, 2019 11:59 AM
To: Jackson Hurst
Subject: RE: Sign up for project updates and construction updates and be added to the mailing list for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project

Hello Jackson –

Thank you for your interest in the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility project. Unfortunately, there is no mailing list for this project. The best way to stay informed of updates is to frequent the project website at:

<http://dot.alaska.gov/nreg/rich359/>

Please contact me if you have any questions regarding the design development of this project.

Thank you.

Colleen Ackiss, P.E.
Engineering Manager
State of Alaska DOT&PF – Northern Region
907-451-5179

From: Jackson Hurst [mailto:ghostlightmater@yahoo.com]
Sent: Wednesday, January 30, 2019 9:05 AM
To: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>
Subject: Sign up for project updates and construction updates and be added to the mailing list for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project

Hi I would like to sign up for project updates and construction updates and be added to the mailing list for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility Project. My mailing address is 4216 Cornell crossing, kennesaw, Georgia, 30144

[Sent from ghostlightmater@yahoo.com](mailto:ghostlightmater@yahoo.com)



COMMENT SHEET

Richardson Highway MP 359 Interchange and Railroad
Grade Separated Facility
Z607340000 / 0A24033
December 19, 2018 – January 25, 2019
On-Line Open House



We welcome written input and ideas from the public. Thank you for taking the time to be involved.
(If you need more space please use second sheet.)

COMMENTS:

I (and most drivers I surveyed) favor the Flyover Concept). It appears to be the least impactful for truck flow – with minimized maneuvering, which can enhance oversize vehicle movements.

- We would like to see an 18'6" clearance under the Flyover. We realize there is an over-height bypass, however, having a higher clearance on the main route can minimize any accidental miss-measurements, or complacent driving – so why would we not build in a more reasonable height to aid in minimizing any strike potentials! This would allow the flow impact in/out of traffic in/out of the bypass to the extreme over-height loads only – which is more appropriate. There are more of these loads in the on the verge of exceeding 17'6" than perhaps even the permit office is aware of.

- This is the main route from the port terminal in Valdez to the Prudhoe Bay oilfields. I feel that it would be unwise to limit the height on this Flyover. I do realize there are other restrictions (Big Delta Tanana River bridge, etc.), however, there have been much discussion between DOT, big oil companies, and industry that perhaps some of those limiting structures should be improved for future projects (ex. Gas line or any other future). So why would we limit this main inbound route into Fairbanks (and on north) for a couple feet of height (my opinion is 18' min)?? This would also drastically decrease the potential for any future bridge strikes!!
- Note: in the AK Highway Preconstruction Manual, 1130-5 Cross Sections (Table 1130-1 Vertical Clearance): there is a footnote "***" which states "From the Port of Anchorage to the North Slope the clearance of roadways underpassing railroads shall be 18 ft.". This footnote was a result of discussions of transports which had caused intensive modifications to pass under the underpass just south of Riley Creek near the Denali Park entrance. The ARRC decided to set the clearance. Also note that the Denali Region also cut the clearance to nearly 19' under that RR overpass, due to these transports as well. Further note: The State Highway section of the table needs to be updated to a min. of 18' (min.) to account for the post 2005 legal height increase from 16'6" to 17'6" on main highways.
- Also: at least three of the largest carriers of oversize transports have blanket utility clearances with the permit office which allow for 18'0", reducible to 17'6", from Port of Anchorage and Port of Valdez to the North Slope. It is quite difficult for these 18' loads to be reduced all the way to 17'6", however, it is reasonable for them to be reduced to ~17'10" by simply releasing the air in their suspensions. To maintain an 18' min clearance would be reasonably acceptable to the industry – so why would we not target 18'6" to allow for snowpack, etc.?

- The Flyover (or **underpass** if Modified Diamond) needs to accommodate excessively wide loads (to 28' wide, ex: large boats, large haul truck beds) which are routed around via Van Horn Rd by the permit office. ✓
 - The Steese Chena River Bridge has been restricted for ANY overweight traffic for a few years now. Therefore, this bypass can be critically important to be designed as a bypass for oversize and overweight truck traffic: additionally, during any particular transport – the permit office can require bypass around the Steese or Mitchell Expwy for any reason (ex. Construction activities) ... so this route should be minimized for any restriction. This is an industrial area of Fairbanks. Note: there are definitely height restriction issues on Van Horn (low lights), but this should be improved as possible to maintain this as the industrial route that it is advertised and utilized. ✓
 - Please note that all high power overhead main power lines (100KV + ?) require a full 4' of electrical clearance between the load height clearance and the sagging line, so please explore this with the power utilities to reduce “clearance” issues for design clearance through this project. ✓
- Thank you to all for your work and consideration to this point on this project! Thank you for your communication!! ✓
- How did you hear about this meeting?** Email forwarded by an ATA member. ✓

*Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment –including your personal identifying information –may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

E-MAIL ADDRESS: ahoza@lynden.com C: 907-388-9411

NAME: Alan Hoza Lynden Logistics, Haul Road Safety Committee member

MAILING ADDRESS: 246 Brighton Dr., Fairbanks, AK 99712

For further information, please contact Colleen M. Ackiss, P.E., Engineering Manager, at (907) 451-5179 or email: colleen.ackiss@alaska.gov. To correspond by text telephone (TDD), please call (907) 451-2363.

Please return comments by January 25, 2019.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by the Alaska DOT&PF pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated November 3, 2017 and executed by the FHWA and DOT&PF.

This IS a very critical route as it is our oversized Last option I agree with all these Notes & Comments!

thank you.

Karen Evick

I agree also!

~~alok.pilotcar@gmail.com~~

Raig Widdis

Ackiss, Colleen M (DOT)

From: Donald Galligan <DGalligan@fnsb.us>
Sent: Thursday, January 31, 2019 11:51 AM
To: Ackiss, Colleen M (DOT)
Cc: Anderson, Ryan (DOT); Christine Nelson; Kellen Spillman
Subject: Comments on the Richardson Highway 359 Interchange and Railroad Grade Separated Facility
Attachments: MP359 Interchange Comments 31Jan2019.pdf
Follow Up Flag: Follow up
Flag Status: Completed

Attached please find the Borough's official comments on this project as presented.

Thank you for the opportunity to provide comment.

Don

Donald C. Galligan, Jr. AICP | Planner IV—Transportation
[Fairbanks North Star Borough](#) | [Community Planning](#)
907.459.1272 (direct) | 907.459.1260 (department)
dgalligan@fnsb.us |



Fairbanks North Star Borough

Mayor's Office

907 Terminal Street P.O. Box 71267 Fairbanks, AK 99707-1267 T.(907)459-1300 F.(907)459-1102

January 31, 2019

Colleen Ackiss
State of Alaska
Department of Transportation & Public Facilities
2301 Peger Rd
Fairbanks, AK 99709

Re Comments on the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility.

Dear Ms. Ackiss,

The Fairbanks North Star Borough (FNSB) appreciates the opportunity to submit comments regarding the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility. Please accept these as the official comments from the FNSB Administration.

The FNSB attended the January 24, 2019 Stakeholders Meeting at DOT Northern Region offices including review of the two alternatives that are currently under consideration for further development. The FNSB has worked diligently over the last 12 years to ensure that Alaska Railroad (ARRC) projects are planned and developed consistent with the goal of re-routing the ARRC to a southerly alignment around the heart of Fairbanks. This effort began in earnest with a June 25, 2007 MOU between the FNSB and the ARRC (Attached) agreeing in principal to preserving a corridor for future railroad realignment.

Our concern is that the current design for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility is inconsistent with the Fairbanks Area Rail Line Relocation Project, is inconsistent with the FNSB Regional Comprehensive Plan, and is inconsistent with the approved Alaska State Rail Plan.

The project is inconsistent with the following sections of the FNSB Regional Comprehensive Plan:

Land Use, Goal 4, Strategy 11, Action C: *Pursue an appropriate realignment route for the Alaska Railroad that will meet both the needs of the military and the Borough;* and
Transportation and Infrastructure, Goal 1, Strategy 5, Action A: *Encourage a reroute of the railroad to reduce the number of at-grade railroad crossings; create separate grade crossings for the remainder, when possible.*

This inconsistency is relevant because local planning authority approval rests with the FNSB Planning Commission. This project as proposed does not incorporate and facilitate the long term vision for our community, and indeed recommends putting the infrastructure in place, that may preclude the achievement of our long-term vision.

The project is inconsistent with the approved Alaska State Rail Plan, which specifically calls out the Richardson Highway: MP 359 Railroad Crossing Overpass as an aspect of the Fairbanks Area Rail Line Relocation (1.2.3.2). This plan is "to serve as the basis for federal and state rail

investments within the state,” and as you are aware, AS 44.42 assigns the DOT the responsibility to plan for all modes of transportation. The FNSB would not have actively supported this project over its history without the understanding that it was an aspect of the overall Fairbanks Area Rail Line Relocation project.

Finally, the Project may be inconsistent with the Fairbanks Area Rail Line Relocation Project because the geometry of the proposed crossing may preclude a transition with the rail line headed south towards North Pole.

In the past, the FNSB has supported this project in multiple comments to the State with the understanding that it would be an aspect of the Fairbanks Area Rail Line Relocation project. On at least three separate occasions, the FNSB submitted comments supporting the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility to the DOT.

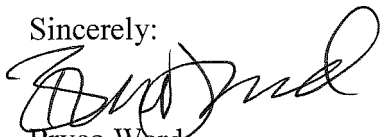
In a May 7, 2014 letter signed by Mayor Hopkins, the FNSB expressed appreciation with the inclusion of this project in the State Transportation and Improvement Program (STIP) and asked for a secure funding source for the project. On August 7, 2014, Mayor Hopkins commented again with concern for funding of this project. Then, on August 18, 2016 in a letter signed for Mayor Kassel, the FNSB commented on how funding for the project had been moved out past 2019 and reiterated the importance of this “priority project” in the State Rail Plan as an aspect of the Fairbanks Area Rail Relocation State II Project.

The 2007 MOU between the ARRC and the FNSB demonstrates the long term goal of both parties to move rail traffic out of the core of the community and relocate it south of town. MP 359 of the Richardson Highway is a key aspect of transitioning between phase 2 and phase 3 of this relocation and this overpass appears to preclude using it as this approved transition point.

This project is very important to the FNSB not only for the safety improvements on the Richardson Highway, but also for the long-term viability of the rail relocation project. The FNSB requests that the DOT show in this document that this long term rail realignment project was seriously considered and addressed through the design process, and that the overpass design can accommodate and, at a minimum, not preclude using this overpass as an aspect of the Fairbanks Area Rail Line Relocation project as envisioned and agreed to by all parties.

Thank you for your consideration. We hope that this project can move forward in a way that supports the longer term vision of realignment of the rail line around Fairbanks.

Sincerely:



Bryce Ward

Mayor

Fairbanks North Star Borough

Attachments (MOU)

FNSB CLERK'S OFFICE
RECEIVED 6/8
DATE 6/8
TIME 4:00pm

MEMORANDUM OF UNDERSTANDING #1
FAIRBANKS NORTH STAR BOROUGH
ALASKA RAILROAD CORPORATION

25 June 2007

THE PURPOSE OF THIS MOU

Alaska Railroad Corporation (ARRC) and Fairbanks North Star Borough (FNSB) desire to optimize the alignment of the Alaska Railroad within the Fairbanks-North Pole area to improve safety, customer response, and minimize transportation conflicts within the adjacent communities. ARRC and FNSB agree to commence defining a new rail corridor from the west side of Fairbanks near Sheep Creek to the east side of North Pole near Moose Creek. This effort is hereby named the Fairbanks – North Pole Rail Realignment (F-NPR). Additionally, ARRC and FNSB will pursue a study to determine possible passenger transit services for the communities along the route.

OVERVIEW

Several major engineering studies have thoroughly investigated alternatives for rail realignment through the Fairbanks-North Pole area. One such segment, commonly known as the Ft. Wainwright Bypass, has been approved to provide Independent Utility and is proceeding with Department of Defense funding. It should be considered an interim route around Ft. Wainwright until such time as the F-NPR is completed.

The overall size and cost of the F-NPR is considerable and will almost certainly require that engineering, funding and construction be accomplished in phases, although these phases would be worked as simultaneously as possible. In recognition of the need for project clarity and considering that "phases" were used in previous studies over years past, a re-naming of proposed F-NPR segments is in order. The Richardson Highway Mile Post 9-North Pole project is clearly the least complex from both a financial and engineering point of view, and shall be called Phase 1. The safety benefits resulting from the Richardson Highway Mile Post 9 to North Pole phase are very substantial. Public transit is a distinct possibility for Phase 1. The NEPA process for Phase 1 can be accomplished expediently by relying on the engineering effort and environmental studies conducted to date. Securing independent utility in order to set the scope of study for NEPA looks to be a possible strategy for proceeding with Phase 1 and if determined to be viable will be supported by the FNSB.

ARRC will continue the alternative analysis engineering study for the area from Richardson Highway Mile Post 3 to Richardson Highway Mile Post 9 (Phase 2) and for the remaining realignment segment west of Phase 2 past the Chena River (Phase 3). Phase 1 should be first priority among the three phases.

Phase 1 Considerations

The existing Tanana River Levee provides a feasible realignment corridor for the railroad that the partners believe would improve safety, minimize traffic conflicts and optimize freight/transit through the area. The Tanana River Levee was constructed by the US Army Corps of Engineers (COE) and is now the responsibility of the FNSB. As part of Phase 1 the FNSB and the ARRC will develop a no-fee "exclusive use easement" right of way and work cooperatively with permitting authorities to ensure use of the area on or near the levee as a rail corridor through a right-of-way agreement. Maintaining

the structural integrity of the rail/levee combination is essential, is in the vital interest of all parties, and must not be compromised. The addition of a railroad on or near the levee could also be used to improve the structural integrity of the levee. As the railroad is realigned to the levee, with the approval of the COE where necessary, the ARRC could assume the FNSB's responsibility for maintenance of the levee in accordance with the COE agreements.

Once the railroad and engineering design for the levee commences, the ARRC and FNSB will seek public input and identify opportunities to enhance recreational trails. The FNSB has a designated recreational trail in the levee area that is largely undeveloped and its upgrade could be an integral part of the project. ARRC would provide access to the river-side of the levee where appropriate. ARRC and FNSB will cooperate to mitigate personal and vehicle access issues arising from the new railroad location. Access is expected to be approved for certain designated locations and will generally coincide with section lines and/or major roadway alignments. FNSB will support ARRC efforts to obtain required Federal approvals, such as "4(f)", which addresses impacts to recreational trails.

Any railroad right-of-way to be completely vacated by F-NPR will trigger statutory evaluation for possible reversion, beginning with North Pole in Phase 1.

Phase 2 and Phase 3 Considerations

As the ARRC progresses on the design and construction of Phase 1, efforts will turn to the west. The FNSB and the ARRC will aggressively pursue funding for planning and design of Phases 2 and 3 of the F-NPR.

This MOU demonstrates that the long term goal of both parties is to move rail traffic out of the core of the community and relocate it south of town. The parties acknowledge that while a "no build" option will be considered under every phase, one purpose of this MOU is to articulate the parties' agreement that routes south of Fairbanks are preferred solutions over increasing speeds or elevating rail traffic through the Trainor Gate - New Steese - Old Steese areas of town.

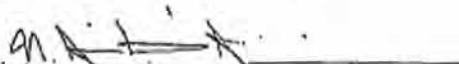
As each phase of railroad relocation develops, the ARRC and the FNSB can draw up further MOU's or right of way agreements as necessary to lock-in specific details for the subsequent project phases.

For the
ALASKA RAILROAD CORPORATION



Patrick K Gamble
President & Chief Executive Officer

For the
FAIRBANKS NORTH STAR BOROUGH



Jim Whitaker
Mayor

Ackiss, Colleen M (DOT)

From: Ackiss, Colleen M (DOT)
Sent: Friday, February 15, 2019 1:41 PM
To: Brian Lindamood
Cc: Rachel Maddy; Blake Adolfae; Clark Hopp; Tim Sullivan
Subject: RE: rich359-comment-sheet - ARRC 1.14.19.pdf

Brian –

Thank you for reply to my questions that were raised by the FNSB after a recent stakeholder meeting, it is greatly appreciated. The department is working on a response to Mayor Ward, and I believe that we have sufficient supporting documentation at this time to address all of his concerns/statements.

I don't anticipate that we will need further help on this issue at this time. We look forward to working together with you on this project.

Thank you. Colleen

From: Brian Lindamood [mailto:LindamoodB@akrr.com]
Sent: Monday, February 11, 2019 2:01 PM
To: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>
Cc: Rachel Maddy <MaddyR@akrr.com>; Blake Adolfae <AdolfaeB@akrr.com>; Clark Hopp <HoppC@akrr.com>; Tim Sullivan <SullivanT@akrr.com>
Subject: FW: rich359-comment-sheet - ARRC 1.14.19.pdf

Ms. Ackiss-

The concern expressed by Mayor Ward affects one of several proposed options for a potential relocation of ARRC around Fairbanks. The Fairbanks Area Railroad Relocation (FARR) project has been considered for at least two decades, but to date, does not have a final proposed location culled from many different possible options, any schedule, nor any potential source of funding for what is estimated to be a project in the hundreds of millions of dollars (at least). Further, there has been no environmental document completed to date, and the right-of-way has not been secured for any of the proposed corridors that have been considered thus far. While the project is in the TIP, it is listed as illustrative, and the magnitude of the undertaking brings its ultimate completion into question.

Should the relocation project ever become a reality, the cost to reconfigure the proposed overpass, if even required, would be but a small fraction of the FARR project as a whole. ARRC is not as experienced as ADOT in the manner that FHWA deals with such considerations during the NEPA process. Therefore, how ADOT wishes to address this comment, or consider potential impacts to the FARR project, is up to you.

Please let us know if there is anything else we can help you with on this project.

Regards,

Brian Lindamood PE SE
Vice President, Chief Engineer

907-265-3095 office | 907-441-6088 mobile
mailing: PO Box 107500, Anchorage, AK 99510-7500
physical: 327 W Ship Creek Ave, Anchorage, AK 99501
web: www.AlaskaRailroad.com



The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or proprietary information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

From: Rachel Maddy
Sent: Wednesday, February 06, 2019 11:58 AM
To: Brian Lindamood
Subject: FW: rich359-comment-sheet - ARRC 1.14.19.pdf

For your consideration and response. Let me know if there is anything I can do to help, thanks!

Rachel Maddy

Manager ROW & Public Projects

907-265-2237 office | 907-350-8442 mobile
mailing: PO Box 107500, Anchorage, AK 99510-7500
physical: 327 W Ship Creek Ave, Anchorage, AK 99501
web: www.AlaskaRailroad.com



The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or proprietary information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

From: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>
Sent: Thursday, January 31, 2019 5:05 PM
To: Rachel Maddy <MaddyR@akrr.com>
Subject: RE: rich359-comment-sheet - ARRC 1.14.19.pdf

Good afternoon Rachel –

Can you confirm that the options proposed for the subject project, with respect to the railroad crossing, is consistent with the Fairbanks Area Rail Line Relocation (FARLR) project?

Reviewing the information on the Alaska Railroad website, it appears that there are three options being considered for Phase II of the FARLR for the 3 Mile Gate Railroad Alignment. Option 2 appears to locate the overcrossing at the location and alignment of the existing tracks where it currently crosses the Richardson Highway. Options 1 and 3 are skewed crossings which would not fully utilize the existing track alignment.

The Fairbanks North Star Borough would like confirmation that the options presented “can accommodate and, at a minimum, not preclude using this overpass as an aspect of the Fairbanks Area Rail Line Relocation project”. By selecting

Option 2 at this time, it may predetermine the option selected in advance of the further development of Phase II of the FARLR project. It doesn't appear that putting a structure that would accommodate both Options 1 and 2 would be fiscally responsible.

Prior to the Department approving our environmental document, we need to ensure that our proposed plans conform to existing Land Use and Transportation Plans. We intend to rely on this email to confirm our shared understanding that the project is consistent and meets the intent of the FARLR.

I have attached the comments received from the Fairbanks North Star Borough for your reference/information.

Please call me if you would like to discuss or have additional questions regarding this request.

Thank you. Colleen

From: Rachel Maddy [<mailto:MaddyR@akrr.com>]
Sent: Monday, January 14, 2019 5:33 PM
To: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>
Cc: Rachel Maddy <MaddyR@akrr.com>
Subject: rich359-comment-sheet - ARRC 1.14.19.pdf

Colleen,

As requested, ARRC's comments for the public open house on the Rich 359 project.

Let me know if you have any questions, thanks!

Rachel Maddy

Manager ROW & Public Projects

907-265-2237 office | 907-350-8442 mobile
mailing: PO Box 107500, Anchorage, AK 99510-7500
physical: 327 W Ship Creek Ave, Anchorage, AK 99501
web: www.AlaskaRailroad.com



The contents of this email message and any attachments are intended solely for the addressee(s) and may contain confidential and/or proprietary information and may be legally protected from disclosure. If you are not the intended recipient of this message or their agent, or if this message has been addressed to you in error, please immediately alert the sender by reply email and then delete this message and any attachments. If you are not the intended recipient, you are hereby notified that any use, dissemination, copying, or storage of this message or its attachments is strictly prohibited.

Ackiss, Colleen M (DOT)

From: Anderson, Ryan (DOT)
Sent: Thursday, March 07, 2019 9:18 AM
To: Lund, Michael C (DOT)
Cc: Ackiss, Colleen M (DOT)
Subject: RE: Rich 359 FNSB/ARRC Environmental Comments

Mike/Colleen –

After discussions with Mayor Ward yesterday, I think all the information needed is already in the letter that has been prepared, and we can simplify the letter quite a bit by focusing on these statements:

- DOT&PF supports the Fairbanks Area Rail Line project, and DOT&PF has considered the plan in our design.
- The current design achieves the near term goals of improving safety on the Richardson Highway, and accommodates Alternative #2 from the rail plan.
- This project does not preclude future railroad crossing alternatives described in the plan from being constructed, recognizing that the other alternative crossings are a long term goal of the plan.

After my discussions it was clear that Mayor Ward understands the project scope and the Fairbanks Rail Line project very well. If we focus on the points above, the Mayor is amenable to agreeing that the current project is in line with both the FNSB Regional Comprehensive Plan and the approved Alaska State Rail Plan.

Hope that helps.

Ryan

From: Lund, Michael C (DOT)
Sent: Wednesday, February 27, 2019 1:49 PM
To: Anderson, Ryan (DOT) <ryan.anderson@alaska.gov>
Cc: Ackiss, Colleen M (DOT) <colleen.ackiss@alaska.gov>
Subject: Rich 359 FNSB/ARRC Environmental Comments

Hi Ryan,

Did you have any comments or concerns regarding the FNSB's letter, and our draft response?

We'd like to get this resolved so we can move forward with completing the environmental document.

Thanks,
Mike

Michael C. Lund, P.E. | Project Delivery Lead | DOT&PF Northern Region
2301 Peger Road; Fairbanks, AK 99709 | ph: 907.451.5067 | CELL 907.712.4579
fax: 907.451.5487 | MICHAEL.LUND@ALASKA.GOV

Connect with ADOT&PF: [Like](#) | [Follow](#) | [Watch](#)



THE STATE
of **ALASKA**
GOVERNOR MICHAEL J. DUNLEAVY

Department of Transportation
and
Public Facilities

NORTHERN REGION
Design & Engineering Services

2301 Peger Road
Fairbanks, Alaska 99709-5388
Main: 907.451-2273
Fax: 907.451-5126
TDD: 907-4551-2363
dot.alaska.gov

March 18, 2019

The Honorable Bryce J. Ward, Mayor
Fairbanks North Star Borough
PO Box 71267
Fairbanks, AK 99707-1267

Dear Mayor Ward:

Re: Richardson Highway MP 359 Interchange and Railroad Grade Separation Facility
Z607340000/OA24033

Thank you for providing comments and expressing your concerns regarding the Railroad Grade Separated Facility portion of this project. We identified six issues/concerns in your similar letters dated January 31, 2019 and March 1, 2019. These issues are addressed below, and clarify the project's consideration of identified local planning documents.

Attached are a few figures which will be referenced in the discussion below:

- Flyover Concept: This is one of the design concepts under consideration for the subject project.
- Modified Diamond Concept: This is the other design concepts under consideration for the subject project.
- Option 1 from 3 Mile Gate Railroad Alignment Study (Highway Overpass)
- Option 2 from 3 Mile Gate Railroad Alignment Study (Highway Overpass)
- Option 3 from 3 Mile Gate Railroad Alignment Study (Railroad Overcrossing)

FNSB concern/statement #1: *Our concern is that the current design for the Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility is inconsistent with the Fairbanks Area Rail Line Relocation Project, is inconsistent with the FNSB Regional Comprehensive Plan, and is inconsistent with the approved Alaska State Rail Plan.*

DOT&PF response: The two design concepts under consideration for the subject project are the Flyover Concept and Modified Diamond Concept (see attachments). Both of these concepts recommend interchanges at the intersection of the Richardson Highway and Old Richardson Highway, as well as a highway overcrossing at the 3 Mile Gate railroad crossing perpendicularly spanning the existing tracks.

"Keep Alaska Moving through service and infrastructure."

The Fairbanks Area Rail Line Relocation Project (FARLRP) consists of 3 phases:

- Phase 1 from Rich 9-Mile to southeast North Pole near Moose Creek (also known as the North pole Road/Rail Crossing Reduction Project.
- Phase 2 from Rich 9-Mile to 3-Mile Gate.
- Phase 3 from the area west of 3-Mile Gate to past the Chena River. The subject project falls within the limits of Phase 2.

Phase 2 is in the preliminary study phase, with the most recent study identifying 3 potential options: Option 1, 2, and 3 of the 3 Mile Gate Railroad Alignment Study (see attachments). While no option has been selected yet, the proposed project is consistent with potential Option 2 – construction of perpendicular highway overcrossing at the existing 3 Mile Gate railroad crossing.

The proposed project will address safety and operational concerns in the MP 359 area of the Richardson Highway. The project proposes a grade separation at the existing 3 Mile Gate railroad crossing location which is consistent with FNSB Regional Comprehensive Plan, Transportation and Infrastructure Goal 1, Strategy 5, Action A of creating grade separated crossings railroad crossings for those that are not eliminated through reduction. No realignment route has been finalized in Phase 2 of the FARLRP; however, the design concepts proposed for the project are consistent with potential Option 2 of the FARLRP.

The Alaska State Rail Plan references the FARLRP and indicates that the environmental document for Phase 1 is complete, but there is no funding for final design and construction. Phase 2 and Phase 3 are in the very preliminary stages of development. In recent correspondence the ARRC has indicated that, “The Fairbanks Area Railroad Relocation (FARR) project has been considered for at least two decades, but to date, does not have a final proposed location culled from many different possible options, any schedule, nor any potential source of funding for what is estimated to be a project in the hundreds of millions of dollars (at least). Further, there has been no environmental document completed to date, and the right-of-way has not been secured for any of the proposed corridors that have been considered thus far.” It is premature to state that the proposed DOT&PF project is inconsistent with the Alaska Rail Plan based on this information. However as noted above, the proposed concepts are consistent with potential Option 2 which has been identified as a viable option.

FNSB concern/statement #2: *This project as proposed does not incorporate and facilitate the long term vision for our community, and indeed recommends putting the infrastructure in place, that may preclude the achievement of our long-term vision.*

DOT&PF response: As noted above, Phase 2 of the FARLRP has not been developed to the point that a final proposed location has been identified from the different possible options studied to date. However, the proposed concepts are consistent with potential Option 2.

FNSB concern/statement #3: *The project is inconsistent with the approved Alaska State Rail Plan, which specifically calls out the Richardson Highway: MP 359 Railroad Crossing Overpass as an aspect of the Fairbanks Area Rail Line Relocation (1.2.3.2).*

DOT&PF response: The Alaska State Rail Plan states, under 1.2.3.2, that FMATS 2045 Metropolitan Transportation Plan (FMATS MTP) Project SR-42 (Richardson Highway: MP 359 Railroad Crossing Overpass) is a component of the FARLRP. FMATS MTP describes planned project SR-42 as “Construct a grade-separated railroad crossing at MP 359 of the Richardson Highway and a pedestrian underpass east of the railroad crossing.” The Richardson MP 359 Interchange and Railroad Grade Separated project design concepts include a grade-separated railroad crossing with a pedestrian underpass on the east side of the railroad crossing; therefore, the project is consistent with section 1.2.3.2 of the Alaska State Rail Plan.

FNSB concern/statement #4: *Finally, the Project may be inconsistent with the Fairbanks Area Rail Line Relocation Project because the geometry of the proposed crossing may preclude a transition with the rail line headed south towards North Pole.*

DOT&PF response: Please refer to attached Options 1, 2, and 3 of the 3 Mile Gate Railroad Alignment Study; the rail line headed south towards North Pole is on the north side of the Richardson Highway and does not cross the highway at this location currently, nor in any of the options considered. The geometry of the proposed crossing (see attached Flyover and Modified Diamond Concepts) does not preclude a transition with the rail line headed south towards North Pole.

FNSB concern/statement #5: *MP 359 of the Richardson Highway is a key aspect of transitioning between phase 2 and phase 3 of this relocation and this overpass appears to preclude using it as this approved transition point.*

DOT&PF response: The project’s design concepts do not preclude using the proposed overpass as a transition point between phase 2 and phase 3 of the FARLRP. As previously noted, the project’s design concepts are consistent with Option 2 of the 3 Mile Gate Railroad Alignment Study. ARRC has stated to DOT&PF, “The Fairbanks Area Railroad Relocation (FARR) project ... to date, does not have a final proposed location culled from many different possible options, any schedule, nor any potential source of funding for what is estimated to be a project in the hundreds of millions of dollars (at least). Further, there has been no environmental document completed ... Should the relocation project ever become a reality, the cost to reconfigure the proposed overpass, if even required, would be but a small fraction of the FARR project as a whole.”

FNSB concern/statement #6: *FNSB requests that the DOT show in this document that this long term rail realignment project was seriously considered and addressed through the design process, and that the overpass design can accommodate and, at a minimum, not preclude using this overpass as an aspect of the Fairbanks Area Rail Line Relocation project as envisioned and agree to by all parties.*

DOT&PF response: As stated above the FARLRP project is in the preliminary stages for Phase 2 and no finalized location or design option has been selected from the many different possible options that have been proposed/studied to date. DOT&PF's proposed project is consistent with Option 2 and does not preclude using the proposed grade separated facility as an aspect of the FARLRP. Further ARRC has stated "While the project is in the TIP, it is listed as illustrative, and the magnitude of the undertaking brings its ultimate completion into question." and "Should the relocation project ever become a reality, the cost to reconfigure the proposed overpass, if even required, would be but a small fraction of the FARR project as a whole."

DOT&PF is committed to developing projects that balance the needs of the public and stakeholders while considering environmental impacts, including consistency with land use and transportation plans. In this case, when portions of a transportation plan have not been completed, we strive to provide design concepts which are consistent with preliminary plan studies and that do not preclude implementing a different design option in the future as the transportation plan is finalized or refined. Features included in this project are consistent with the Alaska Rail Plan, proposed Option 2 of Phase 2 of the FARLRP, the FMATS MTP, and the FNSB Regional Comprehensive Plan.

Your concerns/statements and our responses will be included in the project's environmental document to be completed this spring. The Department looks forward to progressing this project to the Design Study Report/Local Planning Approval stage in a continuing cooperative spirit with the Fairbanks North Star Borough.

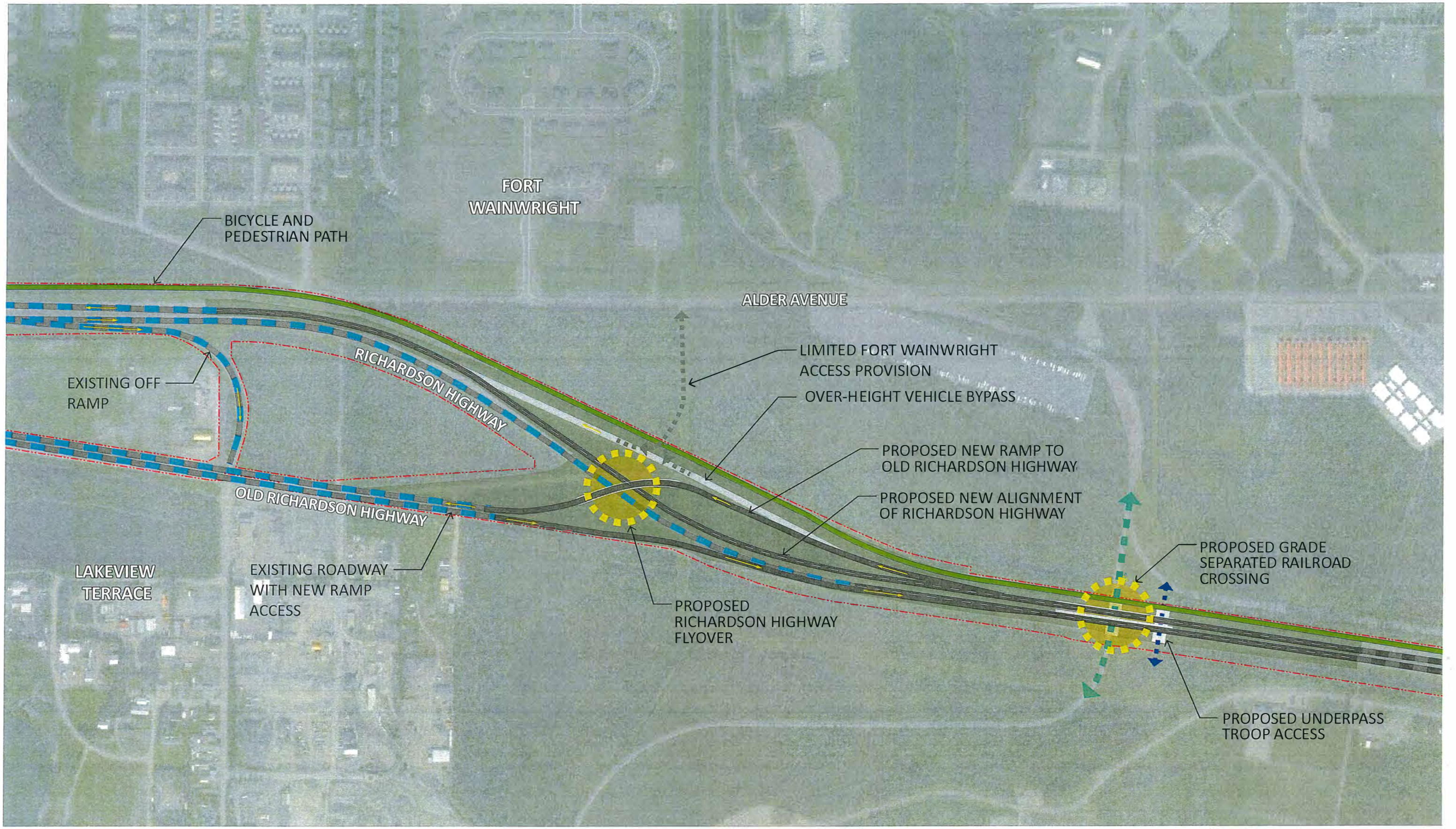
Sincerely,



Colleen M. Ackiss, P.E.

Enclosure: as stated

cma/9b 

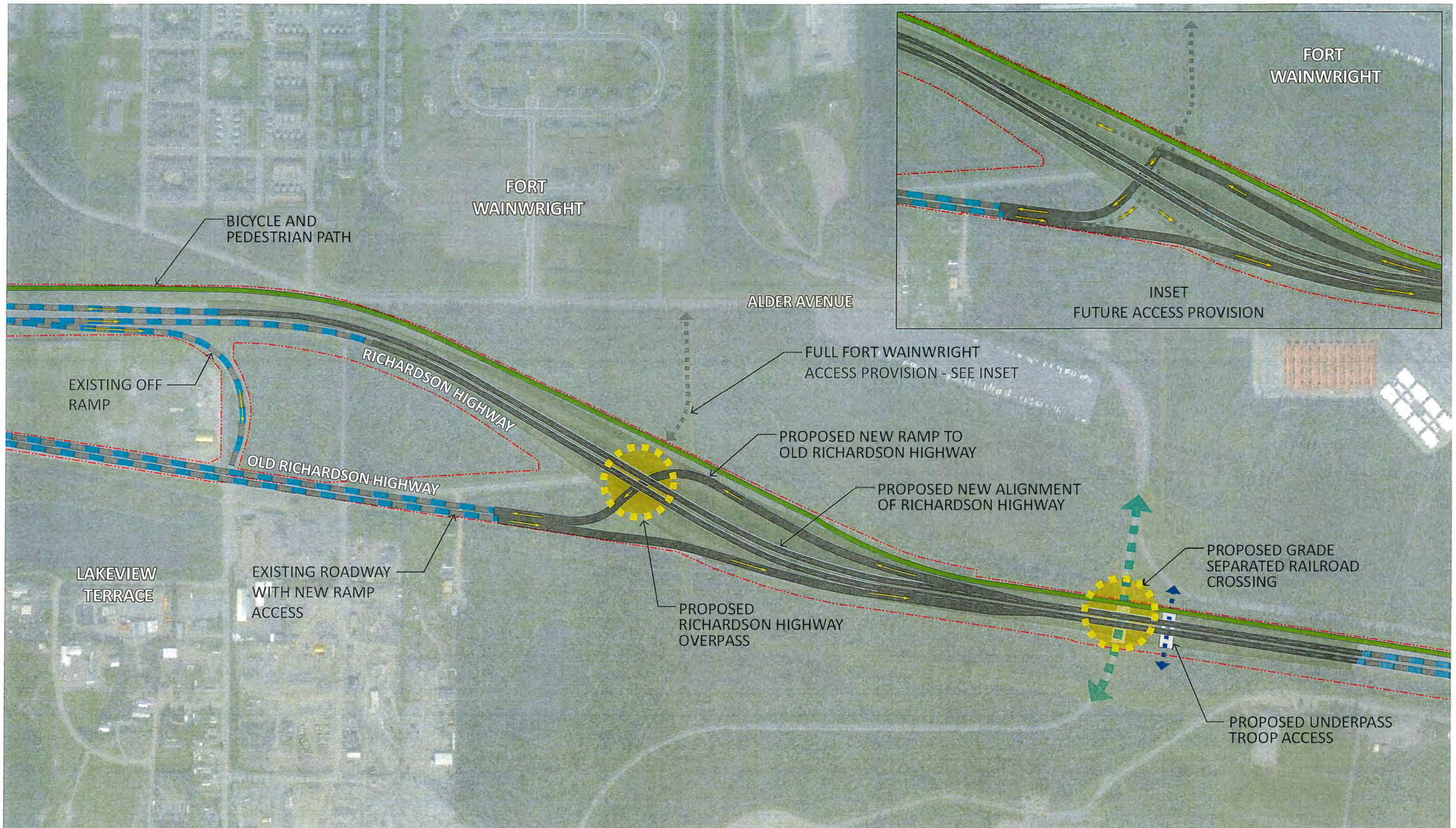


Flyover Concept

12.19.2018








- | | | | | | |
|--|-----------------------------|---|------------------|---|----------------------------|
|  | EXISTING RAILROAD |  | EXISTING ROADWAY |  | FUTURE ACCESS PROVISION |
|  | TROOP ACCESS |  | NEW RAMP |  | OVER-HEIGHT VEHICLE BYPASS |
|  | BICYCLE AND PEDESTRIAN PATH |  | NEW ROADWAY | | |



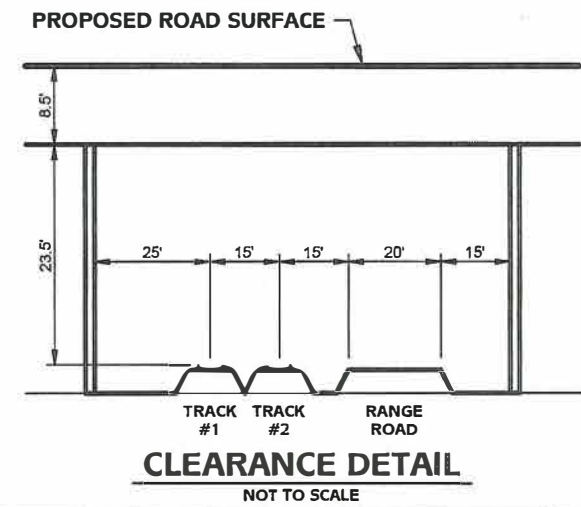
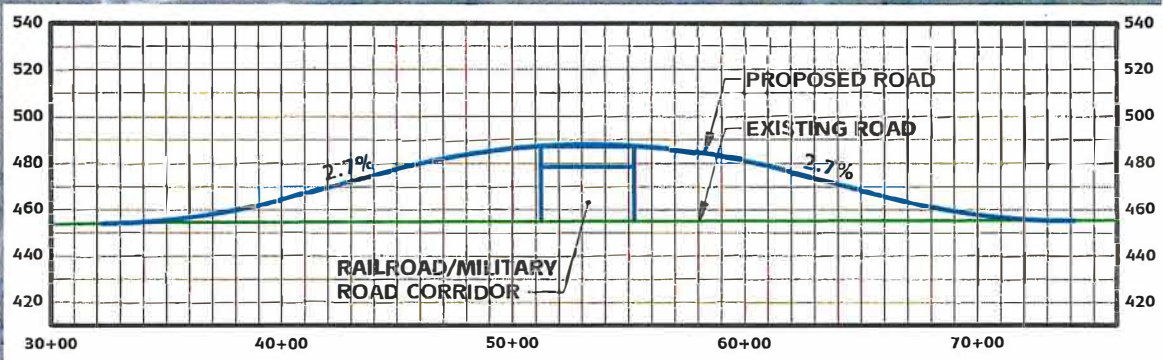
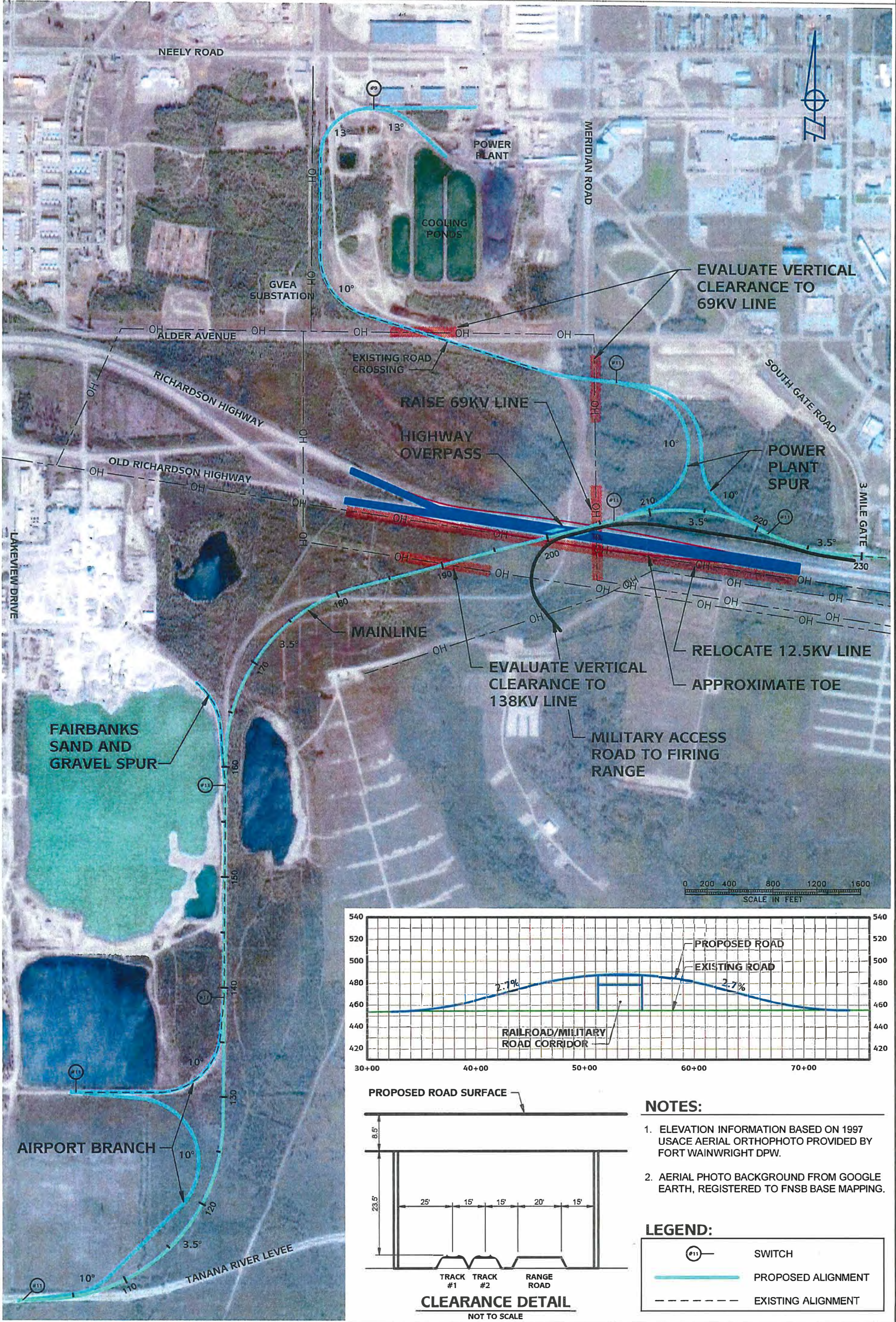


Modified Diamond Concept

12.19.2018

- | | | | | | |
|--|-----------------------------|---|------------------|---|-------------------------|
|  | EXISTING RAILROAD |  | EXISTING ROADWAY |  | FUTURE ACCESS PROVISION |
|  | TROOP ACCESS |  | NEW RAMP |  | NEW ROADWAY |
|  | BICYCLE AND PEDESTRIAN PATH | | | | |





- NOTES:**
- ELEVATION INFORMATION BASED ON 1997 USACE AERIAL ORTHOPHO TO PROVIDED BY FORT WAINWRIGHT DPW.
 - AERIAL PHOTO BACKGROUND FROM GOOGLE EARTH, REGISTERED TO FNSB BASE MAPPING.

LEGEND:

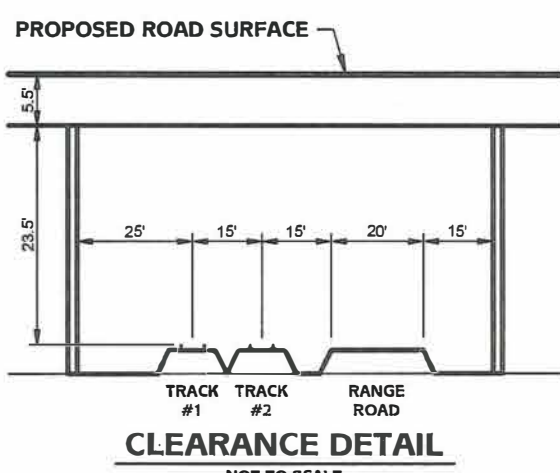
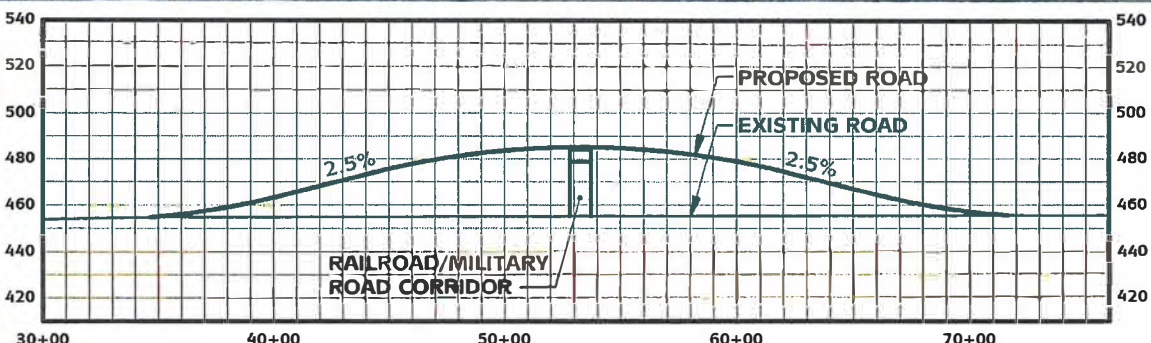
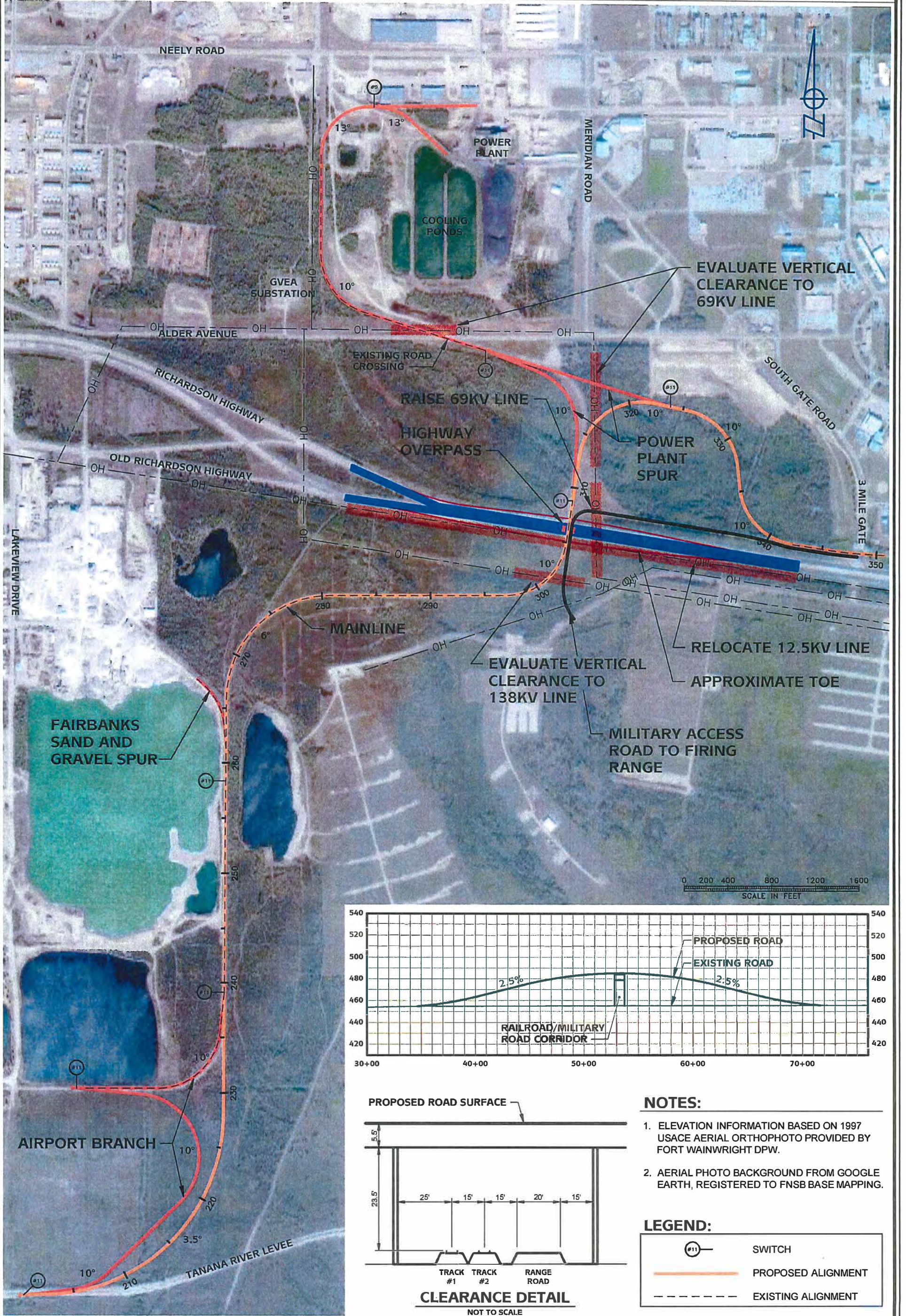
	SWITCH
	PROPOSED ALIGNMENT
	EXISTING ALIGNMENT

1
FIGURE
F07019
APR 2007

DESIGN: MTS/TMZ
DRAWN: CFP
CHECK: MTS

OPTION 1
3 MILE GATE RAILROAD ALIGNMENT STUDY
FORT WAINWRIGHT, ALASKA





- NOTES:**
- ELEVATION INFORMATION BASED ON 1997 USACE AERIAL ORTHOPHOTO PROVIDED BY FORT WAINWRIGHT DPW.
 - AERIAL PHOTO BACKGROUND FROM GOOGLE EARTH, REGISTERED TO FNSB BASE MAPPING.

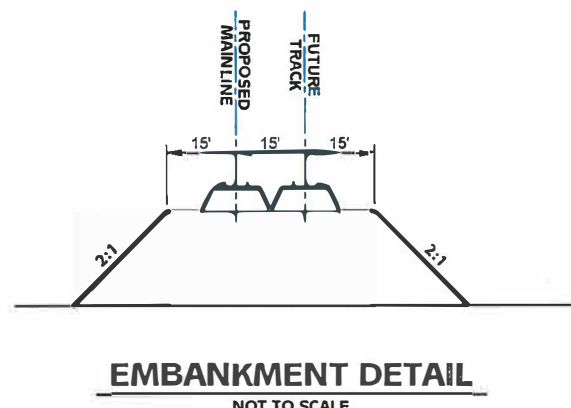
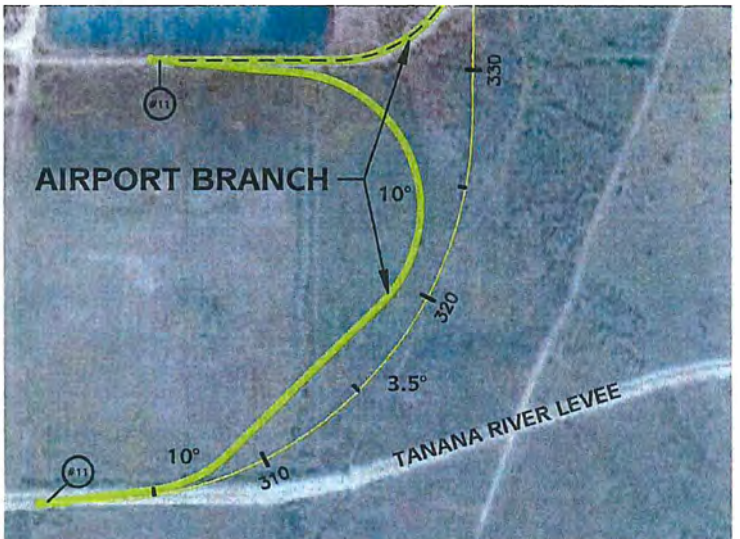
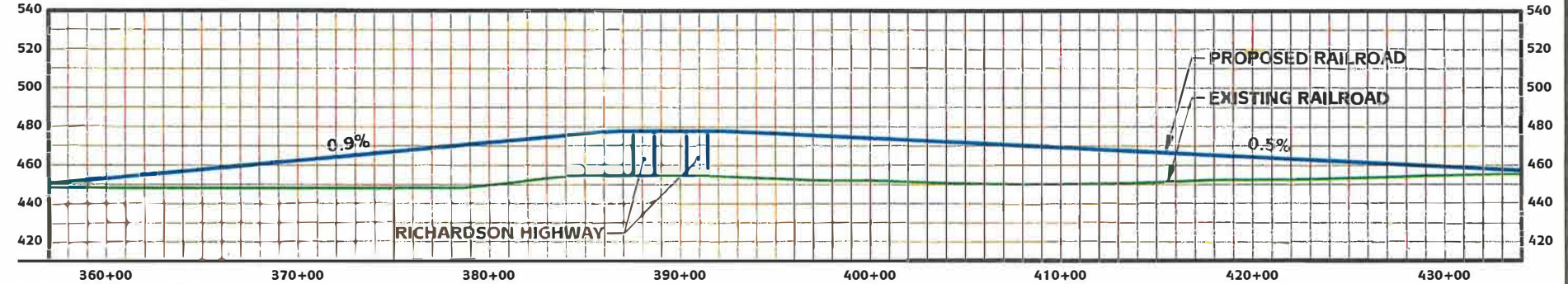
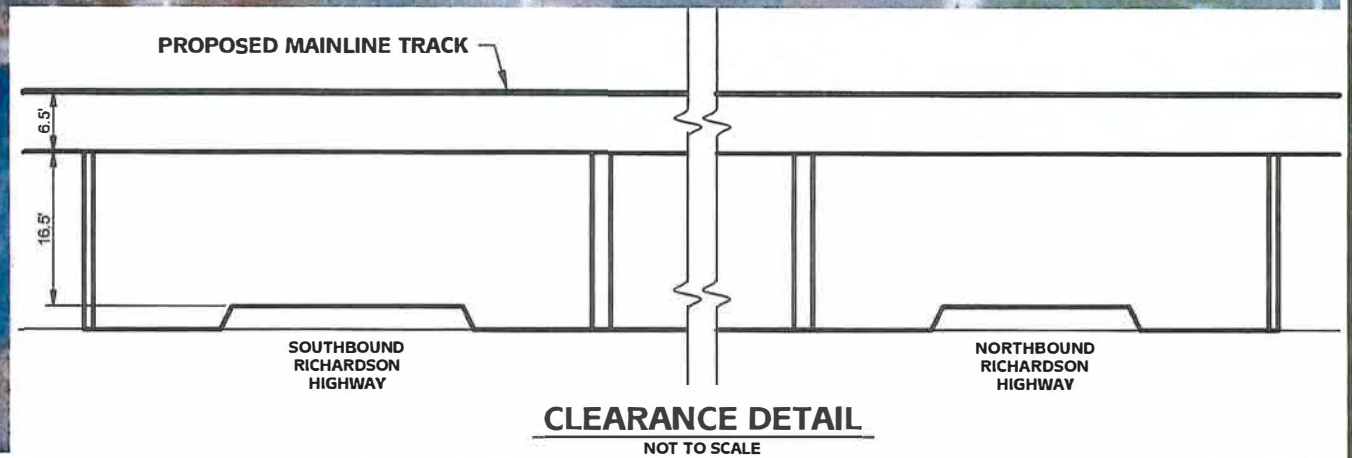
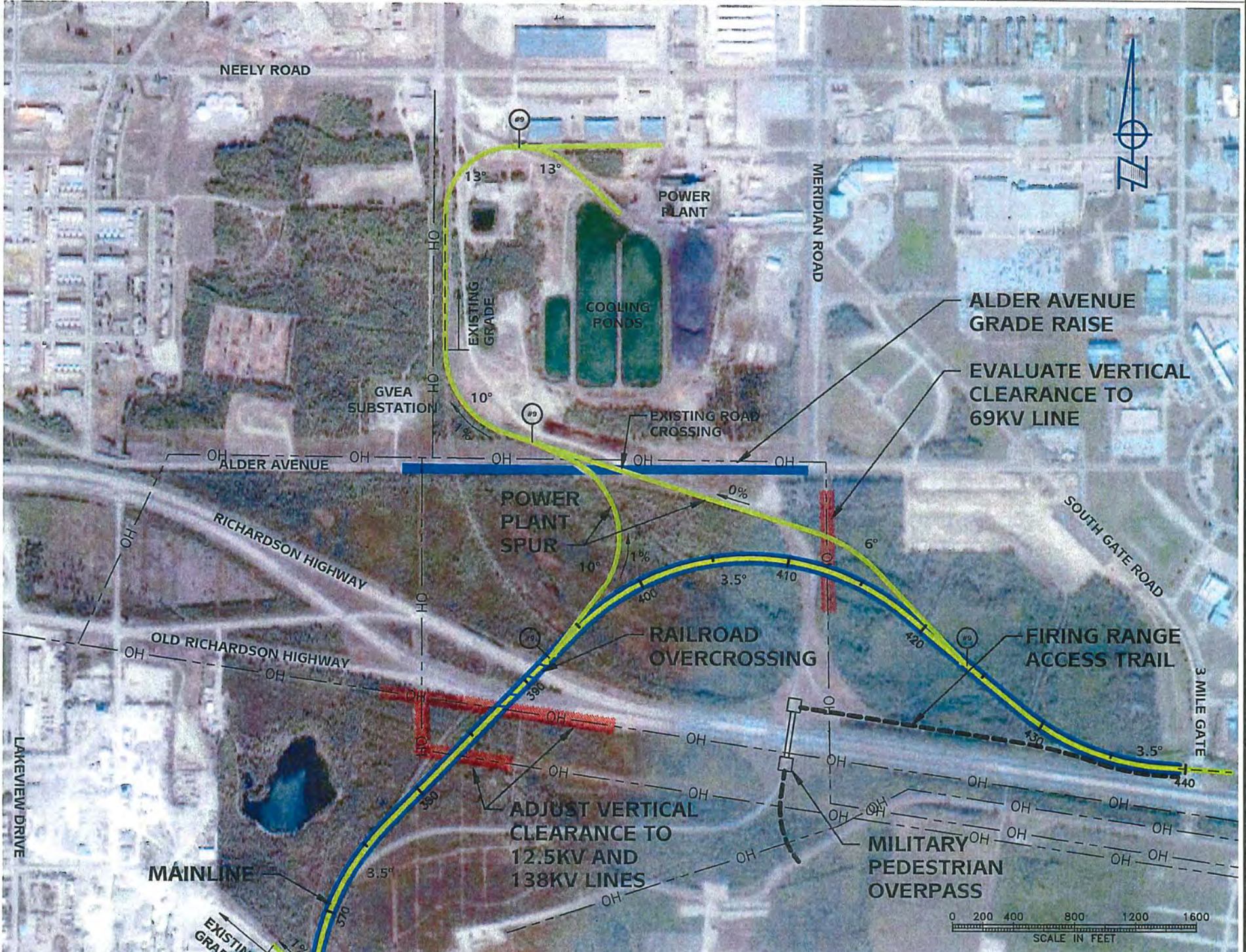
- LEGEND:**
- #11 SWITCH
 - PROPOSED ALIGNMENT
 - - - EXISTING ALIGNMENT

2
FIGURE

DESIGN: MTS/TMZ
DRAWN: CFP
CHECK: MTS

OPTION 2
3 MILE GATE RAILROAD ALIGNMENT STUDY
FORT WAINWRIGHT, ALASKA





NOTES:

1. ELEVATION INFORMATION BASED ON 1997 USACE AERIAL ORTHOPHOTO PROVIDED BY FORT WAINWRIGHT DPW.
2. AERIAL PHOTO BACKGROUND FROM GOOGLE EARTH, REGISTERED TO FNSB BASE MAPPING.

LEGEND:

	SWITCH
	PROPOSED ALIGNMENT
	EXISTING ALIGNMENT

3
FIGURE
APR 2007
PROJ. No.
F07019

OPTION 3
3 MILE GATE RAILROAD ALIGNMENT STUDY
FORT WAINWRIGHT, ALASKA



APPENDIX C

TRAFFIC ANALYSES AND SPEED STUDIES



TECHNICAL MEMORANDUM

Richardson Highway MP 359 Grade Separated Facility

Existing and Background Traffic Conditions and Safety Analysis

Technical Memorandum #1

Date:	June 2, 2017	KAI Project #: 19230
		Federal/State Project #: 0A24(033)/60734
To:	James Potts, PE; CH2M	
From:	Andrew Ooms, PE; Jamie Markosian, EIT; and Gary Katsion, PE <i>AVD</i>	

This memorandum provides an evaluation of the current traffic operations and safety in the area of the Richardson Highway/Old Richardson Highway intersection, as well as the no-build alternative analysis for a future design year of 2040. This memorandum includes the following:

- Description of the project and study area.
- Operational analysis for existing (2016) and future (2040) no-build scenarios on mainline segments of the Richardson Highway and the Richardson Highway/Old Richardson intersections (northbound and southbound).
- Safety analysis of the study area roads and intersections.

PROJECT DESCRIPTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) has developed a Planning and Environmental Linkages (PEL) study for the Richardson Highway/Steese Expressway in the Fairbanks North Star Borough (FNSB) (Reference 1). Within the PEL, The Richardson Highway was evaluated, along with the Steese Expressway, to identify deficiencies and to be broken into smaller project improvements that have been incorporated into the Fairbanks Metropolitan Area Transportation (FMATS) Metropolitan Transportation Plan (MTP) (Reference 2). The PEL study recommended a grade-separated facility on the Richardson Highway near milepost 359 to provide a grade-separated crossing of the Alaska Railroad tracks and to grade separate the northbound off-ramp from the Richardson Highway to the Old Richardson Highway.

Project Location

This study encompasses the section of the Richardson Highway from approximate milepost 358.5 to approximate milepost 360.5 and includes the Lakeview Drive exit off southbound Richardson Highway

and the at-grade intersection of Old Richardson Highway and Richardson Highway. Figure 1 shows the study area. As can be seen in Figure 1, this segment of the Richardson Highway is southeast of Fairbanks and bisects Fort Wainwright. The Richardson Highway serves as the main transportation route to Fairbanks from North Pole, Eielson Air Force Base (AFB), and communities further to the southeast. The land uses in the site vicinity are mainly a mix of industrial/commercial with residential to the southwest and Fort Wainwright to the north and southeast.

EXISTING CONDITIONS

The existing conditions analysis identifies the site conditions and current operational and safety conditions of the roadways within the study area. Figure 2 shows the current lane configurations and traffic control devices in the study area.

Roadway Facilities

Table 1 summarizes the existing transportation facilities and roadways in the study area.

Table 1 Existing Facilities and Roadway Designations

Roadway	Functional Classification ¹	Number of Lanes	Posted Speed (mph)	Sidewalks	Bicycle Lanes	On-Street Parking
Richardson Highway	Interstate Highway	4-6 Lanes	60 ²	No	No ³	No
Old Richardson Highway	Minor Arterial	2-3 Lanes	45	No	No ³	No
Lakeview Drive	Local	2 Lanes	35	No	No ³	No

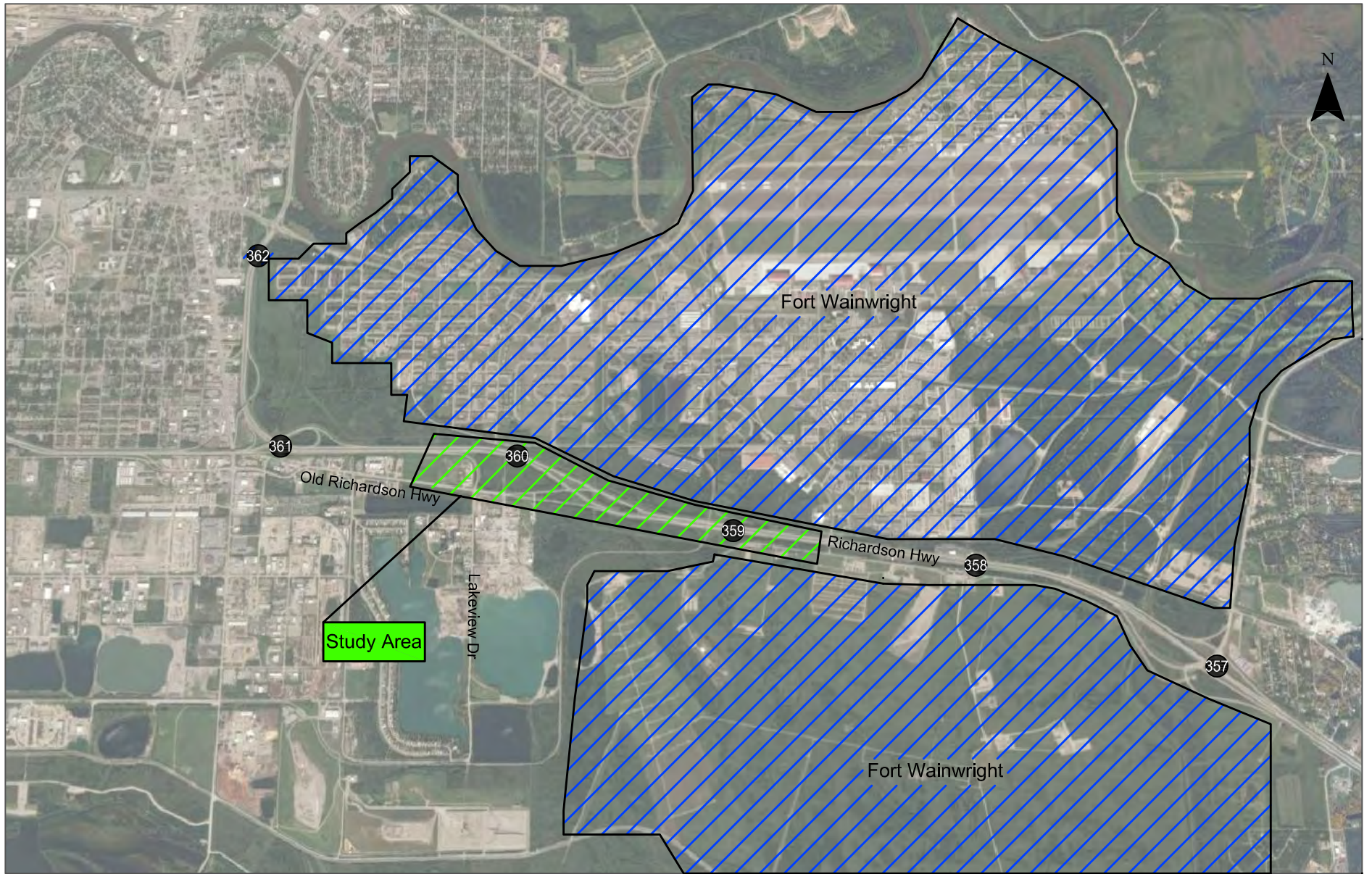
¹ Per DOT&PF Statewide Functional Classification GIS Map (Reference 3).

² Speed limit was raised from 55 mph to 60 mph on August 31, 2016 in the study area.

³ No designated bicycle lanes, but cycling is permitted on roadway shoulder.

The Richardson Highway is the main route for users to travel between Fairbanks and North Pole, Eielson Air Force Base, and beyond. It is classified as an interstate highway by DOT&PF in the Statewide Functional Classification Map. The speed limit on this study segment was raised from 55 miles per hour (mph) to 60 mph on August 31, 2016. Old Richardson Highway is classified as a minor arterial and connects the Richardson Highway with the Cushman Business Area. Land uses along Old Richardson Highway are mainly commercial with some industrial. Lakeview Drive is a local road that serves a small residential area to the south of the study area, as well as several commercial and industrial facilities.

The existing intersection configuration serves two of the four possible movements. Old Richardson Highway to southbound Richardson Highway and northbound Richardson Highway to Old Richardson Highway are served via at-grade ramps. The southbound Richardson Highway to Old Richardson Highway movement is accommodated via the Lakeview Drive ramp at approximate MP 360.4. The Old Richardson Highway to northbound Richardson Highway movement is accommodated by the interchange at MP 361.



- Approximate Milepost Locations

**Study Area Vicinity
Fairbanks, Alaska**

**Figure
1**

K:\H_Anchorage\projfile\19230 - Richardson Hwy MP 359 Interchange Study\dwg\figs\19230_Figures.dwg Jun 01, 2017 - 4:45pm - jmakosian Layout Tab: Study Area

K:\H_Anchorage\profile119230 - Richardson Hwy MP 359 Interchange Study\dwg\figs119230_Figures.dwg Jun 01, 2017 - 4:49pm - jmarkosian Layout Tab: existing lanes



- ## - Study Intersections
- - Stop Sign

**Existing Lane Configurations
Fairbanks, Alaska**

**Figure
2**

Pedestrian and Bicycle Facilities

No recent pedestrian and bicycle count data is available along the study area roadways. There are no sidewalks or marked bicycle lanes on any facility within the study area, however bicycle travel restrictions on the Richardson Highway were removed in the summer of 2015. Additional pedestrian and bicycle facility improvements are planned in the area with the Richardson Highway MP 357-362 Bicycle/Pedestrian Path project which is scheduled for construction in 2018.

Railroad Facilities

There is one at-grade railroad crossing in the study area. The Alaska Railroad Corporation (ARRC) has a spur crossing of the Richardson Highway at MP 359.2 that provides access to the mainline from industrial areas south of the highway. The rail crossing is controlled with reflective cross bucks and gates, overhead flashers, and advance flashers and striping. ARRC reports that two trains a day are typically scheduled from Monday to Thursday at approximately 6:00 a.m. and 11:00 p.m., with each train consisting of 10 to 30 cars.

Transit Facilities

FNSB operates three public transit lines in the immediate site vicinity, and can be seen in Exhibit 1. The Metropolitan Area Commuter System (MACS) Black and Green Lines use the Richardson Highway. The Purple line runs adjacent to the study area, with stops on the western end of the Old Richardson Highway. The Black Line serves as a commuter route for North Pole and Eielson AFB and does not go off the main line Richardson Highway. The Green Line uses both the Old Richardson Highway and the Richardson Highway with one scheduled stop in the study area at the intersection of the Old Richardson Highway and Lakeview Drive (Reference 4).

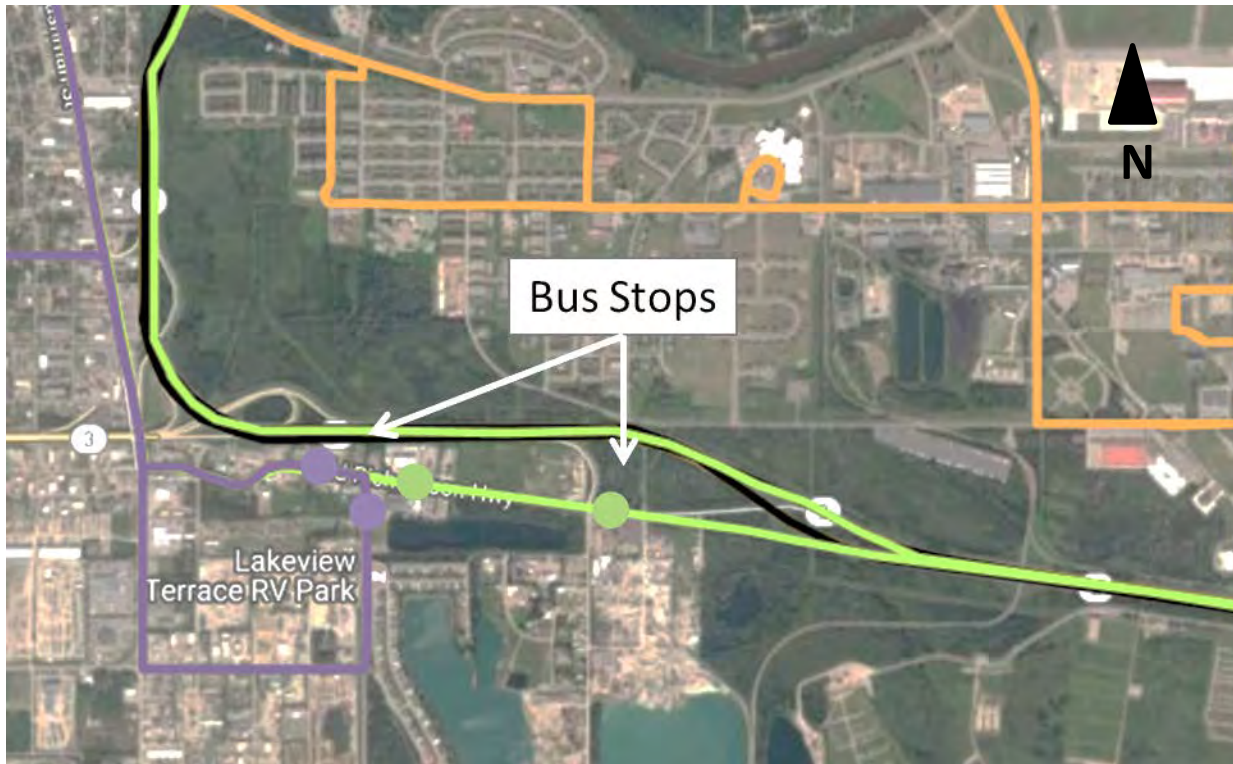


Exhibit 1 FNSB Metropolitan Area Commuter System Routes near Study Area (Reference 4)

Existing Traffic Operations

The existing traffic operations in the study area come from counts provided by DOT&PF and use data collected in June 2016. Supplemental vehicle counts were used from the permanent traffic recorder (PTR) at the old Fort Wainwright gate to the south of the study area to evaluate mainline Richardson Highway operations. Turning movement counts were not available for every leg of the study area intersections, so the available count data was supplemented by data from the PEL study.

The system-wide morning and evening weekday peak hours were found to occur from 7:00 a.m. to 8:00 a.m. and 5:00 p.m. to 6:00 pm, respectively. Figure 3 provides a summary of the existing turning movement counts for the weekday a.m. and p.m. peak hours. Figure 4 illustrates the existing freeway segment and merge/diverge segment operations within the study area.

Based on the existing conditions, all intersections, freeway segments, and merge/diverge sections operate at level of service (LOS) C or better except vehicles exiting the northbound lanes of Richardson Highway onto Old Richardson Highway experience the lowest LOS at D during the PM peak hour while waiting to cross southbound Richardson Highway. The stop-controlled crossing from the northbound Richardson Highway crossing the southbound Richardson Highway was treated as a modified minor street through movement to model the unique configuration. A headway gap of 4.1 seconds of a major street left-turn was used to replicate drivers evaluating gaps in a one-way traffic stream. The follow-up gap of 4.0 seconds from a minor street through movement was maintained to model the effect of the stop sign. This change reduces the calculated delay to better reflect existing

conditions and observed driver behavior. Freeway segment volumes on the Richardson Highway are highest in northbound lanes during the a.m. peak hour and in the southbound lanes during the p.m. peak hour. *Traffic operations worksheets are included in Attachment A.*



CM = CRITICAL MOVEMENT
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE
 Del = CRITICAL MOVEMENT CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO

**Year 2016 Intersection Traffic Conditions
 AM and PM Peak Hours
 Fairbanks, Alaska**

**Figure
 3**

K:\H_Proj\19119230 - Richardson Hwy MP 359 Interchange Study\figs\19230_Figures.cwg Jun 07, 2017 - 11:12am - jmarcosian Layout Tab: 2016_operations



**Year 2016 Freeway Segment Analysis
 Fairbanks, Alaska**

**Figure
 4**

K:\H_Projects\1919230 - Richardson Hwy MP 359 Interchange Study\figs\fig19230_Figures.dwg Jun 07, 2017 - 11:18am - jmakosiam Layout Tab: 2016_Fwy

Safety Analysis

Crash analysis in the study area was performed to propose cost-effective measures to address correctable crashes. Crash histories were reviewed for trends and patterns that could potentially yield corrective opportunities.

Crash records were obtained from DOT&PF for the most recent available five-year period from January 1, 2008 to December 31, 2012. Intersection crash data was reviewed at the intersections within the study area and along the mainline segment of the Richardson Highway near the Alaska Railroad spur crossing. A summary of the available crash data in these locations is show in Table 2, below. *Expanded crash information is available in Attachment B.*

Table 2 Study Area Crash Summary (2008-2012)

Location	Crash Type							Severity				Total Crashes
	Angle	Side-swipe	Rear End	Head On	Run of Road/Fixed Object	Ped/Bike	Animal	PDO	Minor Injury	Major Injury	Fatal	
NB Richardson Hwy Off-Ramp/SB Richardson Hwy	-	-	1	-	-	-	-	-	1	-	-	1
Old Richardson Hwy/ Lakeview Dr	4	-	-	-	3	-	0	5	2	-	-	7
Mainline Richardson Hwy (Milepost 359 – 360)	1	-	3	-	10	-	2	12	4	-	-	16

The at-grade northbound Richardson Highway off-ramp onto Old Richardson Highway had one reported crash during the analysis period.

Four angle crashes were reported at the intersection of Old Richardson Highway/Lakeview Drive in the analysis period. One of these crashes involved an illegal u-turn. The remaining three angle crashes involved southbound vehicles failing to yield to two eastbound and one westbound vehicle.

The crashes on the mainline Richardson Highway were evenly split by direction with eight northbound and eight southbound crashes. Run off the road crashes were the primary crash type for the roadway segment. Of these 10 run off the road crashes, 9 occurred during snow and ice conditions and 5 reports stated the roadway surface was a factor. Additionally, 4 of the 10 crashes were reported to be due to unsafe speed, 2 involved an object in the road, and 1 driver fell asleep. None of the 10 run off the road crashes involved injuries. No patterns were identified based on crash location or direction.

Three crashes were reported within 300 feet of the Alaska Railroad at-grade spur crossing of the mainline Richardson Highway; however, these crashes were not noted to be directly related to the

presence of a train. The minor injury crashes were reported in correspondence with rear-end and animal crashes.

These reported crashes do not include any clear patterns of crash type or location likely to be responsive to engineering mitigations. The crash data analysis indicates that roadway surface and driver behavior are the primary factors for crashes in the study area. Therefore, no cost-effective engineering crash reduction treatments were identified.

FUTURE CONDITIONS

Future no-build traffic operations were evaluated to establish a vehicle operations baseline and to identify operations issues that may arise under future conditions. The future no-build scenario maintains the existing lane configurations and traffic control devices in the study area while including planned roadway projects and increasing the traffic volumes to match projected growth.

Future year 2040 traffic volumes were developed using the FMATS travel demand model outputs, which indicated a 1.5 percent annual linear growth rate over the analysis timeline. The model is being updated to include the planned Eielson AFB expansion, but this change is not reflected in the developed volumes. This annual growth rate was applied to the existing year 2016 traffic volumes to develop the future year 2040 volumes.

According to a review of the FMATS 2040 MTP, there are no further developments planned, aside from the improvements that have been identified from the aforementioned PEL study. The following projects have been identified by the FMATS MTP and include short-range (SR) and long-range (LR) projects (Reference 2):

- SR-42 – *Richardson Highway MP 359 Railroad Overpass*. Construct a grade separated railroad crossing at MP 359 of the Richardson Highway and a pedestrian underpass east of the railroad crossing;
- SR-56 – *MP 356-362 Bicycle/Pedestrian Path (Richardson Hwy)*. Construct a paved bicycle/pedestrian path on the Richardson Highway between MP 356 – 362, starting from the Richardson Highway/Airport Way intersection, continuing along the Richardson Highway to the Badger Loop North Bound Ramp, and terminating at the Badger Road/Old Richardson Highway intersection;
- LR-29 – *Old Richardson Highway Interchange*. Construct a grade-separated interchange at the intersection of Richardson Highway and Old Richardson Highway. Potential access to Fort Wainwright.

Figure 5 shows the projected turning movement volumes and operations for the study area intersections while Figure 6 illustrates the freeway and merge/diverge segment operations within the study area.

The addition of the background 1.5 percent annual growth rate provides some deterioration in the year 2040 traffic conditions. Figure 5 illustrates the effects from this increased volume in several turning movements. The left turn from northbound Richardson Highway onto Old Richardson Highway is forecast to experience LOS F during the a.m. and p.m. peak hours. Additionally, the volume-to-capacity ratio (v/c) is forecast to be over 1.0 during the p.m. peak hour.

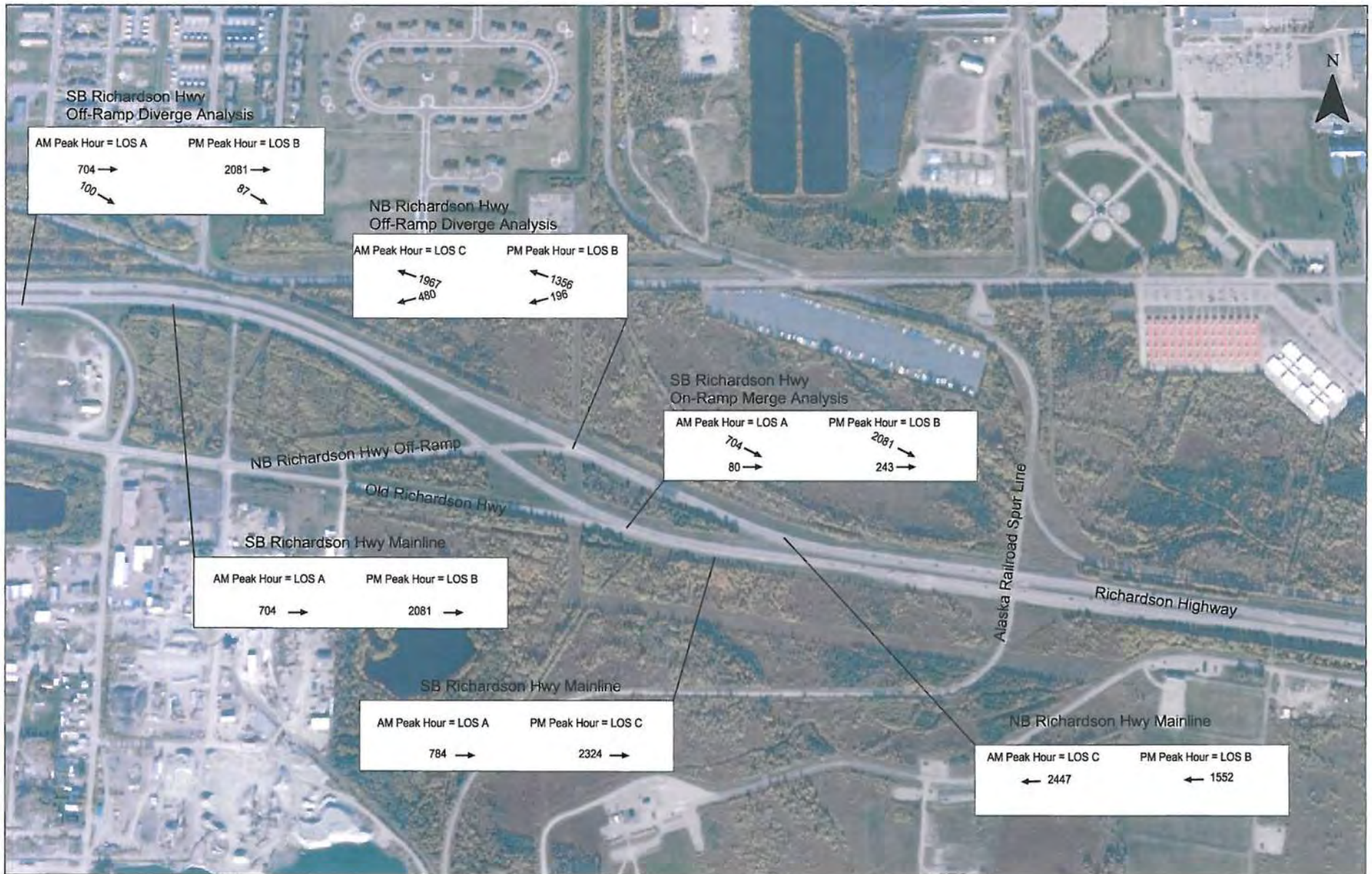
Figure 6 illustrates that the freeway and merge/diverge segments are performing acceptably with LOS C or better on all facilities. *Future traffic operations worksheets are included in Attachment C.*



**Year 2040 Intersection Traffic Conditions
Fairbanks, Alaska**

**Figure
5**

K:\H_Proj\651191230 - Richardson Hwy MP 359 Interchange Study\dwg\figs\19230_Figures.dwg Jun 07, 2017 - 11:19am - jmakosian Layout Tab: 2/40_operations



K:\H_Projects\1919230 - Richardson Hwy MP 359 Interchange Study\1919230_Figures.dwg Jun 07, 2017 - 11:19am - jmarks\am Layout Tab: 2040_Fwy

**Year 2040 Freeway Segment Analysis
Fairbanks, Alaska**

**Figure
6**

NEXT STEPS

The existing and background traffic conditions and safety analysis will be used in the development of alternatives to address identified deficiencies. A subsequent memorandum will document the alternatives development and the future operations and safety performance of each alternative.

REFERENCES



















1. DOWL. *Richardson Highway/Steese Expressway Corridor Planning and Environmental Linkages Study Report*. April 2015.
2. Kittelson & Associates, Inc. *Fairbanks Metro 2040 "A Roadmap to 2040"*. January 2015.
3. Alaska Department of Transportation and Public Facilities. <http://www.dot.state.ak.us/stwdplng/fclass/fclassmaps.shtml>. Accessed September 10, 2016.
4. Fairbanks North Star Borough Metropolitan Area Commuter System. <http://fnsb.us/transportation/Pages/MACS.aspx>. Accessed September 15, 2016.
5. Alaska Department of Transportation and Public Facilities. *Alaska Highway Preconstruction Manual*. November 2013.

Attachment A Existing Year 2016 Traffic
Conditions Worksheets

Richardson Highway MP 359 Grade Separated Facility

101: Lakeview Dr & Old Richardson Hwy
















Year 2016 Traffic Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	65	20	40	340	0	30	0	11	7	30	37
Future Volume (Veh/h)	0	65	20	40	340	0	30	0	11	7	30	37
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	22	43	370	0	33	0	12	8	33	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				TWLTL							
Median storage (veh)	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	370			93			594	538	82	550	549	370
vC1, stage 1 conf vol							82	82		456	456	
vC2, stage 2 conf vol							512	456		94	93	
vCu, unblocked vol	370			93			594	538	82	550	549	370
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			93	100	99	99	94	94
cM capacity (veh/h)	1189			1501			454	532	978	544	529	676
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	93	43	370	45	41	40						
Volume Left	0	43	0	33	8	0						
Volume Right	22	0	0	12	0	40						
cSH	1700	1501	1700	529	532	676						
Volume to Capacity	0.05	0.03	0.22	0.08	0.08	0.06						
Queue Length 95th (ft)	0	2	0	7	6	5						
Control Delay (s)	0.0	7.5	0.0	12.4	12.3	10.7						
Lane LOS		A		B	B	B						
Approach Delay (s)	0.0	0.8		12.4	11.5							
Approach LOS				B	B							
Intersection Summary												
Average Delay	2.9											
Intersection Capacity Utilization	34.6%			ICU Level of Service				A				
Analysis Period (min)	15											

Richardson Highway MP 359 Grade Separated Facility

102: NB Richardson Hwy Off-Ramp & SB Richardson Hwy



















Year 2016 Traffic Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Traffic Volume (veh/h)	0	0	0	0	353	0	0	0	0	0	417	0
Future Volume (Veh/h)	0	0	0	0	353	0	0	0	0	0	417	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	384	0	0	0	0	0	453	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	645	453	226	226	453	0	453				0	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	645	453	226	226	453	0	453				0	
tC, single (s)	7.5	6.5	6.9	7.5	*4.1	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	44	100	100				100	
cM capacity (veh/h)	197	501	776	709	681	1084	1104				1622	
Direction, Lane #	WB 1	SB 1	SB 2									
Volume Total	384	226	226									
Volume Left	0	0	0									
Volume Right	0	0	0									
cSH	681	1700	1700									
Volume to Capacity	0.56	0.13	0.13									
Queue Length 95th (ft)	88	0	0									
Control Delay (s)	16.9	0.0	0.0									
Lane LOS	C											
Approach Delay (s)	16.9	0.0										
Approach LOS	C											
Intersection Summary												
Average Delay			7.8									
Intersection Capacity Utilization			36.8%	ICU Level of Service				A				
Analysis Period (min)			15									
* User Entered Value												

Richardson Hwy MP 359 Grade Separated Facility













201: Lakeview Dr & Old Richardson Hwy

Existing Year 2016 Traffic Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	340	30	20	130	0	10	0	26	6	26	32
Future Volume (Veh/h)	0	340	30	20	130	0	10	0	26	6	26	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	370	33	22	141	0	11	0	28	7	28	35
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			TWLTL							
Median storage (veh)					2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	141			403			620	572	386	600	588	141
vC1, stage 1 conf vol							386	386		185	185	
vC2, stage 2 conf vol							234	185		414	403	
vCu, unblocked vol	141			403			620	572	386	600	588	141
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	99	95	96
cM capacity (veh/h)	1442			1156			550	561	661	534	540	907
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	403	22	141	39	35	35						
Volume Left	0	22	0	11	7	0						
Volume Right	33	0	0	28	0	35						
cSH	1700	1156	1700	626	539	907						
Volume to Capacity	0.24	0.02	0.08	0.06	0.06	0.04						
Queue Length 95th (ft)	0	1	0	5	5	3						
Control Delay (s)	0.0	8.2	0.0	11.1	12.1	9.1						
Lane LOS		A		B	B	A						
Approach Delay (s)	0.0	1.1		11.1	10.6							
Approach LOS				B	B							
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			35.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Richardson Hwy MP 359 Grade Separated Facility

202: NB Richardson Hwy Off-Ramp & SB Richardson Hwy Existing Year 2016 Traffic Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					↑			↑↑				
Traffic Volume (veh/h)	0	0	0	0	144	0	0	1594	0	0	0	0
Future Volume (Veh/h)	0	0	0	0	144	0	0	1594	0	0	0	0
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	157	0	0	1733	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1812	1733	866	866	1733	0	0			1733		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1812	1733	866	866	1733	0	0			1733		
tC, single (s)	7.5	6.5	6.9	7.5	*4.1	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	44	100	100			100		
cM capacity (veh/h)	27	87	296	247	281	1084	1622			360		
Direction, Lane #	WB 1	SE 1	SE 2									
Volume Total	157	866	866									
Volume Left	0	0	0									
Volume Right	0	0	0									
cSH	281	1700	1700									
Volume to Capacity	0.56	0.51	0.51									
Queue Length 95th (ft)	79	0	0									
Control Delay (s)	32.8	0.0	0.0									
Lane LOS	D											
Approach Delay (s)	32.8	0.0										
Approach LOS	D											
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization		58.3%		ICU Level of Service						B		
Analysis Period (min)			15									
* User Entered Value												

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: AM Peak
 Freeway/Dir of Travel: SB Richardson Hwy
 Junction: Lakeview Drive
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	60.0	mph	
Volume on freeway	491	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	74	vph	
Length of first accel/decel lane	250	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	491		74			vph
Peak-hour factor, PHF	0.94		0.94			
Peak 15-min volume, v15	131		20			v
Trucks and buses	7		7			%
Recreational vehicles	0		0			%
Terrain type:	Level		Level			
Grade	0.00	%	0.00	%		%
Length	0.00	mi	0.00	mi		mi
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	541	81	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 541$ pc/h

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	541	4600	No
$v_{Fi} = v_F - v_R$	460	4600	No
v_R	81	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 541$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	541	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 6.7$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	D = 0.435	
Space mean speed in ramp influence area,	S _R = 52.2	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 52.2	mph

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Lakeview Drive
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	60.0	mph	
Volume on freeway	1658	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	64	vph	
Length of first accel/decel lane	250	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1658	64		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	441	17		v
Trucks and buses	7	7		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	1826	70	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 1826$ pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	1826	4600	No
$v_{FO} = v_{FO} - v_{R3}$	1756	4600	No
v_{R3}	70	2000	No
$v_{or3} = v_{or3}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_{or3} > 2700$ pc/h?		No	
Is $v_{or3} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 1826$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	1826	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 17.7$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.434	
Space mean speed in ramp influence area,	S _R = 52.2	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 52.2	mph

Phone: Fax:
E-mail:

-----Merge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: AM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	60.0	mph
Volume on freeway	417	vph

-----On Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	86	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	417	86		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	111	23		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	444	91	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 444 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	535	4600	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 444	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	535	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v_R + 0.0078 v₁₂ - 0.00627 L_A = 4.9 pc/mi/ln

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.275	
	S	
Space mean speed in ramp influence area,	S = 55.0	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 55.0	mph

Phone: Fax:
E-mail:

-----Merge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	60.0	mph
Volume on freeway	1594	vph

-----On Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	360	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent Ramp		vph
Position of adjacent Ramp		
Type of adjacent Ramp		
Distance to adjacent Ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1594	360		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	424	96		v
Trucks and buses	0	0		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade		%	%	%
Length		mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	1.000	1.000	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	1696	383	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 1696 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2079	4600	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 1696	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2079	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v_R + 0.0078 v₁₂ - 0.00627 L_A = 16.8 pc/mi/ln

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.300	
	S	
Space mean speed in ramp influence area,	S = 54.6	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 54.6	mph

Phone: Fax:
 E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: AM Peak
 Freeway/Dir of Travel: NB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	60.0	mph
Volume on freeway	2525	vph

-----Off Ramp Data-----

Side of freeway	Left	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	353	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp
Volume, V (vph)	2525		353		vph
Peak-hour factor, PHF	0.94		0.94		
Peak 15-min volume, v15	672		94		v
Trucks and buses	7		7		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2780	389	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 2780$ pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v = v_{12}$	2780	4600	No
$v_{Fi} = v_F - v_R$	2391	4600	No
v_R	389	2000	No
v_3 or v_{av34}	0 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2780$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2780	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 21.4$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.463	
Space mean speed in ramp influence area,	S _R = 51.7	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 51.7	mph

Phone: Fax:
 E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: NB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	60.0	mph
Volume on freeway	1280	vph

-----Off Ramp Data-----

Side of freeway	Left	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	144	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp
Volume, V (vph)	1280		144		vph
Peak-hour factor, PHF	0.94		0.94		
Peak 15-min volume, v15	340		38		v
Trucks and buses	7		7		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	1409	159	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

v = v + (v - v) P = 1409 pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v = v	1409	4600	No
Fi F			
v = v - v	1250	4600	No
FO F R			
v	159	2000	No
R			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v > 2700 pc/h?		No	
3 av34			
Is v or v > 1.5 v /2		No	
3 av34 12			
If yes, v = 1409		(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v	1409	4400	No
12			

----- Level of Service Determination (if not F) -----

Density, D = 4.252 + 0.0086 v - 0.009 L = 9.6 pc/mi/ln

R 12 D

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	D = 0.442	
	S	
Space mean speed in ramp influence area,	S = 52.0	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 52.0	mph

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: AM Peak
Freeway/Direction: NB Richardson Highway
From/To: North Pole/Fairbanks
Jurisdiction: DOT&PF
Analysis Year: 2016
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	2525	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	672	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1390	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1390	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	23.2	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: NB Richardson Highway
From/To: North Pole/Fairbanks
Jurisdiction: DOT&PF
Analysis Year: 2016
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	1280	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	340	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	705	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	705	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	11.8	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: AM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2016
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	503	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	134	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	277	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	277	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	4.6	pc/mi/ln
Level of service, LOS	A	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2016
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	1954	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	520	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1076	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1076	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	17.9	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

Operational Analysis

Analyst: JGM
 Agency or Company: Kittelson & Associates
 Date Performed: 3/2/2017
 Analysis Time Period: AM Peak
 Freeway/Direction: SB Richardson Highway
 From/To: Fairbanks/North Pole
 Jurisdiction: DOT&PF
 Analysis Year: 2016
 Description: Richardson Highway MP 359 Grade Separated Facility

Flow Inputs and Adjustments

Volume, V	503	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	134	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	277	pc/h/ln

Speed Inputs and Adjustments

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

LOS and Performance Measures

Flow rate, vp	277	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	4.6	pc/mi/ln
Level of service, LOS	A	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2016
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	1954	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	520	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1076	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1076	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	17.9	pc/mi/ln
Level of service, LOS	B	

Attachment B DOT&PF Crash Report
Summary (2008 -2012)



















Location	PCASENUM	CDSRTE	ACCMIPT	Year	STREET	CROSSSTREET	ACCSEVERITY	TOTINJ	MAJINJ	MININJ	TOTFATAL	EVETYPE	EVELOC	WEATHER	SURFACECOND	LIGHT
NB Richardson Hwy Off-Ramp/SB Richardson Hwy	1015190	190705	0.467	2010	RICHARDSON HWY	CROSSOVER	PROPERTY DAMAGE ONLY	0	0	0	0	SIGN	ROADWAY	CLOUDY	ICE	DAYLIGHT
	81631	190700	0.127	2008	OLD RICHARDSON HWY	LAKEVIEW DR	PROPERTY DAMAGE ONLY	0	0	0	0	SIGN	MEDIAN	CLOUDY	ICE	TWILIGHT
Old Richardson Hwy/Lakeview Dr	811805	190700	0.127	2008	OLD RICH@ SOUTH FAIRBANKS	LAKEVIEW DR	NON- INCAPACITATING/POSSIBLE INJURY	2	0	2	0	VEH - ANGLE	ROADWAY	RAIN	WET	DAYLIGHT
	816943	190700	0.127	2008	OLD RICH@SOUTH FAIRBANKS	LAKEVIEW DR	NON- INCAPACITATING/POSSIBLE INJURY	2	0	2	0	VEH - ANGLE	ROADWAY	CLEAR	DRY	DAYLIGHT
	822722	190700	0.127	2008	OLD RICHARDSON HWY	LAKEVIEW DR	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADWAY	CLEAR	ICE	DAYLIGHT
		190700	0.127	2010	OLD RICHARDSON HWY	LAKEVIEW DR	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADWAY	SNOW	ICE	DAYLIGHT
	124640	190700	0.127	2012	OLD RICHARDSON HIGHWAY	LAKEVIEW DRIVE	PROPERTY DAMAGE ONLY	0	0	0	0	VEH - ANGLE	ROADWAY	CLEAR	DRY	DAYLIGHT
	123209	190700	0.127	2012	OLD RICHARDSON HIGHWAY	LAKEVIEW DRIVE	PROPERTY DAMAGE ONLY	0	0	0	0	VEH - ANGLE	ROADWAY	CLOUDY	WATER	DAYLIGHT
		190700	0.127	2012	OLD RICHARDSON HIGHWAY	LAKEVIEW DRIVE	PROPERTY DAMAGE ONLY	0	0	0	0	VEH - ANGLE	ROADWAY	CLOUDY	WATER	DAYLIGHT
Richardson Mainline	8001397	190000	362.321	2008	NB RICHARDSON HWY	R R TRACKS_359 MI	PROPERTY DAMAGE ONLY	0	0	0	0	SIGN	ROADWAY	CLEAR	ICE	DAYLIGHT
		190000	362.321	2008	RICHARDSON HWY	MP 359	PROPERTY DAMAGE ONLY	0	0	0	0	DITCH	UNKNOWN	SNOW	SNOW	DARK - ROADWAY NOT LIGHTED
	920529	190000	362.326	2009	RICHARDSON HWY	MILE 359	NON- INCAPACITATING/POSSIBLE INJURY	1	0	1	0	VEH - REAR END	ROADWAY	CLEAR	DRY	DAYLIGHT
	102648	190000	362.326	2010	RICHARDSON HWY	359 MI	PROPERTY DAMAGE ONLY	0	0	0	0	OTHER FIXED OBJECT	ROADWAY	CLEAR	ICE	DAYLIGHT
	1097943	190000	362.326	2010	RICHARDSON HWY	MILE 359	PROPERTY DAMAGE ONLY	0	0	0	0	MOOSE	ROADWAY	CLOUDY	DRY	DARK - ROADWAY NOT LIGHTED
	124580	190000	362.326	2012	RICHARDSON HWY	359 MI	NON- INCAPACITATING/POSSIBLE INJURY	1	0	1	0	VEH - REAR END	ROADWAY	CLOUDY	DRY	DAYLIGHT
	1015740	190000	362.366	2010	RICHARDSON HIGHWAY	MP 359	PROPERTY DAMAGE ONLY	0	0	0	0	DITCH	ROADWAY	CLOUDY	ICE	DARK - ROADWAY NOT LIGHTED
		190000	362.401	2010	OLD RICHARDSON	AIRPORT WAY	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADSIDE	SLEET, HAIL (FREEZING RAIN)	ICE	DARK - LIGHTED ROADWAY
	85120	190000	362.504	2008	RICHARDSON HWY MP 359.2	AK RAILROAD CROSSING	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADWAY	CLEAR	ICE	DARK - ROADWAY NOT LIGHTED
	923986	190000	362.504	2009	RICHARDSON HWY	ALASKA RAILROAD	NON- INCAPACITATING/POSSIBLE INJURY	1	0	1	0	VEH - REAR END	ROADWAY	CLEAR	DRY	DARK - ROADWAY NOT LIGHTED
	1012132	190000	362.564	2010	RICHARDSON HWY SB	RAILROAD TRACKS	PROPERTY DAMAGE ONLY	0	0	0	0	SIGN	ROADWAY	CLEAR	DRY	DAYLIGHT
	822052	190000	362.711	2008	RICHARDSON HWY	WAINWRIGHT 3 MI GATE	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADWAY	CLEAR	ICE	DARK - LIGHTED ROADWAY
		190000	362.754	2010	RICHARDSON HWY	3 MI RR XING	PROPERTY DAMAGE ONLY	0	0	0	0	RAN OFF ROAD	ROADWAY	CLOUDY	ICE	DAYLIGHT
	820389	190000	362.779	2008	RICHARDSON HWY	OLD RICHARDSON	PROPERTY DAMAGE ONLY	0	0	0	0	DITCH	ROADWAY	SNOW	SNOW	DAYLIGHT
	920336	190000	362.899	2009	N/B RICHARDSON HWY	OLD RICHARDSON HWY	NON- INCAPACITATING/POSSIBLE INJURY	1	0	1	0	MOOSE	ROADWAY	SNOW	WET	DAYLIGHT
		190000	362.976	2009	RICHARDSON HWY	EXIT 15 MITCHELL EXPRESSWAY	PROPERTY DAMAGE ONLY	0	0	0	0	VEH - ANGLE	ROADWAY	CLEAR	DRY	DAYLIGHT

Attachment C Future Year 2040 No-Build
Traffic Conditions Worksheets

Richardson Highway MP359 Grade Separated Facility













101: Lakeview Dr & Old Richardson Hwy

Year 2040 No-Build Traffic Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	88	27	54	462	0	41	0	15	10	40	50
Future Volume (Veh/h)	0	88	27	54	462	0	41	0	15	10	40	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	96	29	59	502	0	45	0	16	11	43	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				TWLTL							
Median storage (veh)	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	502			125			806	730	110	746	745	502
vC1, stage 1 conf vol							110	110		620	620	
vC2, stage 2 conf vol							696	620		126	125	
vCu, unblocked vol	502			125			806	730	110	746	745	502
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			86	100	98	97	90	91
cM capacity (veh/h)	1062			1462			331	443	943	437	440	569
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	125	59	502	61	54	54						
Volume Left	0	59	0	45	11	0						
Volume Right	29	0	0	16	0	54						
cSH	1700	1462	1700	398	439	569						
Volume to Capacity	0.07	0.04	0.30	0.15	0.12	0.09						
Queue Length 95th (ft)	0	3	0	13	10	8						
Control Delay (s)	0.0	7.6	0.0	15.7	14.3	12.0						
Lane LOS		A		C	B	B						
Approach Delay (s)	0.0	0.8		15.7	13.2							
Approach LOS				C	B							
Intersection Summary												
Average Delay				3.3								
Intersection Capacity Utilization				41.0%	ICU Level of Service	A						
Analysis Period (min)	15											

Richardson Highway MP359 Grade Separated Facility



















102: NB Richardson Hwy Off-Ramp & SB Richardson Hwy Year 2040 No-Build Traffic Conditions AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑						↑↑	
Traffic Volume (veh/h)	0	0	0	0	480	0	0	0	0	0	704	0
Future Volume (Veh/h)	0	0	0	0	480	0	0	0	0	0	704	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	522	0	0	0	0	0	765	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1026	765	382	382	765	0	765				0	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1026	765	382	382	765	0	765				0	
tC, single (s)	7.5	6.5	6.9	7.5	*4.1	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	6	100	100				100	
cM capacity (veh/h)	32	332	616	550	557	1084	844				1622	
Direction, Lane #	WB 1	SB 1	SB 2									
Volume Total	522	382	382									
Volume Left	0	0	0									
Volume Right	0	0	0									
cSH	557	1700	1700									
Volume to Capacity	0.94	0.23	0.23									
Queue Length 95th (ft)	299	0	0									
Control Delay (s)	51.3	0.0	0.0									
Lane LOS	F											
Approach Delay (s)	51.3	0.0										
Approach LOS	F											
Intersection Summary												
Average Delay			20.8									
Intersection Capacity Utilization			51.4%	ICU Level of Service				A				
Analysis Period (min)			15									
* User Entered Value												

Richardson Highway MP 359 Grade Separated Facility
















201: Lakeview Dr & Old Richardson Hwy

Year 2040 No-Build Traffic Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	462	41	27	177	0	14	0	35	9	35	43
Future Volume (Veh/h)	0	462	41	27	177	0	14	0	35	9	35	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	502	45	29	192	0	15	0	38	10	38	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				TWLTL							
Median storage veh	2											
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	192			547			840	774	524	812	797	192
vC1, stage 1 conf vol							524	524		250	250	
vC2, stage 2 conf vol							316	250		562	547	
vCu, unblocked vol	192			547			840	774	524	812	797	192
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	93	98	92	94
cM capacity (veh/h)	1381			1022			448	481	553	420	453	850
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	547	29	192	53	48	47						
Volume Left	0	29	0	15	10	0						
Volume Right	45	0	0	38	0	47						
cSH	1700	1022	1700	518	446	850						
Volume to Capacity	0.32	0.03	0.11	0.10	0.11	0.06						
Queue Length 95th (ft)	0	2	0	8	9	4						
Control Delay (s)	0.0	8.6	0.0	12.7	14.0	9.5						
Lane LOS		A		B	B	A						
Approach Delay (s)	0.0	1.1		12.7	11.8							
Approach LOS				B	B							
Intersection Summary												
Average Delay				2.2								
Intersection Capacity Utilization				43.1%	ICU Level of Service	A						
Analysis Period (min)	15											

Richardson Highway MP 359 Grade Separated Facility

202: NB Richardson Hwy Off-Ramp & SB Richardson Hwy Year 2040 No-Build Traffic Conditions PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											 	
Traffic Volume (veh/h)	0	0	0	0	196	0	0	0	0	0	2081	0
Future Volume (Veh/h)	0	0	0	0	196	0	0	0	0	0	2081	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	213	0	0	0	0	0	2262	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2368	2262	1131	1131	2262	0	2262				0	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2368	2262	1131	1131	2262	0	2262				0	
tC, single (s)	7.5	6.5	6.9	7.5	*4.1	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	0	100	100	100	0	100	100				100	
cM capacity (veh/h)	0	40	197	158	187	1084	223				1622	
Direction, Lane #												
	WB 1	SB 1	SB 2									
Volume Total	213	1131	1131									
Volume Left	0	0	0									
Volume Right	0	0	0									
cSH	187	1700	1700									
Volume to Capacity	1.14	0.67	0.67									
Queue Length 95th (ft)	268	0	0									
Control Delay (s)	159.6	0.0	0.0									
Lane LOS	F											
Approach Delay (s)	159.6	0.0										
Approach LOS	F											
Intersection Summary												
Average Delay			13.7									
Intersection Capacity Utilization			74.5%	ICU Level of Service							D	
Analysis Period (min)			15									
* User Entered Value												

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst: JGM
Agency/Co.: Kittelson & Associates
Date performed: 3/1/2017
Analysis time period: AM Peak
Freeway/Dir of Travel: SB Richardson Highway
Junction: Lakeview Drive
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	60.0	mph	
Volume on freeway	804	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	100	vph	
Length of first accel/decel lane	250	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	804	100		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	214	27		v
Trucks and buses	7	7		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00	%	0.00	%
Length	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	885	110	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

v = v + (v - v) P = 885 pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v = v	885	4600	No
Fi F			
v = v - v	775	4600	No
FO F R			
v	110	2000	No
R			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v > 2700 pc/h?		No	
3 av34			
Is v or v > 1.5 v /2		No	
3 av34 12			
If yes, v = 885		(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v	885	4400	No
12			

----- Level of Service Determination (if not F) -----

Density, D = 4.252 + 0.0086 v - 0.009 L = 9.6 pc/mi/ln

R 12 D

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	D = 0.438	
	S	
Space mean speed in ramp influence area,	S = 52.1	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 52.1	mph

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Lakeview Drive
 Jurisdiction: DOT&PF
 Analysis Year: 2040
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	60.0	mph	
Volume on freeway	2081	vph	

-----Off Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	87	vph	
Length of first accel/decel lane	250	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2081	87		vph
Peak-hour factor, PHF	0.94	0.94		
Peak 15-min volume, v15	553	23		v
Trucks and buses	7	7		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %		%
Length	0.00 mi	0.00 mi		mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2291	96	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 2291$ pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	2291	4600	No
$v_{FO} = v_{FO} - v_{R3}$	2195	4600	No
v_{R3}	96	2000	No
$v_{or3} = v_{or3}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_{or3} > 2700$ pc/h?		No	
Is $v_{or3} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2291$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2291	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 21.7$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.437	
Space mean speed in ramp influence area,	S _R = 52.1	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 52.1	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Merge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: AM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2040
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	704	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	80	vph	
Length of first accel/decel lane	750	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	227	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	1200	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	704	80	227	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	187	21	60	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	749	85	241	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 749 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	834	4500	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 749	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	834	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 7.2 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence A

----- Speed Estimation -----

Intermediate speed variable,	M = 0.277	
	S	
Space mean speed in ramp influence area,	S = 51.4	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 51.4	mph

Phone: _____ Fax: _____
 E-mail: _____

-----Merge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: SB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2040
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Merge		
Number of lanes in freeway	2		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	2081	vph	

-----On Ramp Data-----

Side of freeway	Right		
Number of lanes in ramp	1		
Free-flow speed on ramp	35.0	mph	
Volume on ramp	243	vph	
Length of first accel/decel lane	750	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent Ramp	1591	vph	
Position of adjacent Ramp	Upstream		
Type of adjacent Ramp	Off		
Distance to adjacent Ramp	1200	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2081	243	1591	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	553	65	423	v
Trucks and buses	0	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	%
Length	mi	mi	mi	mi
Trucks and buses PCE, ET	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	

Heavy vehicle adjustment, fHV	1.000	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2214	259	1693	pcph

----- Estimation of V12 Merge Areas -----

L = (Equation 13-6 or 13-7)

EQ

P = 1.000 Using Equation 0

FM

v = v (P) = 2214 pc/h

12 F FM

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v	2473	4500	No
FO			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	No	
3 av34	12		
If yes, v	= 2214	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Merge Influence Area -----

	Actual	Max Desirable	Violation?
v	2473	4600	No
R12			

----- Level of Service Determination (if not F) -----

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 19.9 pc/mi/ln

R R 12 A

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	M = 0.315	
	S	
Space mean speed in ramp influence area,	S = 50.9	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 50.9	mph

Phone: Fax:
E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: AM Peak
 Freeway/Dir of Travel: NB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2040
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	2		
Free-flow speed on freeway	60.0	mph	
Volume on freeway	2447	vph	

-----Off Ramp Data-----

Side of freeway	Left		
Number of lanes in ramp	1		
Free-Flow speed on ramp	35.0	mph	
Volume on ramp	480	vph	
Length of first accel/decel lane	750	ft	
Length of second accel/decel lane		ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No		
Volume on adjacent ramp		vph	
Position of adjacent ramp			
Type of adjacent ramp			
Distance to adjacent ramp		ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2447		480			vph
Peak-hour factor, PHF	0.94		0.94			
Peak 15-min volume, v15	651		128			v
Trucks and buses	7		7			%
Recreational vehicles	0		0			%
Terrain type:	Level		Level			
Grade	0.00	%	0.00	%		%
Length	0.00	mi	0.00	mi		mi
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	2694	529	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

$v_{12} = v_R + (v_F - v_R) P = 2694$ pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
$v_{12} = v_{12}$	2694	4600	No
$v_{FO} = v_{FO} - v_{R3}$	2165	4600	No
v_{R3}	529	2000	No
$v_{or3} = 0$ pc/h		(Equation 13-14 or 13-17)	
Is $v_{or3} > 2700$ pc/h?		No	
Is $v_{or3} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2694$		(Equation 13-15, 13-16, 13-18, or 13-19)	

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v_{12}	2694	4400	No

----- Level of Service Determination (if not F) -----

Density, $D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 20.7$ pc/mi/ln

Level of service for ramp-freeway junction areas of influence C

----- Speed Estimation -----

Intermediate speed variable,	D = 0.476	
Space mean speed in ramp influence area,	S _R = 51.4	mph
Space mean speed in outer lanes,	S ₀ = N/A	mph
Space mean speed for all vehicles,	S = 51.4	mph

Phone: Fax:
 E-mail:

-----Diverge Analysis-----

Analyst: JGM
 Agency/Co.: Kittelson & Associates
 Date performed: 3/1/2017
 Analysis time period: PM Peak
 Freeway/Dir of Travel: NB Richardson Highway
 Junction: Old Richardson Highway
 Jurisdiction: DOT&PF
 Analysis Year: 2040
 Description: Richardson Highway MP 359 Grade Separated Facility

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	60.0	mph
Volume on freeway	1552	vph

-----Off Ramp Data-----

Side of freeway	Left	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	196	vph
Length of first accel/decel lane	750	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	No	
Volume on adjacent ramp		vph
Position of adjacent ramp		
Type of adjacent ramp		
Distance to adjacent ramp		ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp
Volume, V (vph)	1552		196		vph
Peak-hour factor, PHF	0.94		0.94		
Peak 15-min volume, v15	413		52		v
Trucks and buses	7		7		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

Heavy vehicle adjustment, fHV	0.966	0.966	
Driver population factor, fP	1.00	1.00	
Flow rate, vp	1709	216	pcph

----- Estimation of V12 Diverge Areas -----

L = (Equation 13-12 or 13-13)

EQ

P = 1.000 Using Equation 0

FD

v = v + (v - v) P = 1709 pc/h

12 R F R FD

----- Capacity Checks -----

	Actual	Maximum	LOS F?
v = v	1709	4600	No
Fi F			
v = v - v	1493	4600	No
FO F R			
v	216	2000	No
R			
v or v	0 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v > 2700 pc/h?		No	
3 av34			
Is v or v > 1.5 v /2		No	
3 av34 12			
If yes, v = 1709		(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

----- Flow Entering Diverge Influence Area -----

	Actual	Max Desirable	Violation?
v	1709	4400	No
12			

----- Level of Service Determination (if not F) -----

Density, D = 4.252 + 0.0086 v - 0.009 L = 12.2 pc/mi/ln

R 12 D

Level of service for ramp-freeway junction areas of influence B

----- Speed Estimation -----

Intermediate speed variable,	D = 0.447	
	S	
Space mean speed in ramp influence area,	S = 51.9	mph
	R	
Space mean speed in outer lanes,	S = N/A	mph
	0	
Space mean speed for all vehicles,	S = 51.9	mph

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: AM Peak
Freeway/Direction: NB Richardson Highway
From/To: North Pole/Fairbanks
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	2447	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	651	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1347	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1347	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	22.5	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: NB Richardson Highway
From/To: North Pole/Fairbanks
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	1552	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	413	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	854	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	854	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	14.2	pc/mi/ln
Level of service, LOS	B	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: AM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	704	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	187	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	388	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	388	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	6.5	pc/mi/ln
Level of service, LOS	A	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	2081	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	553	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1146	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1146	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	19.1	pc/mi/ln
Level of service, LOS	C	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: AM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	784	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	209	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	432	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	432	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	7.2	pc/mi/ln
Level of service, LOS	A	

Phone: Fax:
E-mail:

-----Operational Analysis-----

Analyst: JGM
Agency or Company: Kittelson & Associates
Date Performed: 3/2/2017
Analysis Time Period: PM Peak
Freeway/Direction: SB Richardson Highway
From/To: Fairbanks/North Pole
Jurisdiction: DOT&PF
Analysis Year: 2040
Description: Richardson Highway MP 359 Grade Separated Facility

-----Flow Inputs and Adjustments-----

Volume, V	2324	veh/h
Peak-hour factor, PHF	0.94	
Peak 15-min volume, v15	618	v
Trucks and buses	7	%
Recreational vehicles	0	%
Terrain type:	Level	
Grade	-	%
Segment length	-	mi
Trucks and buses PCE, ET	1.5	
Recreational vehicle PCE, ER	1.2	
Heavy vehicle adjustment, fHV	0.966	
Driver population factor, fp	1.00	
Flow rate, vp	1279	pc/h/ln

-----Speed Inputs and Adjustments-----

Lane width	-	ft
Right-side lateral clearance	-	ft
Total ramp density, TRD	-	ramps/mi
Number of lanes, N	2	
Free-flow speed:	Measured	
FFS or BFFS	60.0	mi/h
Lane width adjustment, fLW	-	mi/h
Lateral clearance adjustment, fLC	-	mi/h
TRD adjustment	-	mi/h
Free-flow speed, FFS	60.0	mi/h

-----LOS and Performance Measures-----

Flow rate, vp	1279	pc/h/ln
Free-flow speed, FFS	60.0	mi/h
Average passenger-car speed, S	60.0	mi/h
Number of lanes, N	2	
Density, D	21.3	pc/mi/ln
Level of service, LOS	C	

TECHNICAL MEMORANDUM

Richardson Highway MP 359 Interchange and Railroad Grade Separated Facility

Alternatives Assessment: Traffic Conditions and Safety Analysis

Technical Memorandum #2

Date:	March 8, 2019	KAI Project #: 19230 Federal/State Project #: 0A24033/Z607340000
To:	James Potts, PE; Jacobs	
From:	Andrew Ooms, PE; Ly Nguyen; and Anthony Yi, PE	

This memorandum builds on the June 2017 Technical Memorandum #1 (Reference #1) and provides an update to the no build alternative traffic operations and safety analysis for a future design year of 2045 and an assessment of the concept alternatives in the area of the Richardson Highway/Old Richardson Highway intersection at milepost 359. This memorandum includes the following:

- Volume development for the future (2045) no build and concept alternatives.
- Operational analysis for 2045 no build scenario on mainline segments of the Richardson Highway and the Richardson Highway/Old Richardson intersections (northbound and southbound).
- Future operational and safety assessment of the project concept alternatives.

A further description of the project and existing conditions is contained in Technical Memorandum #1.

FUTURE NO BUILD CONDITIONS UPDATE

2045 No Build Volumes

Technical Memorandum #1 included forecast future traffic volumes from the Fairbanks Metropolitan Area Transportation System (FMATS) travel demand model for a year 2040 design year. Since that analysis, the FMATS model has been updated to a 2045 horizon year, incorporates projects from the 2045 Metropolitan Transportation Plan (MTP), and includes revised Eielson Air Force Base projections. Given the expected design year for this project, the future no build volumes were revised to accommodate the new 2045 horizon year and updated land use projections. The previous analysis used a 1.5% linear annual growth rate to grow existing intersection turning movement and ramp volumes to 2040; this updated analysis uses a 1.2% annual growth rate through year 2045 based on the updated model growth in the area. The resulting 2045 volumes are substantially similar to the 2040 presented

in Technical Memorandum #1. The Richardson Highway mainline volumes were revised based on updated model projections.

2045 No Build Traffic Operations

Future no build traffic operations were evaluated to establish a vehicle operations baseline and to identify operations issues that may arise under future conditions. The future no build scenario maintains the existing lane configurations and traffic control devices in the study area while including planned roadway projects and increasing the traffic volumes to match projected growth.

Figure 1 shows the projected volumes and operations for the study area intersections and the freeway and merge/diverge segment operations within the study area.

The addition of the background 1.2 percent annual growth rate provides some deterioration in the year 2045 traffic conditions. The left turn from northbound Richardson Highway onto Old Richardson Highway is forecast to experience LOS F during the AM and PM peak hours. The freeway and merge/diverge segments are forecast to perform acceptably with LOS C or better on all facilities. *Future no build traffic operations worksheets are included in Attachment A.*

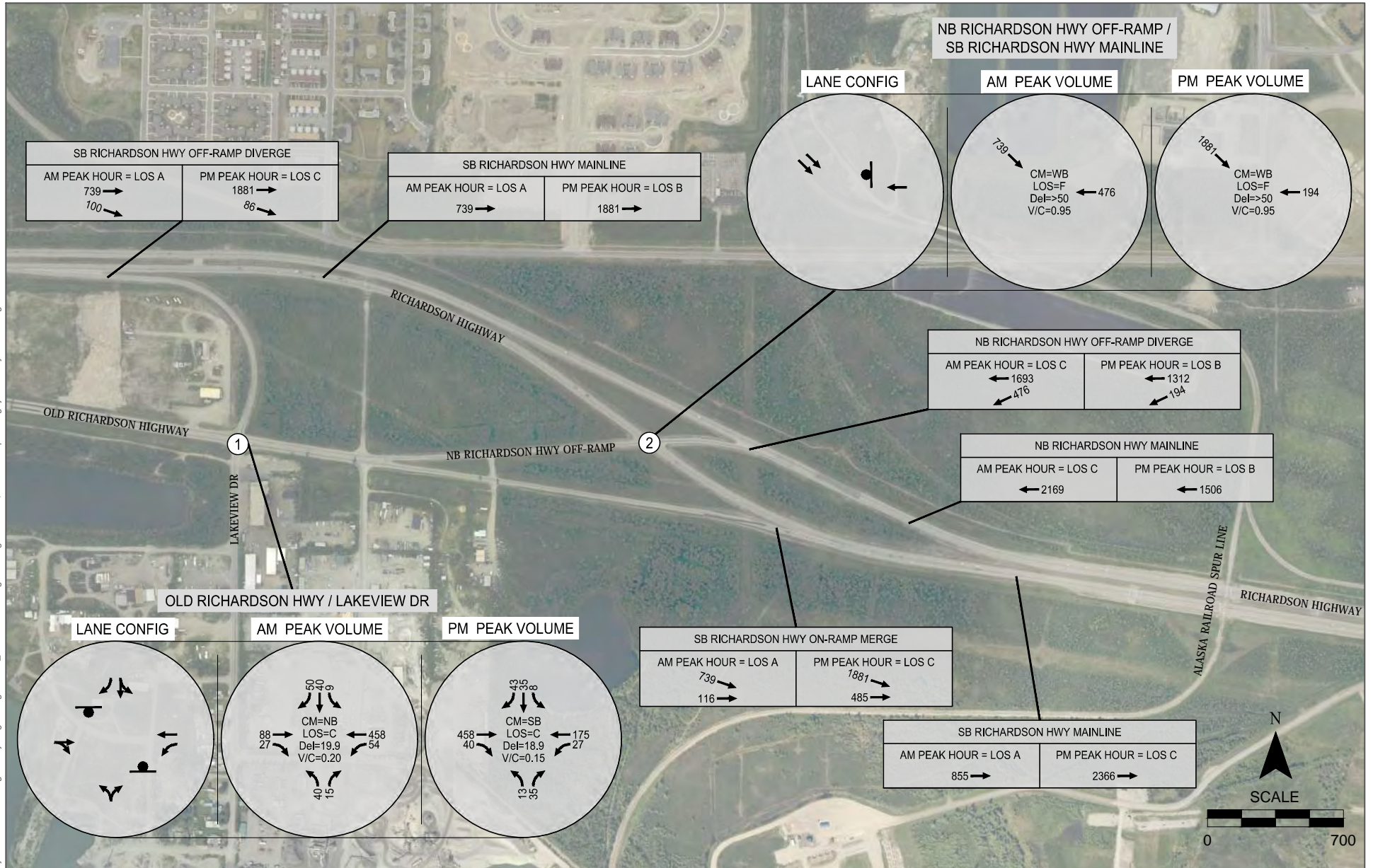
FUTURE CONCEPT EVALUATION

The project team has developed and evaluated preliminary interchange concepts, as documented in the August 2018 Interchange Concept Development Memo, prepared by Jacobs (Reference #2). That memo recommended two concepts for further analysis:

- **A flyover concept** replaces the existing at-grade intersection between southbound Richardson Highway and westbound Old Richardson Highway with a bridge over the mainline and a northbound truck bypass lane. The initial phase would not have a connection to Fort Wainwright and the completed concept would serve the base with access to and from northbound Richardson Highway via a right-in/right-out connection to the bypass lane, which would act as a frontage road.
- **A diamond interchange concept** accommodates the northbound Richardson Highway intersection connection to westbound Old Richardson Highway via an undercrossing under the mainline in the initial phase. When access to Fort Wainwright is provided, the undercrossing will be converted into a diamond interchange form with full access from the Old Richardson Highway and both directions of the Richardson Highway.

Both concepts also raise the Richardson Highway over the railroad to eliminate the current at-grade crossing near milepost 359.

H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwg\design\19230_Tech Memo 2 Figures.dwg Mar 05, 2019 - 4:55pm - Inguyen Layout Tab: Fig 1



Year 2045 No Build
Intersection Lane Configurations, Freeway Segment Analysis,
AM and PM Peak Hours Traffic Conditions

Figure
1

Future Concept Volumes Development

Kittelson developed analysis volumes for the initial and completed (with base access) phases of both the flyover and diamond interchange concept configurations.

Initial Phase Volume Development

The initial phase of both concepts provides grade separation of the northbound Richardson Highway to the westbound Old Richardson Highway connection over or under the southbound Richardson Highway. As documented in Technical Memorandum #1, average westbound vehicle delay at this location is over 30 seconds during the existing PM peak hour. However, traffic diversion due to this delay is expected to be minimal as the alternative route to this movement via Lathrop Street includes out-of-direction travel. Therefore, as neither concept provides a new connection that is expected to shift traffic volumes in the study area in their initial phase, the 2045 No Build volumes were used to analyze the initial phase of each concept.

Completed Phase Volume Development

Kittelson ran the 2045 FMATS MTP model with the proposed Fort Wainwright access alternatives to develop future volumes with the base connections. Kittelson developed and ran model runs for the flyover concept with right-in/right-out access from the Richardson Highway and the diamond concept with full access. Though calibrated to the Fairbanks network, the model can't fully capture the limits imposed by gate hours, specialized land uses, and restricted access, so Kittelson compared the model forecast against the existing base access counts to validate the output. Table 1 shows the existing and forecast daily traffic volumes at the Fort Wainwright gates. The total base access volumes differ across the 2045 model scenarios due to variability inherent in the travel demand model runs.

Table 1 Daily Fort Wainwright Base Access Volumes

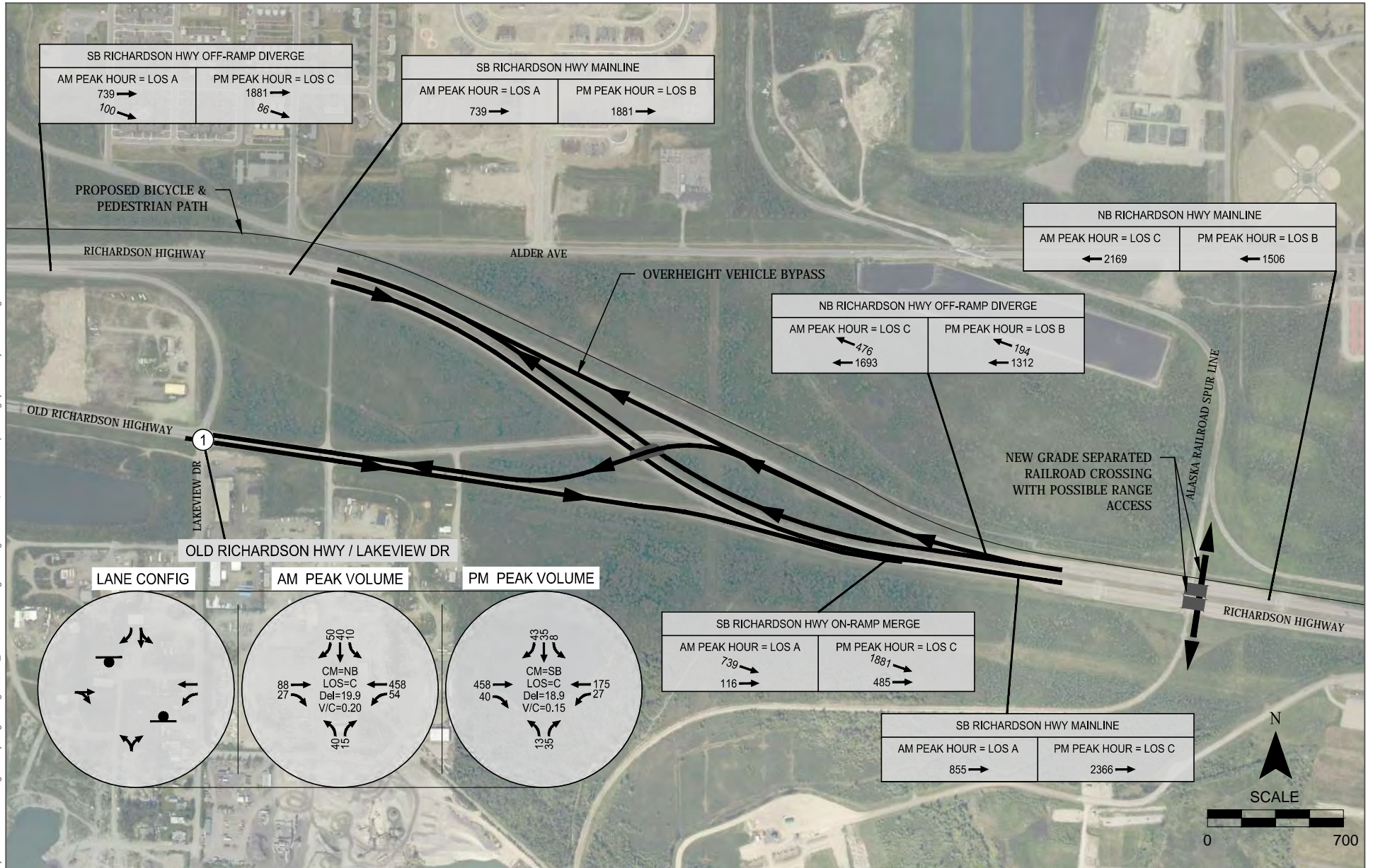
Gate	2017 Counts		2045 No Build		2045 Right-In/Right-Out		2045 Full Access	
	Volumes	Percentage	Volumes	Percentage	Volumes	Percentage	Volumes	Percentage
Trainor Gate	5,130	25%	3,530	16%	3,852	18%	3,751	17%
Gaffney Gate	12,678	61%	13,005	57%	9,847	46%	9,739	45%
Badger Gate	3,000	14%	6,110	27%	5,390	25%	5,494	25%
Proposed MP 359 Gate	0	0%	0	0%	2,203	10%	2,565	12%
Total	20,808	100%	22,645	100%	21,292	100%	21,549	100%

The model forecasts approximately 2,500 daily trips through the new gate, which is 10-12% of total base trips. The model forecasts for the right-in/right-out and full access configurations vary by only two percent.

Intersection turning movement and ramp volumes were developed for each concept by adding the peak hour base-access traffic flows from the model to the updated no build volumes for existing movements.

The proposed lane configurations and peak hour traffic volumes are shown in Figures 2 through 7.

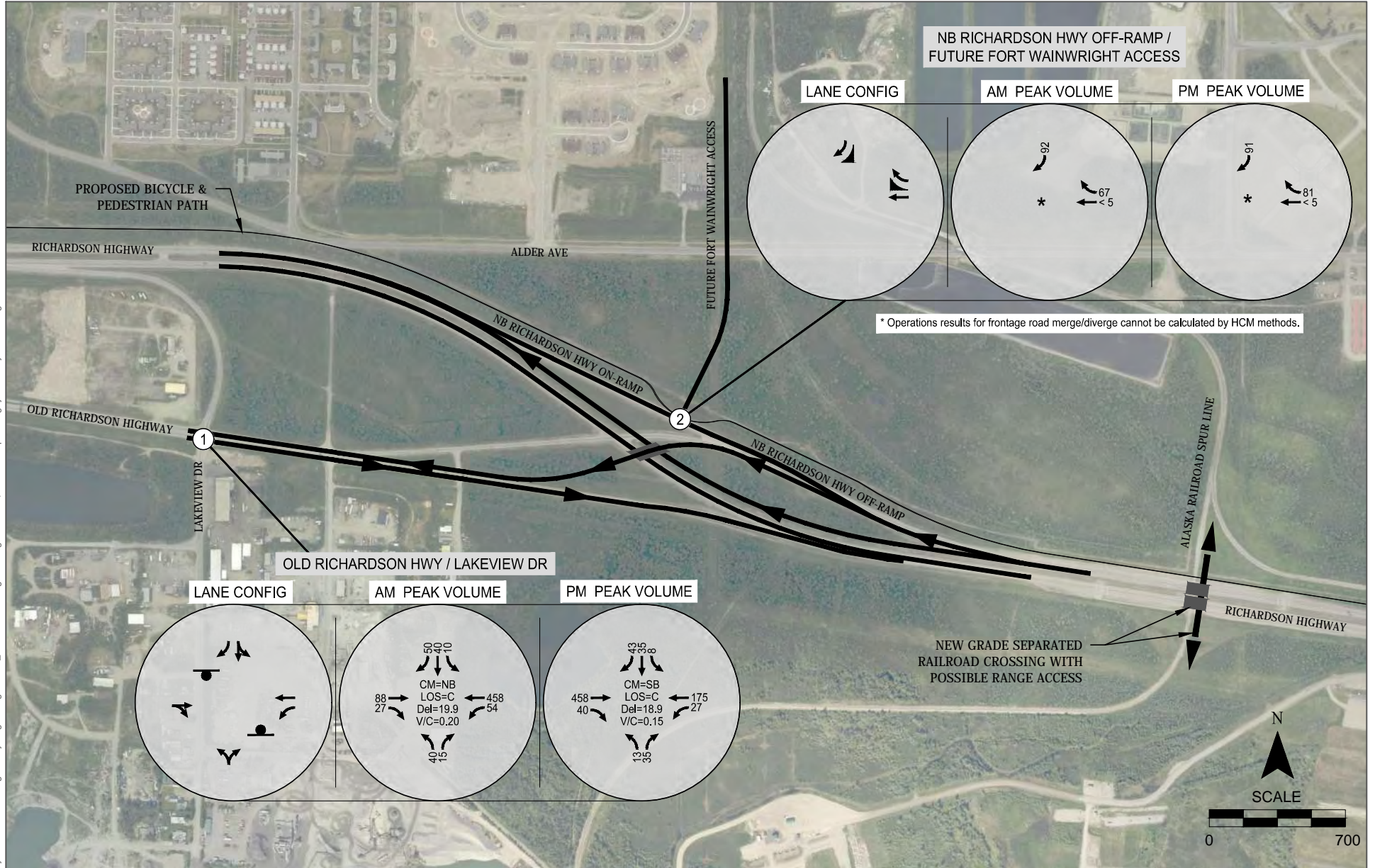
H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwg\design\19230_Tech Memo 2 Figures.dwg Mar-07, 2019 - 12:49pm - Ingyen Layout Tab: Fig2



Year 2045 Flyover Interchange Concept Without Base Access, Intersection Lane Configurations, Freeway Segment Analysis, AM and PM Peak Hours Traffic Conditions

Figure 2

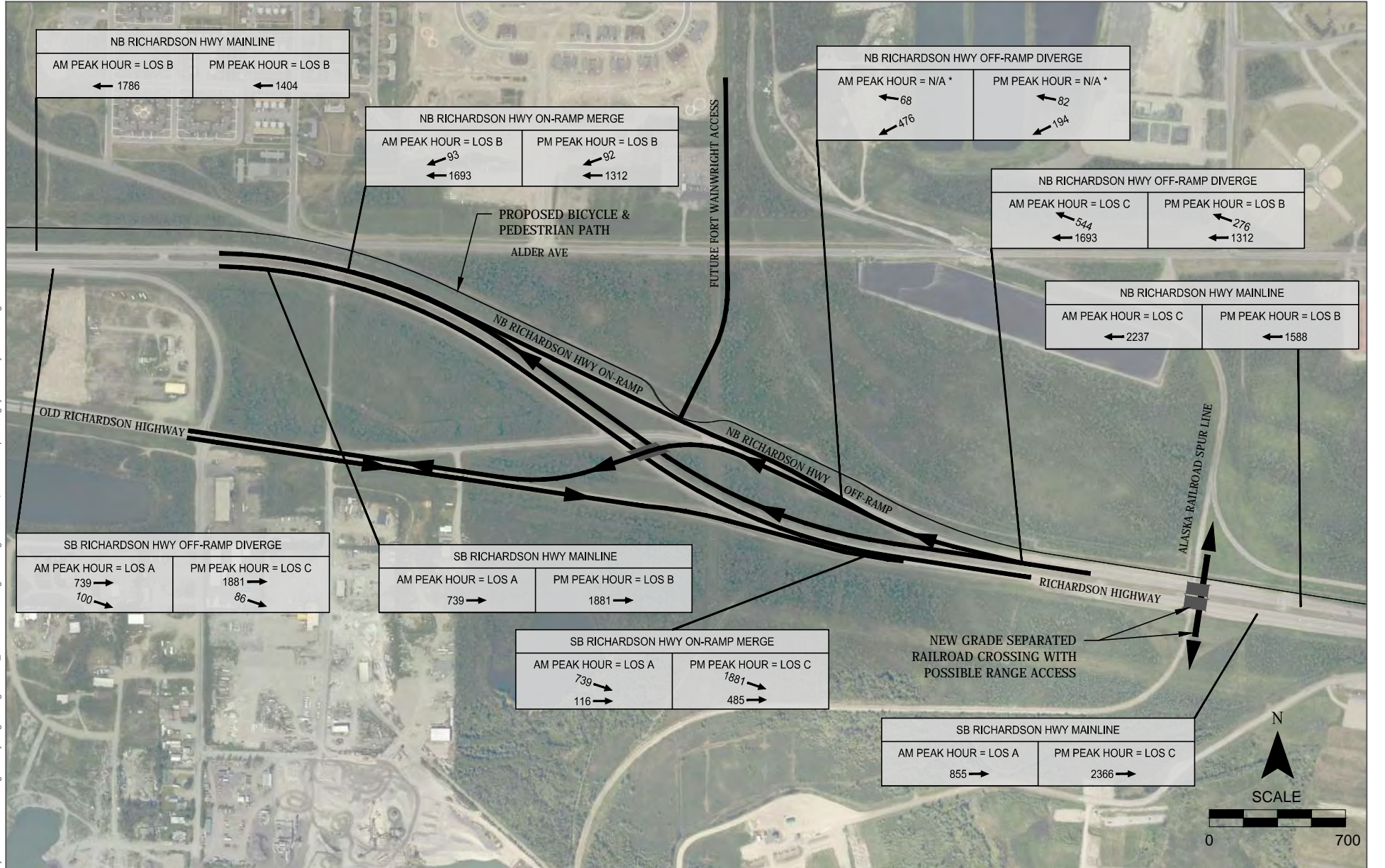
H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwg\design\19230_Tech Memo 2 Figures.dwg Mar 05, 2019 - 4:57 pm - Inguyen Layout Tab: Fig3



Year 2045 Flyover Interchange Concept With Base Access
 Intersection Lane Configurations and
 AM and PM Peak Hours Traffic Conditions

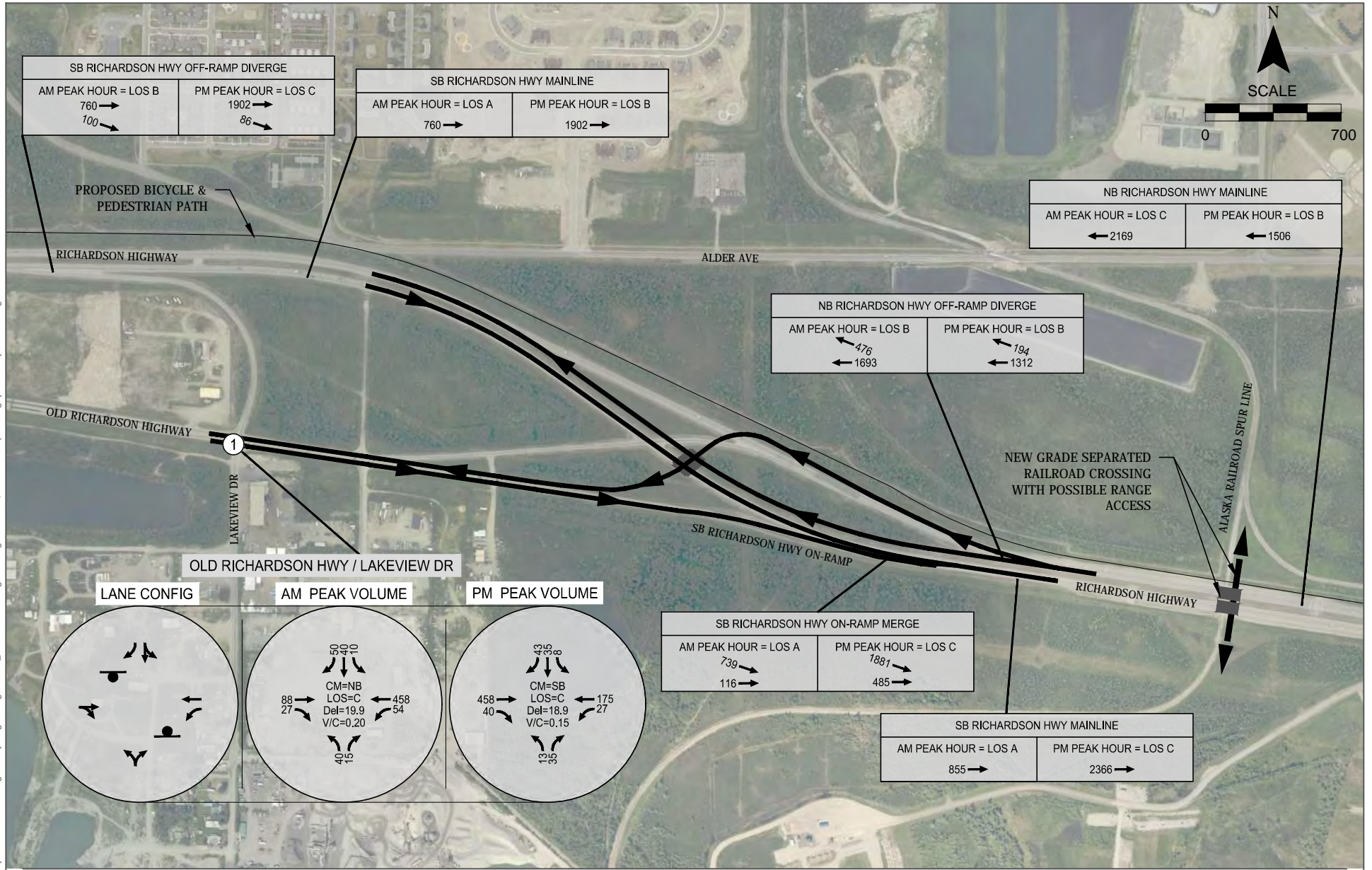
Figure
 3

H:\191\19230 - Richardson Hwy MP 359 Interchange Study\dwgs\design\19230_Tech Memo 2 Figures.dwg Mar 05, 2019 - 4:57 pm - Inguyen Layout Tab: Fig 4



Year 2045 Flyover Interchange Concept With Base Access
 AM and PM Peak Hours Freeway Segment Analysis

Figure 4



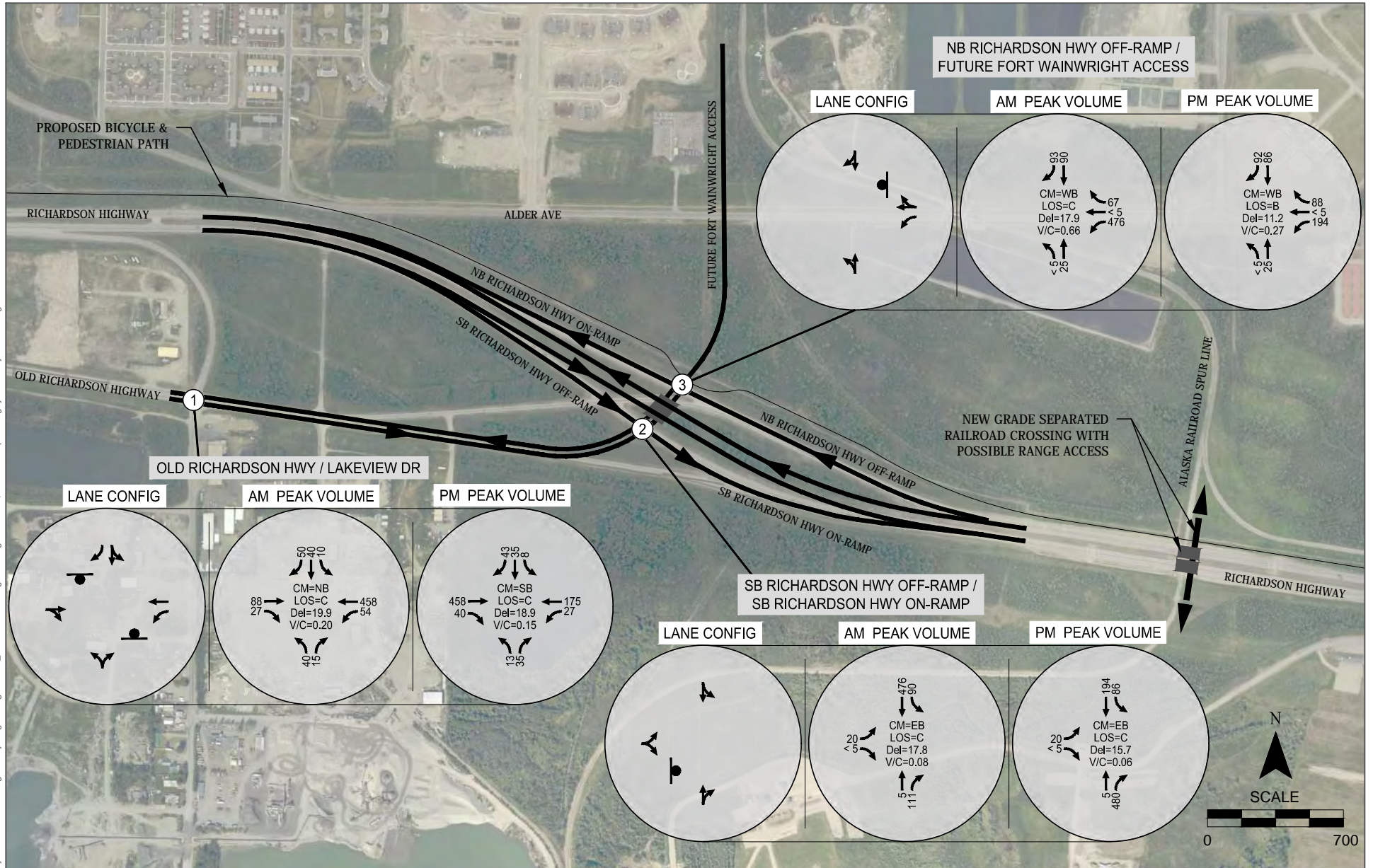
CM = CRITICAL MOVEMENT
 LOS = CRITICAL MOVEMENT LEVEL OF SERVICE
 Del = CRITICAL MOVEMENT CONTROL DELAY
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO
 # - STUDY INTERSECTIONS
 + - STOP SIGN
 - - CONCEPT LINE WORK PROVIDED BY JACOBS

Year 2045 Diamond Interchange Concept Without Base Access, Intersection Lane Configurations, Freeway Segment Analysis, AM and PM Peak Hours Traffic Conditions

Figure 5

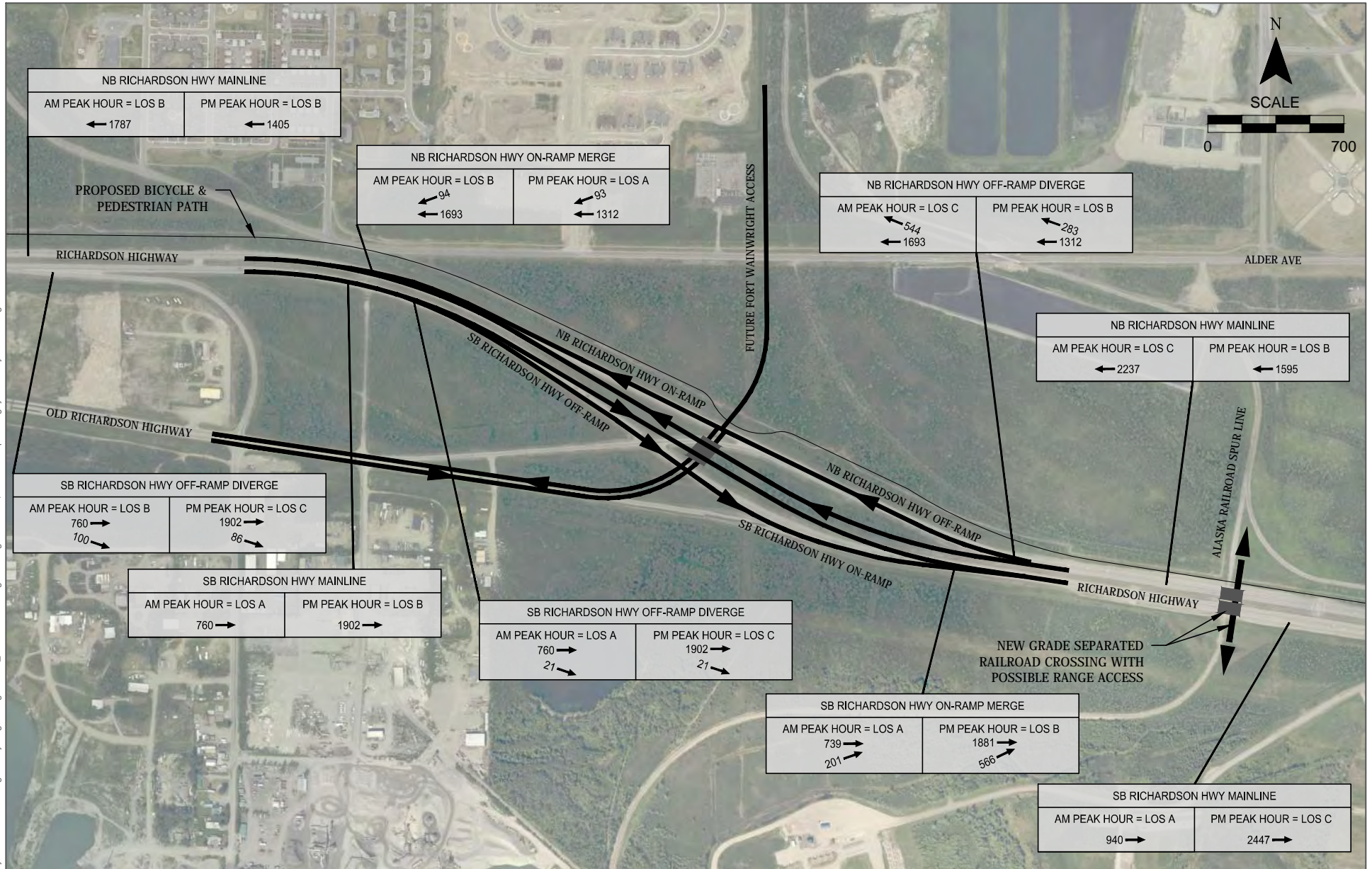
H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwg\design\19230_Tech Memo 2 Figures.dwg Mar 07, 2019 - 12:59pm - Ingyuen Layout Tab: Figs

H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwgs\design\19230_Tech Memo 2 Figures.dwg Mar 05, 2019 - 5:03pm - Inguyen Layout Tab - Fig6



Year 2045 Diamond Interchange Concept With Base Access, Intersection Lane Configurations and AM and PM Peak Hours Traffic Conditions

Figure 6



Year 2045 Diamond Interchange Concept With Base Access, AM and PM Peak Hours Freeway Segment Analysis

Figure 7

H:\19\19230 - Richardson Hwy MP 359 Interchange Study\dwgs\design\19230_Tech Memo 2 Figures.dwg Mar 05, 2019 - 5:04pm - Inguyen Layout Tab: Fig 7

ALTERNATIVE EVALUATION

Traffic Operations

Flyover Concept

The initial phase of the flyover concept is expected to result in 2045 volumes similar to the no build condition. Figure 2 illustrates the proposed initial roadway configuration (without base access) and the intersection and ramp peak hour traffic operations. With the flyover eliminating the northbound-to-westbound intersection and its forecast delay, all intersections and ramps are forecast to operate at LOS C or better in 2045.

The completed concept (with base access) includes a right-in/right-out connection to the northbound Richardson Highway via the overheight truck bypass lane which would then serve as a frontage road, as shown in Figure 3. This connection will be provided via a free-flowing merge/diverge intersection shown in Exhibit 1, which cannot be directly assessed via Highway Capacity Manual methods. However, given the minimal forecast through volumes, the base access movements are expected to experience very little delay. Figure 4 demonstrates that all ramp and mainline movements are forecast to operate at LOS C or better during the AM and PM peak hours.

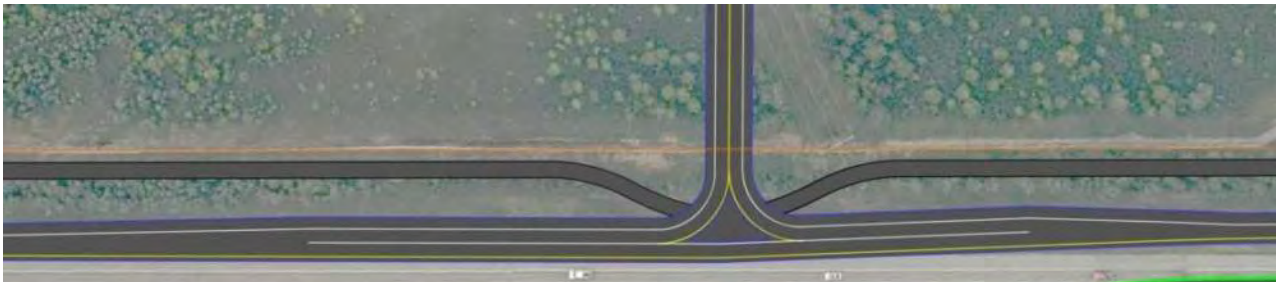


Exhibit 1 Flyover Completed Concept Base Access Intersection (Source: Jacobs)

Diamond Concept

As with the flyover, the initial phase of the diamond concept is forecast to have similar volumes to the 2045 no build scenario. Figure 5 (without base access) shows the proposed roadway configuration and intersection and ramp operations. With the heavy northbound-to-westbound movement served via an undercrossing, all intersections and ramps are forecast to operate at LOS C or better during the 2045 AM and PM peak hours.

The completed concept includes a full access diamond interchange, as shown in Figure 6 (with base access), which creates two interchange ramp terminal intersections. Kittelson investigated three traffic control configurations:

- **Two-way stop control** on the ramp approaches is forecast to operate at LOS C in 2045. The heavy northbound-to-westbound movement is subject to stop control at the northbound ramp

terminal intersection, but due to low conflicting volumes is not forecast to result in delay greater than LOS C.

- **Single-lane roundabouts** were considered to increase the capacity of the interchange ramp terminals over the stop-controlled alternative. However, roundabouts would have higher construction and maintenance costs than two-way stop control.
- **Traffic signal control** was considered though the ramp terminal intersections do not meet traffic signal volume warrants in 2045.

Given the uncertainty of timing and appeal of the base access configurations, Kittelson ran a sensitivity analysis on the volume in and out of the base to test the suitability of each traffic control alternative while the forecast no build volumes are kept constant. The two-way stop control configuration would support a doubling of the forecast base access volumes at LOS C. This base access volume would represent 25% of total base ins and outs.

The project team selected the two-way stop control configuration as it provides sufficient capacity in 2045. The lane configurations and resulting intersection and ramp operations are shown in Figure 6. All movements are forecast to operate at LOS C or better during the 2045 AM and PM peak hours. Figure 7 demonstrates that all ramp and mainline movements under the diamond interchange concept are forecast to operate at LOS C or better during the AM and PM peak hours. *Future no build traffic operations worksheets are included in Attachment B.*

Railroad Crossing Operations

All concepts plan to grade separate the existing milepost 359 railroad crossing. This configuration would remove all vehicle delay associated with the two off-peak train crossings per day as well as the required stopping at the tracks for buses and hazardous materials trucks.

Safety Assessment

Initial Phase Concepts

All proposed concepts eliminate the crash risk associated with:

- Stopping and weaving conflicts at the at-grade railroad crossing.
- Driver expectation challenges associated with the northbound left exit to the Old Richardson Highway.
- High speed right-angle and rear-end crashes at the at-grade intersection between southbound Richardson Highway and westbound Old Richardson Highway. While Technical Memorandum #1 documents no right-angle crashes were reported at this location between 2008 and 2012, this crash risk is likely to grow with the increasing traffic volumes and delay forecast at this intersection.

As a result, the initial phases of the flyover and diamond concepts are expected to have similar future safety performance.

Completed Phase Concepts

The predicted future safety performance of the completed concepts is expected to differentiate the concepts based on the number of conflicts reflecting the degree of access each concept provides. The completed flyover concept provides only right-in/right-out base access via a free-flowing frontage road intersection. The heavy northbound-to-westbound movement is provided via flyover.

The completed diamond concept is predicted to result in more crashes than the flyover concept as a result of providing full access between the base and the Richardson and Old Richardson Highways. These additional connections lead to more conflict points than the flyover, including stop-control for the northbound-to-westbound movement.

Pedestrian and Bicycle Assessment

Initial Phase Concepts

The initial phases of both concepts facilitate the proposed Richardson Highway MP 357-362 Bicycle/Pedestrian Path running on the north side of the project. Neither concept provides a connection between that path to the Old Richardson Highway, though the initial phase of the diamond concept could more easily accommodate some future connection.

Completed Phase Concepts

Both completed concept configurations include a crossing where the bicycle/pedestrian path crosses the base access road at an intersection. Appropriate signing, striping, and traffic control at this crossing will be developed as the design progresses. The diamond concept could likely accommodate a future pedestrian and bicycle connection to Old Richardson Highway, but the grades associated with the flyover may preclude such a connection in that concept.

Vehicle Access and Circulation

Initial Phase Concepts

Both initial phase concepts provide access and circulation that are functionally similar to the existing configuration. The ramps on and off the Richardson Highway to the south combined with the existing eastbound Richardson Highway offramp at Lakeview Drive provide three of the four movements at the interchange. The eastbound Old Richardson Highway to northbound Richardson Highway movement is

not accommodated, but due to the alignment of the highways this movement is effectively a U-turn and can be efficiently made via the Mitchell and Steese Expressway ramps from South Cushman Street.

The treatment of access points along Old Richardson Highway in the vicinity of the interchange will be established after alternative selection as the design moves forward.

Completed Phase Concepts

The degree of access and circulation differs between the two completed concepts. The completed flyover concept adds only the right-in/right-out access to Fort Wainwright and does not provide a connection between the base and southbound Richardson Highway.

The completed diamond concept does provide a direct connection from the Old Richardson Highway and the base and access to the Richardson Highway in all directions. The southbound Richardson Highway off-ramp is somewhat redundant to the upstream Lakeview Drive off ramp, but it does provide more direct access to the base from the north, though that volume is forecast to be small. As a result, this off-ramp at the Old Richardson Highway is optional and will be further investigated if the diamond concept is selected.

NEXT STEPS

This traffic and safety evaluation of the proposed concepts will be considered by the project team alongside other criteria, such as cost and right-of-way impacts, to determine a preferred alternative. Given that the initial phases of the two concepts are functionally similar, special consideration must be placed on the likelihood of an eventual base connection and the access needs of that connection. The preferred alternative and the selection process will be further documented in an Interchange Alternative Selection Report. The chosen interchange configuration's adherence to the Federal Highway Administration's two-point policy will be documented in an Interchange Justification Report.



















REFERENCES

1. Kittelson & Associates, Inc. *Richardson Highway MP 359 Grade Separated Facility Technical Memorandum #1: Existing and Background Traffic Conditions and Safety Analysis*. June 2017.
2. Jacobs. *Richardson Highway MP 359 Grade Separated Facility: Interchange Concept Development Memo*. August 2018.

Attachment A 2045 No Build Traffic
Conditions Worksheets













Year 2045 No-Build Traffic Conditions AM Peak Hour
 1: Lakeview Dr & Old Richardson Hwy

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	0	88	27	54	458	0	40	0	15	9	40	50	
Future Volume (Veh/h)	0	88	27	54	458	0	40	0	15	9	40	50	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	96	29	59	498	0	43	0	16	10	43	54	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None					None							
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	498			125			802	726	110	742	741	498	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	498			125			802	726	110	742	741	498	
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	100			96			82	100	98	97	87	91	
cM capacity (veh/h)	1066			1462			239	337	943	316	330	572	
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2							
Volume Total	125	59	498	59	53	54							
Volume Left	0	59	0	43	10	0							
Volume Right	29	0	0	16	0	54							
cSH	1700	1462	1700	300	327	572							
Volume to Capacity	0.07	0.04	0.29	0.20	0.16	0.09							
Queue Length 95th (ft)	0	3	0	18	14	8							
Control Delay (s)	0.0	7.6	0.0	19.9	18.1	11.9							
Lane LOS		A		C	C	B							
Approach Delay (s)	0.0	0.8		19.9	15.0								
Approach LOS				C	B								
Intersection Summary													
Average Delay	3.8												
Intersection Capacity Utilization	40.8%			ICU Level of Service					A				
Analysis Period (min)	15												



















Year 2045 No-Build Traffic Conditions AM Peak Hour
 2: NB Richardson Hwy Off-Ramp & SB Richardson Hwy

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑						↑↑	
Traffic Volume (veh/h)	0	0	0	0	476	0	0	0	0	0	739	0
Future Volume (Veh/h)	0	0	0	0	476	0	0	0	0	0	739	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	517	0	0	0	0	0	803	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1062	803	402	402	803	0	803			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1062	803	402	402	803	0	803			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	100	100	0	100	100			100		
cM capacity (veh/h)	0	315	598	533	315	1084	817			1622		
Direction, Lane #												
	WB 1	SB 1	SB 2									
Volume Total	517	402	402									
Volume Left	0	0	0									
Volume Right	0	0	0									
cSH	315	1700	1700									
Volume to Capacity	1.64	0.24	0.24									
Queue Length 95th (ft)	785	0	0									
Control Delay (s)	330.9	0.0	0.0									
Lane LOS	F											
Approach Delay (s)	330.9	0.0										
Approach LOS	F											
Intersection Summary												
Average Delay			129.6									
Intersection Capacity Utilization		84.3%		ICU Level of Service		E						
Analysis Period (min)			15									













Year 2045 No-Build Traffic Conditions PM Peak Hour
1: Lakeview Dr & Old Richardson Hwy

Synchro 10 Report
HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	458	40	27	175	0	13	0	35	8	35	43
Future Volume (Veh/h)	0	458	40	27	175	0	13	0	35	8	35	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	498	43	29	190	0	14	0	38	9	38	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	190			541			834	768	520	806	789	190
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	190			541			834	768	520	806	789	190
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			94	100	93	97	88	94
cM capacity (veh/h)	1384			1028			241	323	556	274	314	852
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	541	29	190	52	47	47						
Volume Left	0	29	0	14	9	0						
Volume Right	43	0	0	38	0	47						
cSH	1700	1028	1700	412	305	852						
Volume to Capacity	0.32	0.03	0.11	0.13	0.15	0.06						
Queue Length 95th (ft)	0	2	0	11	13	4						
Control Delay (s)	0.0	8.6	0.0	15.0	18.9	9.5						
Lane LOS		A		C	C	A						
Approach Delay (s)	0.0	1.1		15.0	14.2							
Approach LOS				C	B							
Intersection Summary												
Average Delay				2.6								
Intersection Capacity Utilization				42.7%	ICU Level of Service	A						
Analysis Period (min)				15								

Year 2045 No-Build Traffic Conditions PM Peak Hour
 2: NB Richardson Hwy Off-Ramp & SB Richardson Hwy

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↑						↑↑		
Traffic Volume (veh/h)	0	0	0	0	194	0	0	0	0	0	1881	0	
Future Volume (Veh/h)	0	0	0	0	194	0	0	0	0	0	1881	0	
Sign Control	Stop			Stop			Free			Free			
Grade	0%			0%			0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	0	0	0	211	0	0	0	0	0	2045	0	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type						None			None				
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked													
vC, conflicting volume	2150	2045	1022	1022	2045	0	2045						0
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	2150	2045	1022	1022	2045	0	2045						0
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1						4.1
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2						2.2
p0 queue free %	0	100	100	100	0	100	100						100
cM capacity (veh/h)	0	55	233	190	55	1084	272						1622
Direction, Lane #													
	WB 1	SB 1	SB 2										
Volume Total	211	1022	1022										
Volume Left	0	0	0										
Volume Right	0	0	0										
cSH	55	1700	1700										
Volume to Capacity	3.80	0.60	0.60										
Queue Length 95th (ft)	Err	0	0										
Control Delay (s)	Err	0.0	0.0										
Lane LOS	F												
Approach Delay (s)	Err	0.0											
Approach LOS	F												
Intersection Summary													
Average Delay			935.2										
Intersection Capacity Utilization			68.9%	ICU Level of Service									C
Analysis Period (min)			15										

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	East of Lakeview Dr Off-Ramp
Date Performed	12/17/2018	Jurisdiction	DOT&PF
Analysis Time Period	AM Peak	Analysis Year	2045 No Build
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	739	veh/h	Peak-Hour Factor, PHF 0.94
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	60.0	mph	FFS 60.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	407	pc/h/ln	
x f _p)			v _p = (V or DDHV) / (PHF x N x f _{HV})
S	60.0	mph	x f _p)
D = v _p / S	6.8	pc/mi/ln	S
LOS	A		D = v _p / S
			Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	East of Lakeview Dr Off-Ramp
Date Performed	12/17/2018	Jurisdiction	DOT&PF
Analysis Time Period	PM Peak	Analysis Year	2045 No Build
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	1881	veh/h	Peak-Hour Factor, PHF 0.94
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Grade
DDHV = AADT x K x D		veh/h	Grade 0.00% Length 0.00mi Up/Down % 0.00
Calculate Flow Adjustments			
f _p	1.00		E _R 1.2
E _T	1.5		f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	60.0	mph	FFS 60.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1036	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	60.0	mph	S
D = v _p / S	17.3	pc/mi/ln	D = v _p / S
LOS	B		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	South of Old Richardson Hwy
Date Performed	12/17/2018	Jurisdiction	DOT&PF
Analysis Time Period	AM Peak	Analysis Year	2045 No Build
Project Description <i>Richardson Highway MP 359 Interchange Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	855	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
471	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	60.0	x f _p)	
D = v _p / S	7.8	S	
LOS	A	D = v _p / S	
		pc/mi/ln	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	South of Old Richardson Hwy
Date Performed	12/17/2018	Jurisdiction	DOT&PF
Analysis Time Period	PM Peak	Analysis Year	2045 No Build
Project Description <i>Richardson Highway MP 359 Interchange Study</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2366	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1303	Design LOS	pc/h/ln
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0	x f _p)	
D = v _p / S	21.7	S	mph
LOS	C	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Lakeview Drive					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	AM Peak		Analysis Year	2045 No Build					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			250		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			839		V _D = veh/h		
		Ramp Volume, V _R			100				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	839	0.94	Level	7	0	0.966	1.00	924	
Ramp	100	0.94	Level	7	0	0.966	1.00	110	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 924 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	924	Exhibit 13-8	4600	No
			V _{FO} = V _F - V _R	814	Exhibit 13-8	4600	No		
			V _R	110	Exhibit 13-10	2000	No		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	924	Exhibit 13-8 4400:All		No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 9.9 (pc/mi/ln) LOS = A (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.438 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 52.1 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 52.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Lakeview Drive					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	PM Peak		Analysis Year	2045 No Build					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L _{up} = ft		Deceleration Lane Length L _D		250		L _{down} = ft			
V _u = veh/h		Freeway Volume, V _F		1967		V _D = veh/h			
		Ramp Volume, V _R		86					
		Freeway Free-Flow Speed, S _{FF}		60.0					
		Ramp Free-Flow Speed, S _{FR}		35.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1967	0.94	Level	7	0	0.966	1.00	2166	
Ramp	86	0.94	Level	7	0	0.966	1.00	95	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 2166 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2166	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	2071	Exhibit 13-8	4600	No
					V _R	95	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2166	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 20.6 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.437 (Exhibit 13-12) S _R = 52.1 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 52.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Old Richardson Highway					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	AM Peak		Analysis Year	2045 No Build					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			750			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			739			V _D = veh/h	
		Ramp Volume, V _R			116				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	739	0.94	Level	0	0	1.000	1.00	786	
Ramp	116	0.94	Level	0	0	1.000	1.00	123	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 786 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	909	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	909	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 7.8 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.263 (Exhibit 13-11) S _R = 55.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 55.3 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Old Richardson Highway					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	PM Peak		Analysis Year	2045 No Build					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			750			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			1881			V _D = veh/h	
		Ramp Volume, V _R			485				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1881	0.94	Level	0	0	1.000	1.00	2001	
Ramp	485	0.94	Level	0	0	1.000	1.00	516	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 2001 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	2517	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2517	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 20.2 (pc/mi/ln) LOS = C (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.302 (Exhibit 13-11) S _R = 54.6 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 54.6 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel <i>NB Richardson Highway Before NB Off-Ramp Diverge</i>	
Agency or Company	Kittelson & Associates	From/To	
Date Performed	12/17/2018	Jurisdiction <i>DOT&PF</i>	
Analysis Time Period	AM Peak	Analysis Year <i>2045 No Build</i>	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	2169	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	60.0	FFS	60.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	1194	Design LOS	
x f _p)		v _p = (V or DDHV) / (PHF x N x f _{HV})	pc/h/ln
S	60.0	x f _p)	
D = v _p / S	19.9	S	mph
LOS	C	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	NB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	Before NB Off-Ramp Diverge
Date Performed	12/17/2018	Jurisdiction	DOT&PF
Analysis Time Period	PM Peak	Analysis Year	2045 No Build
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	1506	veh/h	Peak-Hour Factor, PHF 0.94
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Level
DDHV = AADT x K x D		veh/h	Grade % Length mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	60.0	mph	FFS 60.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v _p = (V or DDHV) / (PHF x N x f _{HV})	829	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})
x f _p)			x f _p)
S	60.0	mph	S
D = v _p / S	13.8	pc/mi/ln	D = v _p / S
LOS	B		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			













RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	NB Richardson Highway Off-Ramp					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	AM Peak		Analysis Year	2045 No Build					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		2	Downstream Adj Ramp					
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1	<input type="checkbox"/> Yes <input type="checkbox"/> On					
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L _A			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off					
L _{up} = ft	Deceleration Lane Length L _D		445	L _{down} = ft					
V _u = veh/h	Freeway Volume, V _F		2169	V _D = veh/h					
	Ramp Volume, V _R		476						
	Freeway Free-Flow Speed, S _{FF}		60.0						
	Ramp Free-Flow Speed, S _{FR}		35.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2169	0.94	Level	7	0	0.966	1.00	2388	
Ramp	476	0.94	Level	7	0	0.966	1.00	524	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
L _{EQ} =	V ₁₂ = V _F (P _{FM}) (Equation 13-6 or 13-7)				L _{EQ} =	V ₁₂ = V _R + (V _F - V _R)P _{FD} (Equation 13-12 or 13-13)			
P _{FM} =	using Equation (Exhibit 13-6)				P _{FD} =	1.000 using Equation (Exhibit 13-7)			
V ₁₂ =	pc/h				V ₁₂ =	2388 pc/h			
V ₃ or V _{av34}	pc/h (Equation 13-14 or 13-17)				V ₃ or V _{av34}	0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?	<input type="checkbox"/> Yes <input type="checkbox"/> No				Is V ₃ or V _{av34} > 2,700 pc/h?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2	<input type="checkbox"/> Yes <input type="checkbox"/> No				Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =	pc/h (Equation 13-16, 13-18, or 13-19)				If Yes, V _{12a} =	pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2388	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1864	Exhibit 13-8	4600	No
					V _R	524	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2388	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R =	5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A				D _R =	4.252 + 0.0086 V ₁₂ - 0.009 L _D			
D _R =	(pc/mi/ln)				D _R =	20.8 (pc/mi/ln)			
LOS =	(Exhibit 13-2)				LOS =	C (Exhibit 13-2)			
Speed Determination					Speed Determination				
M _S =	(Exhibit 13-11)				D _S =	0.475 (Exhibit 13-12)			
S _R =	mph (Exhibit 13-11)				S _R =	51.4 mph (Exhibit 13-12)			
S ₀ =	mph (Exhibit 13-11)				S ₀ =	N/A mph (Exhibit 13-12)			
S =	mph (Exhibit 13-13)				S =	51.4 mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway						
Agency or Company	Kittelson & Associates		Junction	NB Richardson Highway Off-Ramp						
Date Performed	12/17/2018		Jurisdiction	DOT&PF						
Analysis Time Period	PM Peak		Analysis Year	2045 No Build						
Project Description Richardson Highway MP 359 Grade Separated Facility										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft		Deceleration Lane Length L _D		445		L _{down} = ft				
V _u = veh/h		Freeway Volume, V _F		1506		V _D = veh/h				
		Ramp Volume, V _R		194						
		Freeway Free-Flow Speed, S _{FF}		60.0						
		Ramp Free-Flow Speed, S _{FR}		35.0						
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	1506	0.94	Level	7	0	0.966	1.00	1658		
Ramp	194	0.94	Level	7	0	0.966	1.00	214		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)			
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		1658 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	1658	Exhibit 13-8	4600	No	
			V _{FO} = V _F - V _R	1444	Exhibit 13-8	4600	No			
			V _R	214	Exhibit 13-10	2000	No			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	1658	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 14.5 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = B (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.447 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 51.9 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 51.9 mph (Exhibit 13-13)					

Attachment B 2045 Concept Traffic
Conditions Worksheets
















Year 2045 Diamond Interchange Traffic Condition AM Peak Hour
 1: Lakeview Dr & Old Richardson Hwy

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑		↘	↑			↕			↘	↗
Traffic Volume (veh/h)	0	88	27	54	458	0	40	0	15	10	40	50
Future Volume (Veh/h)	0	88	27	54	458	0	40	0	15	10	40	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	96	29	59	498	0	43	0	16	11	43	54
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	498			125			802	726	110	742	741	498
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498			125			802	726	110	742	741	498
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			82	100	98	97	87	91
cM capacity (veh/h)	1066			1462			239	337	943	316	330	572
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	125	59	498	59	54	54						
Volume Left	0	59	0	43	11	0						
Volume Right	29	0	0	16	0	54						
cSH	1700	1462	1700	300	327	572						
Volume to Capacity	0.07	0.04	0.29	0.20	0.17	0.09						
Queue Length 95th (ft)	0	3	0	18	15	8						
Control Delay (s)	0.0	7.6	0.0	19.9	18.2	11.9						
Lane LOS		A		C	C	B						
Approach Delay (s)	0.0	0.8		19.9	15.1							
Approach LOS				C	C							
Intersection Summary												
Average Delay				3.8								
Intersection Capacity Utilization				40.8%	ICU Level of Service	A						
Analysis Period (min)				15								

















Year 2045 Diamond Interchange Traffic Condition AM Peak Hour
 2: SB Richardson Hwy Off Ramp /On-Ramp

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	1	0	0	0	0	5	111	90	476	0
Future Volume (Veh/h)	20	0	1	0	0	0	0	5	111	90	476	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	0	1	0	0	0	0	5	121	98	517	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	778	839	517	780	778	66	517			126		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	778	839	517	780	778	66	517			126		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	100	100	100	100	100			93		
cM capacity (veh/h)	297	282	558	296	305	998	1049			1460		
Direction, Lane #												
	EB 1	NB 1	SB 1									
Volume Total	23	126	615									
Volume Left	22	0	98									
Volume Right	1	121	0									
cSH	303	1700	1460									
Volume to Capacity	0.08	0.07	0.07									
Queue Length 95th (ft)	6	0	5									
Control Delay (s)	17.8	0.0	1.8									
Lane LOS	C		A									
Approach Delay (s)	17.8	0.0	1.8									
Approach LOS	C											
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			46.7%	ICU Level of Service	A							
Analysis Period (min)			15									













Year 2045 Diamond Interchange Traffic Condition AM Peak Hour
 3: NB Richardson Hwy Off-Ramp & New Base Access

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	476	1	67	0	25	0	0	90	93
Future Volume (Veh/h)	0	0	0	476	1	67	0	25	0	0	90	93
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	517	1	73	0	27	0	0	98	101
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type						None			None			
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	249	176	148	176	226	27	199			27		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	249	176	148	176	226	27	199			27		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	34	100	93	100			100		
cM capacity (veh/h)	655	718	898	787	673	1048	1373			1587		
Direction, Lane #												
	WB 1	WB 2	NB 1	SB 1								
Volume Total	517	74	27	199								
Volume Left	517	0	0	0								
Volume Right	0	73	0	101								
cSH	787	1041	1373	1700								
Volume to Capacity	0.66	0.07	0.00	0.12								
Queue Length 95th (ft)	125	6	0	0								
Control Delay (s)	17.9	8.7	0.0	0.0								
Lane LOS	C	A										
Approach Delay (s)	16.7		0.0	0.0								
Approach LOS	C											
Intersection Summary												
Average Delay			12.1									
Intersection Capacity Utilization			43.5%	ICU Level of Service						A		
Analysis Period (min)			15									

Year 2045 Diamond Interchange Traffic Conditions PM Peak Hour
 1: Lakeview Dr & Old Richardson Hwy

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑		↗	↑			↕			↖	↗
Traffic Volume (veh/h)	0	458	40	27	175	0	13	0	35	8	35	43
Future Volume (Veh/h)	0	458	40	27	175	0	13	0	35	8	35	43
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	498	43	29	190	0	14	0	38	9	38	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	190			541			834	768	520	806	789	190
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	190			541			834	768	520	806	789	190
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			94	100	93	97	88	94
cM capacity (veh/h)	1384			1028			241	323	556	274	314	852
Direction, Lane #												
	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2						
Volume Total	541	29	190	52	47	47						
Volume Left	0	29	0	14	9	0						
Volume Right	43	0	0	38	0	47						
cSH	1700	1028	1700	412	305	852						
Volume to Capacity	0.32	0.03	0.11	0.13	0.15	0.06						
Queue Length 95th (ft)	0	2	0	11	13	4						
Control Delay (s)	0.0	8.6	0.0	15.0	18.9	9.5						
Lane LOS		A		C	C	A						
Approach Delay (s)	0.0	1.1		15.0	14.2							
Approach LOS				C	B							
Intersection Summary												
Average Delay				2.6								
Intersection Capacity Utilization				42.7%	ICU Level of Service	A						
Analysis Period (min)				15								

















Year 2045 Diamond Interchange Traffic Conditions PM Peak Hour
 2: SB Richardson Hwy Off-Ramp/ On-Ramp

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	1	0	0	0	0	5	480	86	194	0
Future Volume (Veh/h)	20	0	1	0	0	0	0	5	480	86	194	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	0	1	0	0	0	0	5	522	93	211	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	663	924	211	664	663	266	211			527		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	663	924	211	664	663	266	211			527		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	100	100	100	100	100			91		
cM capacity (veh/h)	349	245	829	348	347	773	1360			1040		
Direction, Lane #												
	EB 1	NB 1	SB 1									
Volume Total	23	527	304									
Volume Left	22	0	93									
Volume Right	1	522	0									
cSH	358	1700	1040									
Volume to Capacity	0.06	0.31	0.09									
Queue Length 95th (ft)	5	0	7									
Control Delay (s)	15.7	0.0	3.3									
Lane LOS	C		A									
Approach Delay (s)	15.7	0.0	3.3									
Approach LOS	C											
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			58.3%			ICU Level of Service				B		
Analysis Period (min)			15									

Year 2045 Diamond Interchange Traffic Conditions PM Peak Hour
 3: NB Richardson Hwy Off-Ramp & New Base Access

Synchro 10 Report
 HCM Unsignalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	194	1	88	0	25	0	0	86	92
Future Volume (Veh/h)	0	0	0	194	1	88	0	25	0	0	86	92
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	211	1	96	0	27	0	0	93	100
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	266	170	143	170	220	27	193			27		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	266	170	143	170	220	27	193			27		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	73	100	91	100			100		
cM capacity (veh/h)	623	723	905	794	678	1048	1380			1587		
Direction, Lane #												
	WB 1	WB 2	NB 1	SB 1								
Volume Total	211	97	27	193								
Volume Left	211	0	0	0								
Volume Right	0	96	0	100								
cSH	794	1043	1380	1700								
Volume to Capacity	0.27	0.09	0.00	0.11								
Queue Length 95th (ft)	27	8	0	0								
Control Delay (s)	11.2	8.8	0.0	0.0								
Lane LOS	B	A										
Approach Delay (s)	10.4		0.0	0.0								
Approach LOS	B											
Intersection Summary												
Average Delay			6.1									
Intersection Capacity Utilization			27.6%	ICU Level of Service	A							
Analysis Period (min)			15									

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>LTN</i>	Highway/Direction of Travel <i>NB Richardson Highway East of AK Railroad Spur Line</i>	
Agency or Company	<i>Kittelson & Associates</i>	From/To	
Date Performed	<i>12/18/2018</i>	Jurisdiction <i>DOT&PF</i>	
Analysis Time Period	<i>Year 2045 AM Peak</i>	Analysis Year <i>Flyover Concept w/ Base Access</i>	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	<i>2237</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	<i>2</i>		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	<i>60.0</i>	mph	FFS <i>60.0</i> mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1232	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	<i>60.0</i> mph	S	
D = v _p / S	<i>20.5</i> pc/mi/ln	D = v _p / S	
LOS	<i>C</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	
V - Hourly volume	D - Density	f _{LW} - Exhibit 11-8	
v _p - Flow rate	FFS - Free-flow speed	E _T - Exhibits 11-10, 11-11, 11-13	
LOS - Level of service	BFFS - Base free-flow speed	f _{LC} - Exhibit 11-9	
DDHV - Directional design hour volume		f _p - Page 11-18	
		TRD - Page 11-11	
		LOS, S, FFS, v _p - Exhibits 11-2, 11-3	

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel <i>NB Richardson Highway East of AK Railroad Spur Line</i>	
Agency or Company	Kittelson & Associates	From/To	
Date Performed	12/18/2018	Jurisdiction	DOT&PF
Analysis Time Period	Year 2045 PM Peak	Analysis Year	Flyover Concept w/ Base Access
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1588	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain: <i>Level</i>
			Grade % Length <i>mi</i>
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] 0.966	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
874	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	60.0	mph	pc/h/ln
D = v _p / S	14.6	pc/mi/ln	mph
LOS	B	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	NB Richardson Highway East of Denali Park Off-Ramp
Agency or Company	Kittelson & Associates	From/To	DOT&PF
Date Performed	12/18/2018	Jurisdiction	Flyover Concept w/ Base Access
Analysis Time Period	Year 2045 AM Peak	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1786	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV})		Design LOS	
983	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV})	
x f _p)		pc/h/ln	
S	60.0	mph	mph
D = v _p / S	16.4	pc/mi/ln	pc/mi/ln
LOS	B	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>LTN</i>	Highway/Direction of Travel	<i>NB Richardson Highway East of Denali Park Off-Ramp</i>
Agency or Company	<i>Kittelson & Associates</i>	From/To	<i>DOT&PF</i>
Date Performed	<i>12/18/2018</i>	Jurisdiction	<i>Flyover Concept w/ Base Access</i>
Analysis Time Period	<i>Year 2045 PM Peak</i>	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1404</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.966</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	<i>60.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>60.0</i> mph
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
v _p	<i>773</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
S	<i>60.0</i>	mph	pc/h/ln
D = v _p / S	<i>12.9</i>	pc/mi/ln	S mph
LOS	<i>B</i>		D = v _p / S pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Flyover Interchange Off-Ramp					
Date Performed	12/18/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Flyover Concept w/out Base					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			307		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			2169		V _D = veh/h		
		Ramp Volume, V _R			476				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2169	0.94	Level	7	0	0.966	1.00	2388	
Ramp	476	0.94	Level	7	0	0.966	1.00	524	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 2388 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2388	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1864	Exhibit 13-8	4600	No
					V _R	524	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2388	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 22.0 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.345 (Exhibit 13-12) S _R = 53.8 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 53.8 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Flyover Interchange Off-Ramp					
Date Performed	12/28/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Flyover Concept w/out Base					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			307		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1506		V _D = veh/h		
		Ramp Volume, V _R			194				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1506	0.94	Level	7	0	0.966	1.00	1658	
Ramp	194	0.94	Level	7	0	0.966	1.00	214	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 1658 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1658	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1444	Exhibit 13-8	4600	No
					V _R	214	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1658	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 15.7 (pc/mi/ln) LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.317 (Exhibit 13-12) S _R = 54.3 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 54.3 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Flyover Interchange Off-Ramp					
Date Performed	12/18/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Flyover Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L _{up} = ft		Deceleration Lane Length L _D		307		L _{down} = ft			
V _u = veh/h		Freeway Volume, V _F		2237		V _D = veh/h			
		Ramp Volume, V _R		544					
		Freeway Free-Flow Speed, S _{FF}		60.0					
		Ramp Free-Flow Speed, S _{FR}		45.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2237	0.94	Level	7	0	0.966	1.00	2463	
Ramp	544	0.94	Level	7	0	0.966	1.00	599	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 2463 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2463	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1864	Exhibit 13-8	4600	No
					V _R	599	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2463	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 22.7 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _S = 0.352 (Exhibit 13-12) S _R = 53.7 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 53.7 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		LTN			Freeway/Dir of Travel		NB Richardson Highway		
Agency or Company		Kittelson & Associates			Junction		Flyover Interchange Off-Ramp		
Date Performed		12/18/2018			Jurisdiction		DOT&PF		
Analysis Time Period		Year 2045 PM Peak			Analysis Year		Flyover Concept w/ Base Access		
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N				2		Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N				1		<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A						<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D				307		L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F				1588		V _D = veh/h	
		Ramp Volume, V _R				276			
		Freeway Free-Flow Speed, S _{FF}				60.0			
		Ramp Free-Flow Speed, S _{FR}				45.0			
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1588	0.94	Level	7	0	0.966	1.00	1748	
Ramp	276	0.94	Level	7	0	0.966	1.00	304	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}		
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)		
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)		
V ₁₂ =		pc/h			V ₁₂ =		1748 pc/h		
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)		
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)		
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	1748	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1444	Exhibit 13-8	4600	No
					V _R	304	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1748	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 16.5 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = B (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.325 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 54.1 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 54.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Hwy					
Agency or Company	Kittelson & Associates		Junction	Flyover Interchange On-Ramp					
Date Performed	12/18/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Flyover Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1000			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			1693			V _D = veh/h	
		Ramp Volume, V _R			93				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1693	0.94	Level	7	0	0.966	1.00	1864	
Ramp	93	0.94	Level	7	0	0.966	1.00	102	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1864 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1966	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1966	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 14.5 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.259 (Exhibit 13-11) S _R = 55.3 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 55.3 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Hwy						
Agency or Company	Kittelson & Associates		Junction	Flyover Interchange On-Ramp						
Date Performed	12/18/2018		Jurisdiction	DOT&PF						
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Flyover Concept w/ Base Access						
Project Description Richardson Highway MP 359 Grade Separated Facility										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1000			<input type="checkbox"/> No <input checked="" type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = 4500 ft		
V _u = veh/h		Freeway Volume, V _F			1312			V _D = 283 veh/h		
		Ramp Volume, V _R			92					
		Freeway Free-Flow Speed, S _{FF}			60.0					
		Ramp Free-Flow Speed, S _{FR}			45.0					
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	1312	0.94	Level	7	0	0.966	1.00	1445		
Ramp	92	0.94	Level	7	0	0.966	1.00	101		
UpStream										
DownStream	283	0.94	Level	7	0	0.966	1.00	312		
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13)					
P _{FM} = 1.000 using Equation (Exhibit 13-6)					P _{FD} = using Equation (Exhibit 13-7)					
V ₁₂ = 1445 pc/h					V ₁₂ = pc/h					
V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17)					V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17)					
Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No					
If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}	1546	Exhibit 13-8		No	V _F		Exhibit 13-8			
					V _{FO} = V _F - V _R		Exhibit 13-8			
					V _R		Exhibit 13-10			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}	1546	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8			
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$					
D _R = 11.2 (pc/mi/ln)					D _R = (pc/mi/ln)					
LOS = B (Exhibit 13-2)					LOS = (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _s = 0.249 (Exhibit 13-11)					D _s = (Exhibit 13-12)					
S _R = 55.5 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)					
S ₀ = N/A mph (Exhibit 13-11)					S ₀ = mph (Exhibit 13-12)					
S = 55.5 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)					

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway
Agency or Company	Kittelson & Associates	From/To	East of Lakeview Dr Off-Ramp
Date Performed	12/18/2018	Jurisdiction	DOT&PF
Analysis Time Period	Year 2045 AM Peak	Analysis Year	Diamond Concept w/ Base Access
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	<input type="checkbox"/> Planning Data
Flow Inputs			
Volume, V	760	veh/h	Peak-Hour Factor, PHF 0.94
AADT		veh/day	%Trucks and Buses, P _T 7
Peak-Hr Prop. of AADT, K			%RVs, P _R 0
Peak-Hr Direction Prop, D			General Terrain: Grade
DDHV = AADT x K x D		veh/h	Grade 0.00% Length 0.00mi Up/Down % 0.00
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	f _{LW} mph
Number of Lanes, N	2		f _{LC} mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment mph
FFS (measured)	60.0	mph	FFS 60.0 mph
Base free-flow Speed, BFFS		mph	
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
	418	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
S	60.0	mph	S
D = v _p / S	7.0	pc/mi/ln	D = v _p / S
LOS	A		Required Number of Lanes, N
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>LTN</i>	Highway/Direction of Travel	<i>SB Richardson Highway East of Lakeview Dr Off-Ramp</i>
Agency or Company	<i>Kittelson & Associates</i>	From/To	<i>DOT&PF</i>
Date Performed	<i>12/18/2018</i>	Jurisdiction	<i>Diamond Concept w/ Base Access</i>
Analysis Time Period	<i>Year 2045 PM Peak</i>	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1902</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.966</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	<i>60.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>60.0</i> mph
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
	<i>1047</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)
S	<i>60.0</i>	mph	pc/h/ln
D = v _p / S	<i>17.5</i>	pc/mi/ln	S mph
LOS	<i>B</i>		D = v _p / S pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway East of AK Railroad Spur Line
Agency or Company	Kittelson & Associates	From/To	DOT&PF
Date Performed	12/18/2018	Jurisdiction	Diamond Concept w/ Base Access
Analysis Time Period	Year 2045 AM Peak	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	940	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
517	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	60.0	mph	pc/h/ln
D = v _p / S	8.6	pc/mi/ln	mph
LOS	A	D = v _p / S	pc/mi/ln
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel	SB Richardson Highway East of AK Railroad Spur Line
Agency or Company	Kittelson & Associates	From/To	DOT&PF
Date Performed	12/18/2018	Jurisdiction	Diamond Concept w/ Base Access
Analysis Time Period	Year 2045 PM Peak	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2447	veh/h	Peak-Hour Factor, PHF
AADT		veh/day	0.94
Peak-Hr Prop. of AADT, K			%Trucks and Buses, P _T
Peak-Hr Direction Prop, D			7
DDHV = AADT x K x D		veh/h	%RVs, P _R
			0
			General Terrain:
			Level
			Grade % Length
			mi
			Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	0.966
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	mph
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
1347	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	60.0	mph	pc/h/ln
D = v _p / S	22.5	pc/mi/ln	mph
LOS	C	D = v _p / S	pc/mi/ln
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway						
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange Off-Ramp						
Date Performed	12/17/2018		Jurisdiction	DOT&PF						
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Diamond Concept w/ Base Access						
Project Description Richardson Highway MP 359 Grade Separated Facility										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft		Deceleration Lane Length L _D		200		L _{down} = ft				
V _u = veh/h		Freeway Volume, V _F		760		V _D = veh/h				
		Ramp Volume, V _R		21						
		Freeway Free-Flow Speed, S _{FF}		60.0						
		Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	760	0.94	Level	7	0	0.966	1.00	837		
Ramp	21	0.94	Level	7	0	0.966	1.00	23		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)					
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		837 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	837	Exhibit 13-8	4600	No	
			V _{FO} = V _F - V _R	814	Exhibit 13-8	4600	No			
			V _R	23	Exhibit 13-10	2100	No			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	837	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 9.7 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = A (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.300 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 54.6 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 54.6 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange Off-Ramp					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Diamond Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L _{up} = ft		Deceleration Lane Length L _D		200		L _{down} = ft			
V _u = veh/h		Freeway Volume, V _F		1902		V _D = veh/h			
		Ramp Volume, V _R		21					
		Freeway Free-Flow Speed, S _{FF}		60.0					
		Ramp Free-Flow Speed, S _{FR}		45.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1902	0.94	Level	7	0	0.966	1.00	2094	
Ramp	21	0.94	Level	7	0	0.966	1.00	23	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}		
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)		
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)		
V ₁₂ =		pc/h			V ₁₂ =		2094 pc/h		
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)		
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)		
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2094	Exhibit 13-8	4600	No
			V _{FO} = V _F - V _R			2071	Exhibit 13-8	4600	No
			V _R			23	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2094	Exhibit 13-8		4400:All
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 20.5 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _s = 0.300 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 54.6 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 54.6 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Highway						
Agency or Company	Kittelson & Associates		Junction	Lakeview Drive						
Date Performed	12/17/2018		Jurisdiction	DOT&PF						
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Diamond Concept w/ Base Access						
Project Description Richardson Highway MP 359 Grade Separated Facility										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft		Deceleration Lane Length L _D		250		L _{down} = ft				
V _u = veh/h		Freeway Volume, V _F		860		V _D = veh/h				
		Ramp Volume, V _R		100						
		Freeway Free-Flow Speed, S _{FF}		60.0						
		Ramp Free-Flow Speed, S _{FR}		35.0						
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	860	0.94	Level	7	0	0.966	1.00	947		
Ramp	100	0.94	Level	7	0	0.966	1.00	110		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)			
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		947 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	947	Exhibit 13-8	4600	No	
			V _{FO} = V _F - V _R	837	Exhibit 13-8	4600	No			
			V _R	110	Exhibit 13-10	2000	No			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	947	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 10.1 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = B (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.438 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 52.1 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 52.1 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst		LTN			Freeway/Dir of Travel		SB Richardson Highway		
Agency or Company		Kittelson & Associates			Junction		Lakeview Drive		
Date Performed		12/17/2018			Jurisdiction		DOT&PF		
Analysis Time Period		Year 2045 PM Peak			Analysis Year		Diamond Concept 2/ Base Access		
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A					<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D			250		L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1988		V _D = veh/h		
		Ramp Volume, V _R			86				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			35.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1988	0.94	Level	7	0	0.966	1.00	2189	
Ramp	86	0.94	Level	7	0	0.966	1.00	95	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}		
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)		
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)		
V ₁₂ =		pc/h			V ₁₂ =		2189 pc/h		
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)		
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)		
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2189	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	2094	Exhibit 13-8	4600	No
					V _R	95	Exhibit 13-10	2000	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2189	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D				
D _R = (pc/mi/ln)					D _R = 20.8 (pc/mi/ln)				
LOS = (Exhibit 13-2)					LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11)					D _S = 0.437 (Exhibit 13-12)				
S _R = mph (Exhibit 13-11)					S _R = 52.1 mph (Exhibit 13-12)				
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)				
S = mph (Exhibit 13-13)					S = 52.1 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN	Freeway/Dir of Travel	SB Richardson Hwy		Agency or Company	Kittelson & Associates	Junction	Diamond Interchange On-Ramp	
Date Performed	12/17/2018	Jurisdiction	DOT&PF		Analysis Time Period	Year 2045 AM Peak	Analysis Year	Diamond Concept w/ Base Access	
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L _A		1000		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft	Deceleration Lane Length L _D				L _{down} = ft				
V _u = veh/h	Freeway Volume, V _F		739		V _D = veh/h				
	Ramp Volume, V _R		201						
	Freeway Free-Flow Speed, S _{FF}		60.0						
	Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	739	0.94	Level	7	0	0.966	1.00	814	
Ramp	201	0.94	Level	7	0	0.966	1.00	221	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 814 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1035	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1035	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 7.2 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	0.242 (Exhibit 13-11)				D _S =	(Exhibit 13-12)			
S _R =	55.6 mph (Exhibit 13-11)				S _R =	mph (Exhibit 13-12)			
S ₀ =	N/A mph (Exhibit 13-11)				S ₀ =	mph (Exhibit 13-12)			
S =	55.6 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	SB Richardson Hwy					
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange On-Ramp					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Diamond Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2		Downstream Adj Ramp		
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1		<input type="checkbox"/> Yes <input type="checkbox"/> On		
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1000		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		
L _{up} = ft		Deceleration Lane Length L _D					L _{down} = ft		
V _u = veh/h		Freeway Volume, V _F			1881		V _D = veh/h		
		Ramp Volume, V _R			566				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1881	0.94	Level	7	0	0.966	1.00	2071	
Ramp	566	0.94	Level	7	0	0.966	1.00	623	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13)				
L _{EQ} =					L _{EQ} =				
P _{FM} = 1.000 using Equation (Exhibit 13-6)					P _{FD} = using Equation (Exhibit 13-7)				
V ₁₂ = 2071 pc/h					V ₁₂ = pc/h				
V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17)					V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17)				
Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No				
If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	2694	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	2694	Exhibit 13-8 4600:All		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$				
D _R = 19.9 (pc/mi/ln)					D _R = (pc/mi/ln)				
LOS = B (Exhibit 13-2)					LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.289 (Exhibit 13-11)					D _S = (Exhibit 13-12)				
S _R = 54.8 mph (Exhibit 13-11)					S _R = mph (Exhibit 13-12)				
S ₀ = N/A mph (Exhibit 13-11)					S ₀ = mph (Exhibit 13-12)				
S = 54.8 mph (Exhibit 13-13)					S = mph (Exhibit 13-13)				

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel <i>NB Richardson Highway West of AK Railroad Spur Line</i>	
Agency or Company	Kittelson & Associates	From/To	
Date Performed	12/18/2018	Jurisdiction <i>DOT&PF</i>	
Analysis Time Period	Year 2045 AM Peak	Analysis Year <i>Diamond Concept w/ Base Access</i>	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	2237	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f _{LW}	mph
Number of Lanes, N	2	f _{LC}	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	
FFS (measured)	60.0	FFS	60.0
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	1232 pc/h/ln	Design LOS	
S	60.0 mph	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	pc/h/ln
D = v _p / S	20.5 pc/mi/ln	S	mph
LOS	C	D = v _p / S	pc/mi/ln
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	LTN	Highway/Direction of Travel <i>NB Richardson Highway West of AK Railroad Spur Line</i>	
Agency or Company	Kittelson & Associates	From/To	
Date Performed	12/18/2018	Jurisdiction <i>DOT&PF</i>	
Analysis Time Period	Year 2045 PM Peak	Analysis Year <i>Diamond Concept w/ Base Access</i>	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	1595	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	1.00	E _R	1.2
E _T	1.5	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)] <i>0.966</i>	
Speed Inputs		Calc Speed Adj and FFS	
Lane Width	ft	f _{LW}	mph
Rt-Side Lat. Clearance	ft	f _{LC}	mph
Number of Lanes, N	2	TRD Adjustment	
Total Ramp Density, TRD	ramps/mi	FFS	60.0
FFS (measured)	60.0	mph	mph
Base free-flow Speed, BFFS	mph		
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
878	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	60.0	mph	pc/h/ln
D = v _p / S	14.6	pc/mi/ln	mph
LOS	B	D = v _p / S	
		Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>LTN</i>	Highway/Direction of Travel	<i>NB Richardson Highway East of Denali Park Off-Ramp</i>
Agency or Company	<i>Kittelson & Associates</i>	From/To	<i>DOT&PF</i>
Date Performed	<i>12/18/2018</i>	Jurisdiction	<i>Diamond Concept w/ Base Access</i>
Analysis Time Period	<i>Year 2045 AM Peak</i>	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1787</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.966</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		
Total Ramp Density, TRD		ramps/mi	
FFS (measured)	<i>60.0</i>	mph	
Base free-flow Speed, BFFS		mph	
			f _{LW} mph
			f _{LC} mph
		TRD Adjustment	mph
		FFS	<i>60.0</i> mph
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
<i>984</i>	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	<i>60.0</i> mph	S	
D = v _p / S	<i>16.4</i> pc/mi/ln	D = v _p / S	
LOS	<i>B</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

BASIC FREEWAY SEGMENTS WORKSHEET			
General Information		Site Information	
Analyst	<i>LTN</i>	Highway/Direction of Travel	<i>NB Richardson Highway East of Denali Park Off-Ramp</i>
Agency or Company	<i>Kittelson & Associates</i>	From/To	<i>DOT&PF</i>
Date Performed	<i>12/18/2018</i>	Jurisdiction	<i>Diamond Concept w/ Base Access</i>
Analysis Time Period	<i>Year 2045 PM Peak</i>	Analysis Year	
Project Description <i>Richardson Highway MP 359 Grade Separated Facility</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
Flow Inputs			
Volume, V	<i>1405</i>	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P _T <i>7</i>
Peak-Hr Prop. of AADT, K			%RVs, P _R <i>0</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Level</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
Calculate Flow Adjustments			
f _p	<i>1.00</i>	E _R	<i>1.2</i>
E _T	<i>1.5</i>	f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	<i>0.966</i>
Speed Inputs		Calc Speed Adj and FFS	
Lane Width		ft	
Rt-Side Lat. Clearance		ft	
Number of Lanes, N	<i>2</i>		f _{LW} mph
Total Ramp Density, TRD		ramps/mi	f _{LC} mph
FFS (measured)	<i>60.0</i>	mph	TRD Adjustment mph
Base free-flow Speed, BFFS		mph	FFS <i>60.0</i> mph
LOS and Performance Measures		Design (N)	
Operational (LOS)		Design (N)	
v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)		Design LOS	
773	pc/h/ln	v _p = (V or DDHV) / (PHF x N x f _{HV} x f _p)	
S	<i>60.0</i> mph	S	
D = v _p / S	<i>12.9</i> pc/mi/ln	D = v _p / S	
LOS	<i>B</i>	Required Number of Lanes, N	
Glossary		Factor Location	
N - Number of lanes	S - Speed	E _R - Exhibits 11-10, 11-12	f _{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E _T - Exhibits 11-10, 11-11, 11-13	f _{LC} - Exhibit 11-9
v _p - Flow rate	FFS - Free-flow speed	f _p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v _p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway					
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange Off-Ramp					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 AM Peak		Analysis Year	Diamond Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp			
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On			
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off			
L _{up} = ft		Deceleration Lane Length L _D		300		L _{down} = ft			
V _u = veh/h		Freeway Volume, V _F		2237		V _D = veh/h			
		Ramp Volume, V _R		544					
		Freeway Free-Flow Speed, S _{FF}		60.0					
		Ramp Free-Flow Speed, S _{FR}		45.0					
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	2237	0.94	Level	7	0	0.966	1.00	2463	
Ramp	544	0.94	Level	7	0	0.966	1.00	599	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = using Equation (Exhibit 13-6) V ₁₂ = pc/h V ₃ or V _{av34} pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = 1.000 using Equation (Exhibit 13-7) V ₁₂ = 2463 pc/h V ₃ or V _{av34} 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}		Exhibit 13-8			V _F	2463	Exhibit 13-8	4600	No
					V _{FO} = V _F - V _R	1864	Exhibit 13-8	4600	No
					V _R	599	Exhibit 13-10	2100	No
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}		Exhibit 13-8			V ₁₂	2463	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = 22.7 (pc/mi/ln) LOS = C (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = (Exhibit 13-11) S _R = mph (Exhibit 13-11) S ₀ = mph (Exhibit 13-11) S = mph (Exhibit 13-13)					D _s = 0.352 (Exhibit 13-12) S _R = 53.7 mph (Exhibit 13-12) S ₀ = N/A mph (Exhibit 13-12) S = 53.7 mph (Exhibit 13-13)				

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Information					Site Information					
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Highway						
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange Off-Ramp						
Date Performed	12/17/2018		Jurisdiction	DOT&PF						
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Diamond Concept w/ Base Access						
Project Description Richardson Highway MP 359 Grade Separated Facility										
Inputs										
Upstream Adj Ramp		Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A				<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft		Deceleration Lane Length L _D		300		L _{down} = ft				
V _u = veh/h		Freeway Volume, V _F		1595		V _D = veh/h				
		Ramp Volume, V _R		283						
		Freeway Free-Flow Speed, S _{FF}		60.0						
		Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p		
Freeway	1595	0.94	Level	7	0	0.966	1.00	1756		
Ramp	283	0.94	Level	7	0	0.966	1.00	312		
UpStream										
DownStream										
Merge Areas					Diverge Areas					
Estimation of v ₁₂					Estimation of v ₁₂					
L _{EQ} =		V ₁₂ = V _F (P _{FM})			L _{EQ} =		V ₁₂ = V _R + (V _F - V _R)P _{FD}			
		(Equation 13-6 or 13-7)					(Equation 13-12 or 13-13)			
P _{FM} =		using Equation (Exhibit 13-6)			P _{FD} =		1.000 using Equation (Exhibit 13-7)			
V ₁₂ =		pc/h			V ₁₂ =		1756 pc/h			
V ₃ or V _{av34}		pc/h (Equation 13-14 or 13-17)			V ₃ or V _{av34}		0 pc/h (Equation 13-14 or 13-17)			
Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 2,700 pc/h?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input type="checkbox"/> No			Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			If Yes, V _{12a} =		pc/h (Equation 13-16, 13-18, or 13-19)			
Capacity Checks					Capacity Checks					
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?	
V _{FO}		Exhibit 13-8			V _F	1756	Exhibit 13-8	4600	No	
			V _{FO} = V _F - V _R	1444	Exhibit 13-8	4600	No			
			V _R	312	Exhibit 13-10	2100	No			
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area					
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	1756	Exhibit 13-8		4400:All	No
Level of Service Determination (if not F)					Level of Service Determination (if not F)					
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					D _R = 4.252 + 0.0086 V ₁₂ - 0.009 L _D					
D _R = (pc/mi/ln)					D _R = 16.7 (pc/mi/ln)					
LOS = (Exhibit 13-2)					LOS = B (Exhibit 13-2)					
Speed Determination					Speed Determination					
M _S = (Exhibit 13-11)					D _S = 0.326 (Exhibit 13-12)					
S _R = mph (Exhibit 13-11)					S _R = 54.1 mph (Exhibit 13-12)					
S ₀ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exhibit 13-13)					S = 54.1 mph (Exhibit 13-13)					

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN	Freeway/Dir of Travel	NB Richardson Hwy						
Agency or Company	Kittelson & Associates	Junction	Diamond Interchange On-Ramp						
Date Performed	12/17/2018	Jurisdiction	DOT&PF						
Analysis Time Period	Year 2045 AM Peak	Analysis Year	Diamond Concept w/ Base Access						
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp	Freeway Number of Lanes, N		2		Downstream Adj Ramp				
<input type="checkbox"/> Yes <input type="checkbox"/> On	Ramp Number of Lanes, N		1		<input type="checkbox"/> Yes <input type="checkbox"/> On				
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	Acceleration Lane Length, L _A		1200		<input checked="" type="checkbox"/> No <input type="checkbox"/> Off				
L _{up} = ft	Deceleration Lane Length L _D				L _{down} = ft				
V _u = veh/h	Freeway Volume, V _F		1693		V _D = veh/h				
	Ramp Volume, V _R		94						
	Freeway Free-Flow Speed, S _{FF}		60.0						
	Ramp Free-Flow Speed, S _{FR}		45.0						
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1693	0.94	Level	7	0	0.966	1.00	1864	
Ramp	94	0.94	Level	7	0	0.966	1.00	103	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v ₁₂					Estimation of v ₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1864 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1967	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1967	Exhibit 13-8	4600:All	No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 13.2 (pc/mi/ln) LOS = B (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S =	0.241 (Exhibit 13-11)				D _s =	(Exhibit 13-12)			
S _R =	55.7 mph (Exhibit 13-11)				S _R =	mph (Exhibit 13-12)			
S ₀ =	N/A mph (Exhibit 13-11)				S ₀ =	mph (Exhibit 13-12)			
S =	55.7 mph (Exhibit 13-13)				S =	mph (Exhibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Information					Site Information				
Analyst	LTN		Freeway/Dir of Travel	NB Richardson Hwy					
Agency or Company	Kittelson & Associates		Junction	Diamond Interchange On-Ramp					
Date Performed	12/17/2018		Jurisdiction	DOT&PF					
Analysis Time Period	Year 2045 PM Peak		Analysis Year	Diamond Concept w/ Base Access					
Project Description Richardson Highway MP 359 Grade Separated Facility									
Inputs									
Upstream Adj Ramp		Freeway Number of Lanes, N			2			Downstream Adj Ramp	
<input type="checkbox"/> Yes <input type="checkbox"/> On		Ramp Number of Lanes, N			1			<input type="checkbox"/> Yes <input type="checkbox"/> On	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Off		Acceleration Lane Length, L _A			1200			<input checked="" type="checkbox"/> No <input type="checkbox"/> Off	
L _{up} = ft		Deceleration Lane Length L _D						L _{down} = ft	
V _u = veh/h		Freeway Volume, V _F			1312			V _D = veh/h	
		Ramp Volume, V _R			93				
		Freeway Free-Flow Speed, S _{FF}			60.0				
		Ramp Free-Flow Speed, S _{FR}			45.0				
Conversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PHF x f _{HV} x f _p	
Freeway	1312	0.94	Level	7	0	0.966	1.00	1445	
Ramp	93	0.94	Level	7	0	0.966	1.00	102	
UpStream									
DownStream									
Merge Areas					Diverge Areas				
Estimation of v₁₂					Estimation of v₁₂				
$V_{12} = V_F (P_{FM})$ (Equation 13-6 or 13-7) L _{EQ} = P _{FM} = 1.000 using Equation (Exhibit 13-6) V ₁₂ = 1445 pc/h V ₃ or V _{av34} = 0 pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 13-12 or 13-13) L _{EQ} = P _{FD} = using Equation (Exhibit 13-7) V ₁₂ = pc/h V ₃ or V _{av34} = pc/h (Equation 13-14 or 13-17) Is V ₃ or V _{av34} > 2,700 pc/h? <input type="checkbox"/> Yes <input type="checkbox"/> No Is V ₃ or V _{av34} > 1.5 * V ₁₂ /2 <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, V _{12a} = pc/h (Equation 13-16, 13-18, or 13-19)				
Capacity Checks					Capacity Checks				
	Actual	Capacity		LOS F?		Actual	Capacity		LOS F?
V _{FO}	1547	Exhibit 13-8		No	V _F		Exhibit 13-8		
					V _{FO} = V _F - V _R		Exhibit 13-8		
					V _R		Exhibit 13-10		
Flow Entering Merge Influence Area					Flow Entering Diverge Influence Area				
	Actual	Max Desirable		Violation?		Actual	Max Desirable		Violation?
V _{R12}	1547	Exhibit 13-8		No	V ₁₂		Exhibit 13-8		
Level of Service Determination (if not F)					Level of Service Determination (if not F)				
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$ D _R = 10.0 (pc/mi/ln) LOS = A (Exhibit 13-2)					$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$ D _R = (pc/mi/ln) LOS = (Exhibit 13-2)				
Speed Determination					Speed Determination				
M _S = 0.231 (Exhibit 13-11) S _R = 55.8 mph (Exhibit 13-11) S ₀ = N/A mph (Exhibit 13-11) S = 55.8 mph (Exhibit 13-13)					D _s = (Exhibit 13-12) S _R = mph (Exhibit 13-12) S ₀ = mph (Exhibit 13-12) S = mph (Exhibit 13-13)				

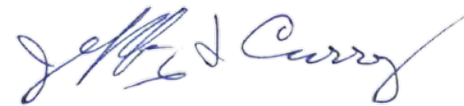
APPENDIX D

PAVEMENT DESIGN

Project Name: Richardson Highway MP 359 Railroad Grade Separated Facility				Project Number: Z607340000/0A24033				Analysis Date: 1/26/2021			Project Status		
Design Type: New Design				Designer: James McCurtain				Unit: US Customary			All layer damages less than 100%.		
Project Location: FAIRBANKS INTL AP				Tire Load (lbs) 4500	Load Description: ESAL								
Design AADT: 26,000			Design Loadings	Tire Press. (psi) 110	Load Loc (in) X: 0 Y: 0	0	13.5						
Spring%: 8			489,339		Eval Loc (in) X: 0 Y: 0	0	6.75						
Summer%: 33			2,018,524										
Fall%: 17			1,039,846										
Winter%: 42			2,569,031										
Total%: 100			6,116,740										
Layer	Critical Z Coordinate (in)	Asphalt Properties	Season	Modulus (Ksi)	Poisson's Ratio	Tensile Micro Strain	Compressive Stress (psi)	Million Cycles to Failure	Past Damage (%)	Future Damage (%)	Total Damage (%)		
Thickness (in): 4	3.99	Air%: 5 Asphalt%: 5.5 Density (pcf) 148	Spring	350	0.30	92		39.32		1.24	1.24		
Name: Asphalt Concrete (4Unmodified Asphalt)			Summer	300	0.30	88		52.20		3.87	3.87		
Use TAI: Yes			Fall	300	0.30	88		52.20		1.99	1.99		
			Winter	1200	0.30	31		501.44		0.51	0.51		
Total Damage:										7.61	7.61		
Thickness (in): 4	7.99	Air%: 6 Asphalt%: 4.5 Density (pcf) 145	Spring	200	0.35	166		3.43		14.25	14.25		
Name: 4-5% Asphalt Treated Base			Summer	200	0.35	159		3.99		50.54	50.54		
Use TAI: Yes			Fall	200	0.35	159		3.99		26.03	26.03		
			Winter	600	0.35	59		41.22		6.23	6.23		
Total Damage:										97.05	97.05		
Thickness (in): 8	8.01	Air%: Asphalt%: Density:	Spring	35	0.40		13.7	8.42		5.81	5.81		
Name: Subbase F P200<6%			Summer	40	0.40		15.1	9.52		21.21	21.21		
Use TAI:			Fall	40	0.40		15.1	9.52		10.92	10.92		
			Winter	90	0.40		12.2	267.16		0.96	0.96		
Total Damage:										38.90	38.90		
Thickness (in): 24	16.01	Air%: Asphalt%: Density:	Spring	35	0.40		6.8	84.37		0.58	0.58		
Name: Select A P200<6%			Summer	40	0.40		7.2	106.11		1.90	1.90		
Use TAI:			Fall	40	0.40		7.2	106.11		0.98	0.98		
			Winter	90	0.40		6.0	2764.00		0.09	0.09		
Total Damage:										3.55	3.55		
Thickness (in): 0	40.01		Spring	10	0.40		1.2	256.83		0.19	0.19		
Name: Select B P200<18%			Summer	10	0.40		1.2	287.03		0.70	0.70		
			Fall	10	0.40		1.2	287.03		0.36	0.36		
			Winter	10	0.40		0.7	1827.46		0.14	0.14		
Total Damage:										1.39	1.39		

C:\AKDOT\PF\Alaska Flexible Pavement Design\My FPD Projects\Richardson Highway MP 359 Railroad Grade Separated Facility.xml

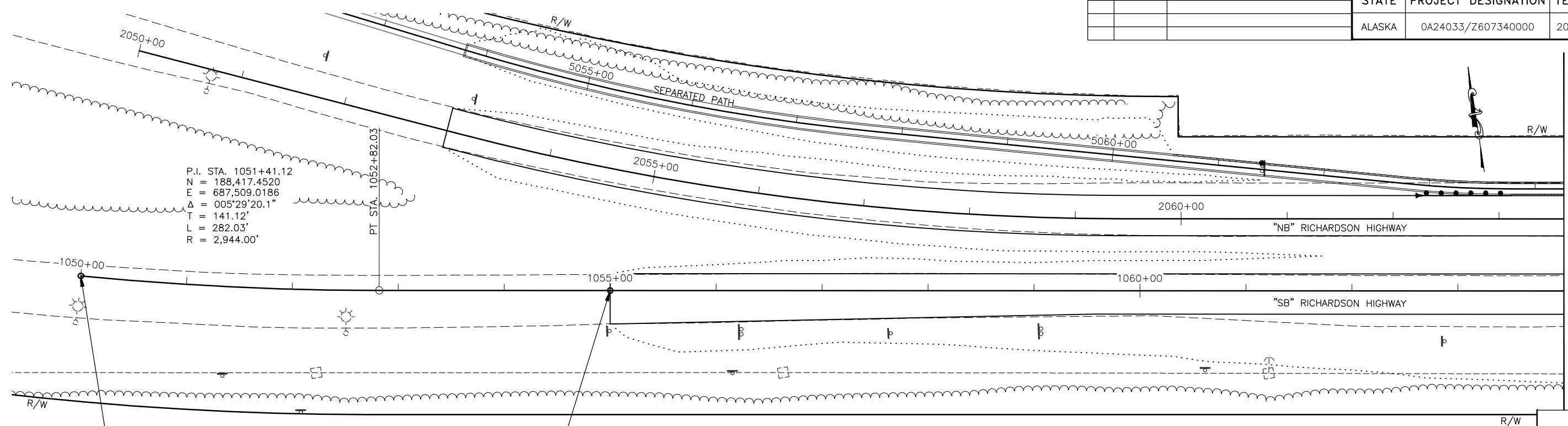
Approved-Jeff Currey, P.E.
NR Mat'ls Engr 3-4-21



APPENDIX E

PRELIMINARY PLAN AND PROFILE SHEETS

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F1	F9



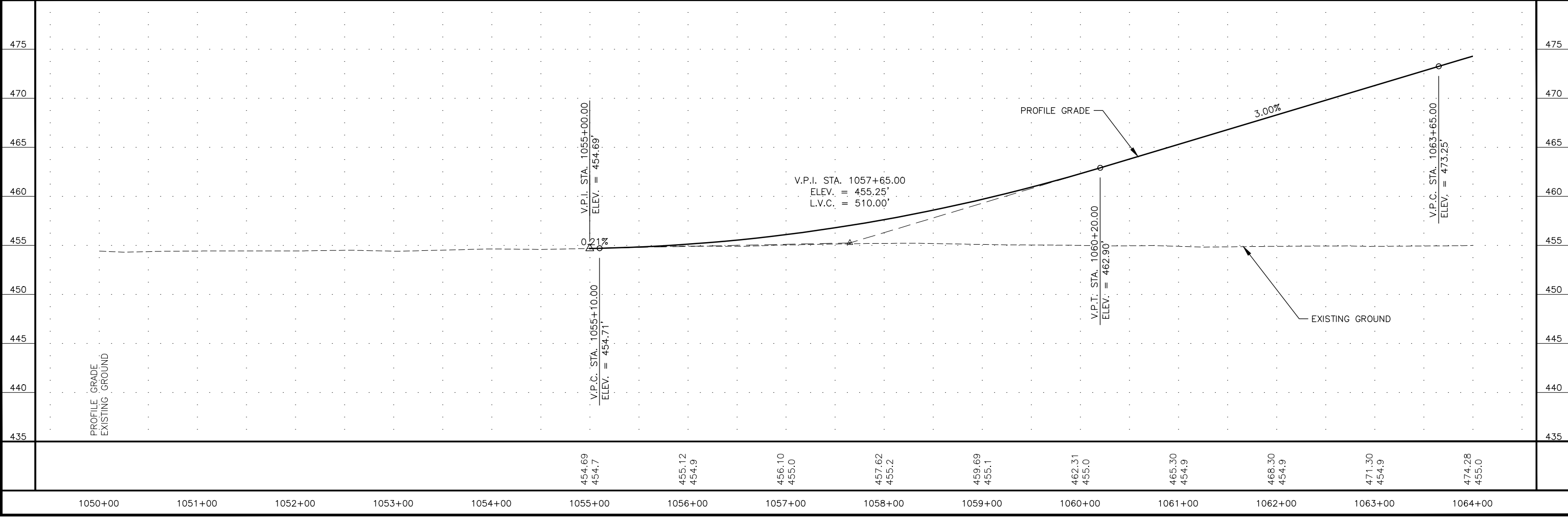
BEGIN "SB"
"SB" STA. 1050+00.00
N 188452.5032
E 687372.3159

BEGIN "SB" CONSTRUCTION
"SB" STA. 1055+00.00
N 188361.9453
E 687863.7937

SOUTHBOUND RICHARDSON
(1 OF 3)

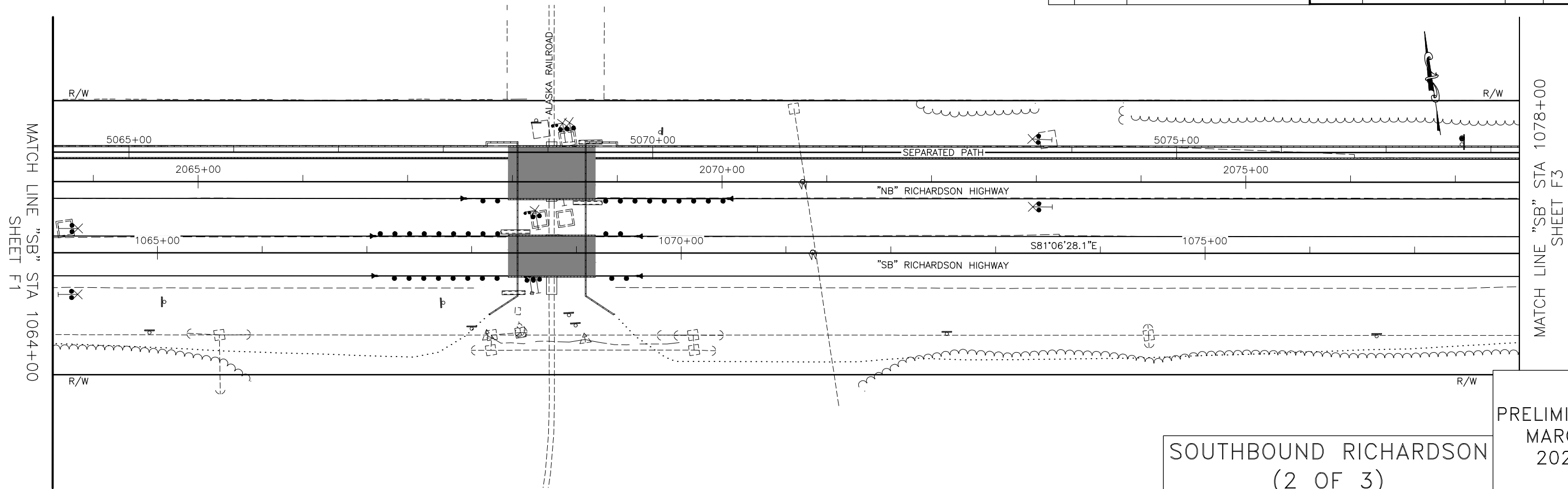
PRELIMINARY
MARCH
2021

MATCH LINE "SB" STA 1064+00
SHEET F2



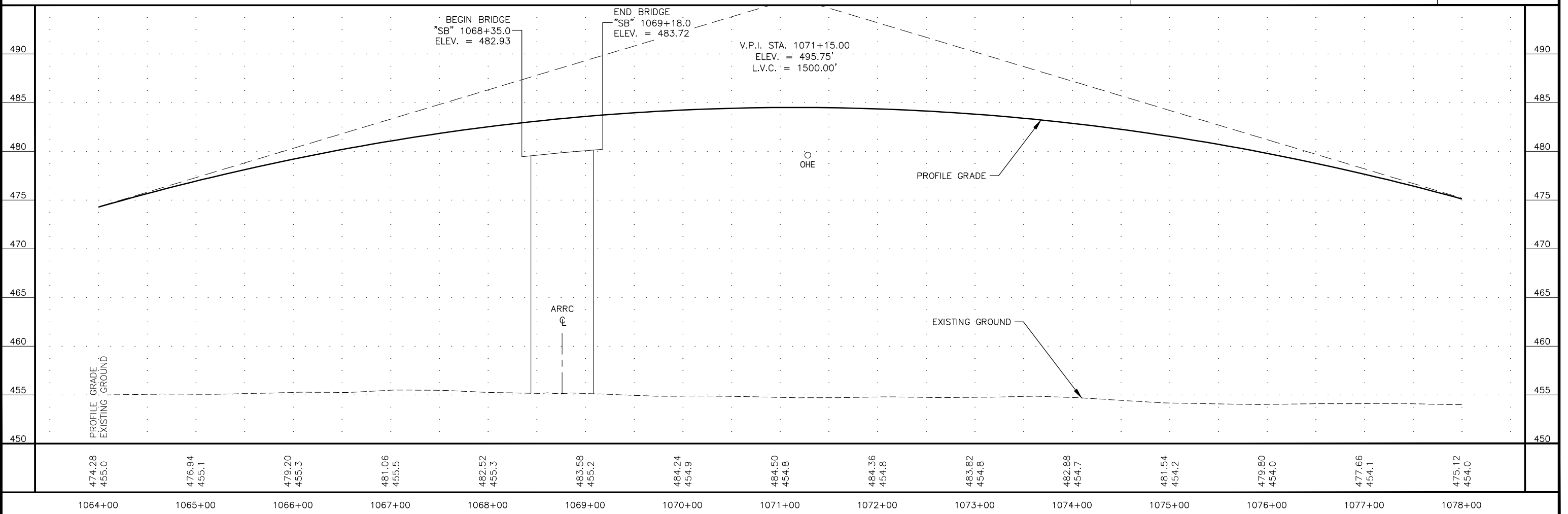
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
C:\pwworkdir\user001\work\001\0053776\d1395104\60734_F1_Php-F1_Tue_Mar/23/21_10:25am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F2	F9

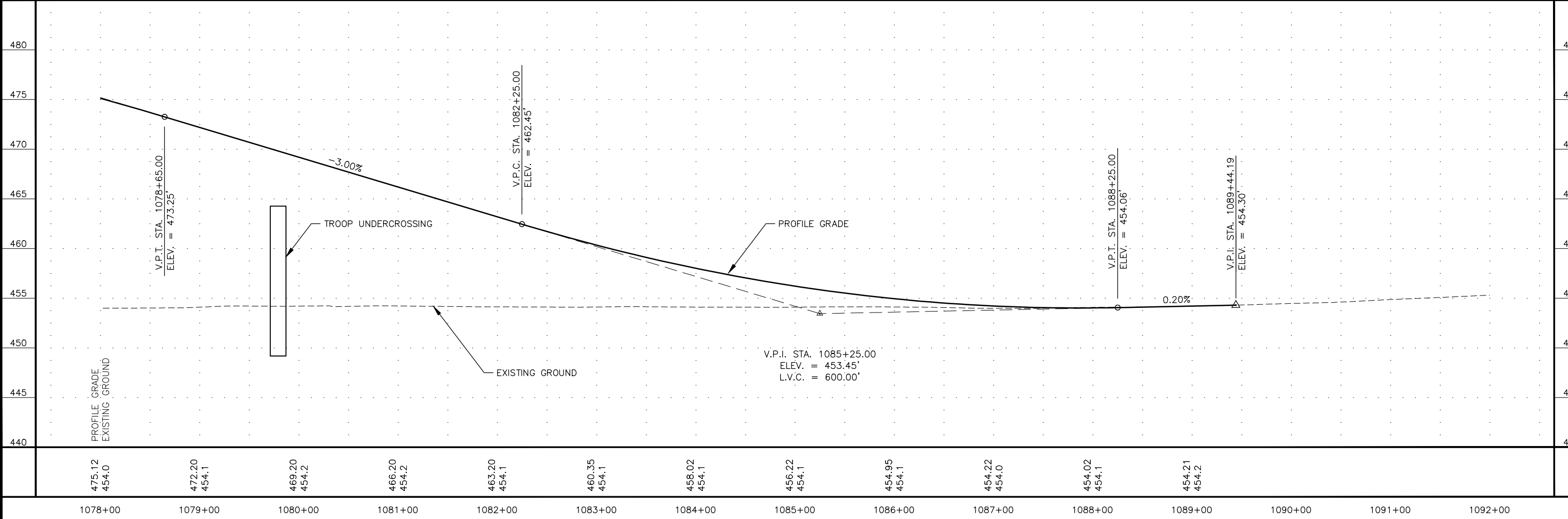
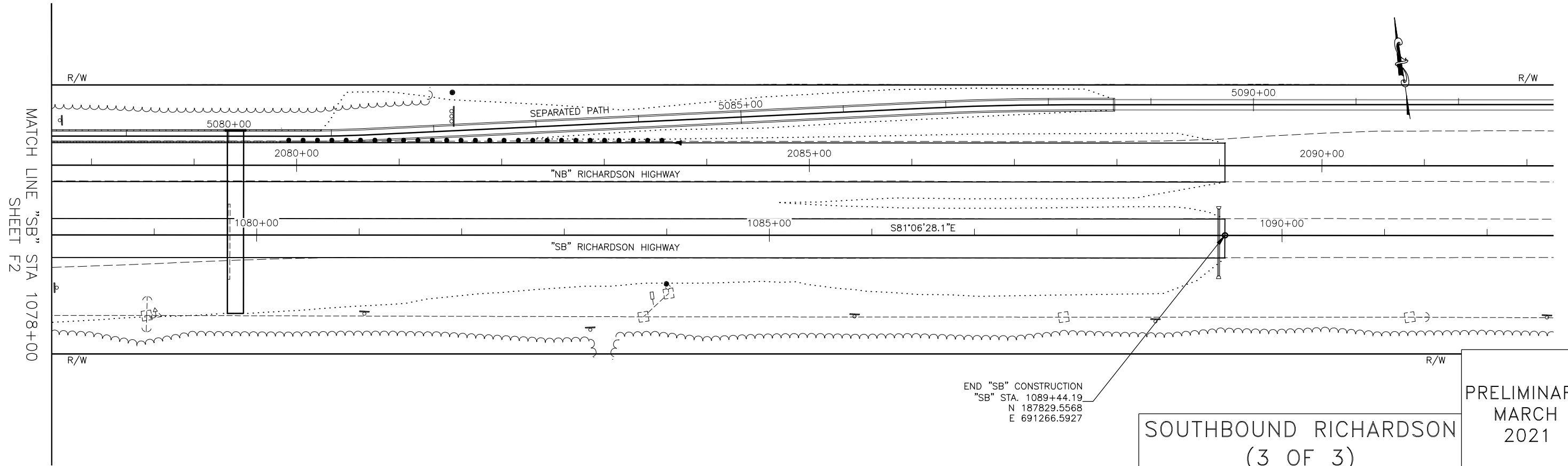


SOUTHBOUND RICHARDSON
(2 OF 3)

PRELIMINARY
MARCH
2021

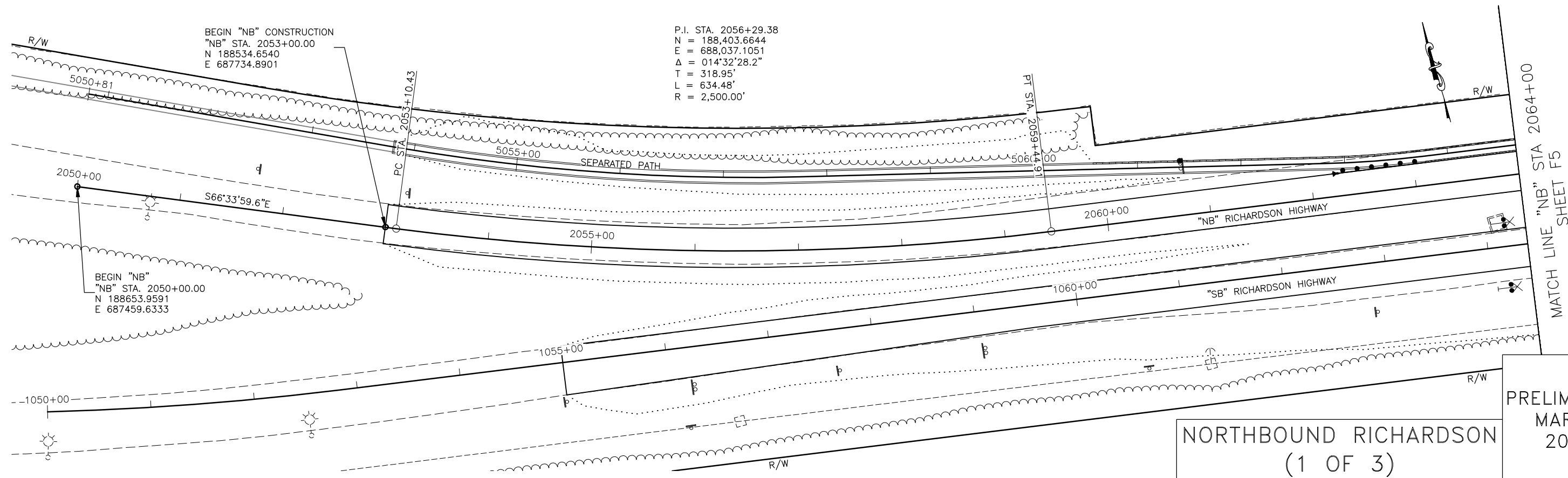


NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F3	F9



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
C:\pwworkdir\user001\work\053776\1395104\60734_F3_P1P-F3_Tue_Mar/23/21_10:26am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F4	F9

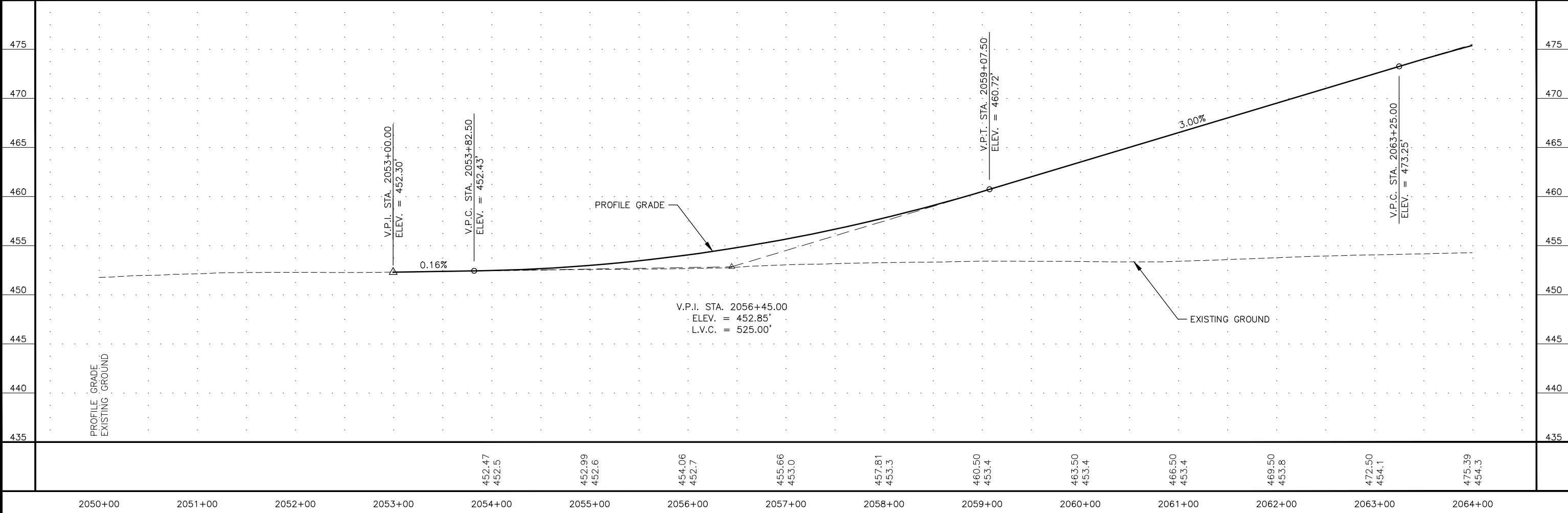


MATCH LINE "NB" STA 2064+00
SHEET F5

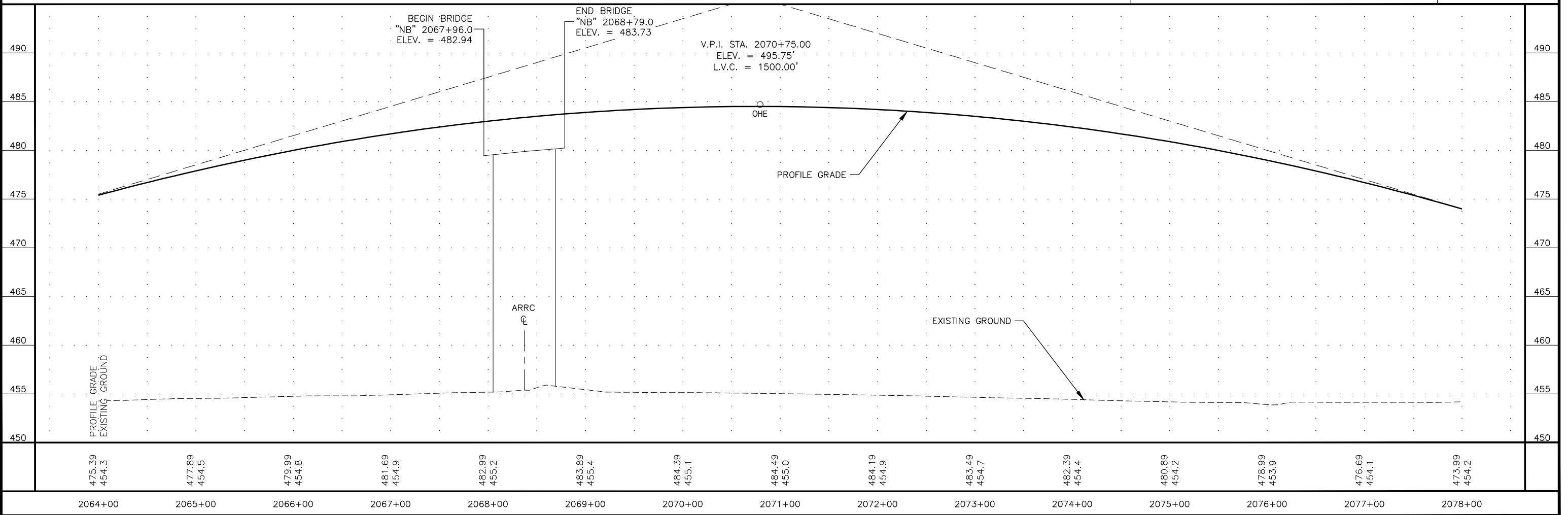
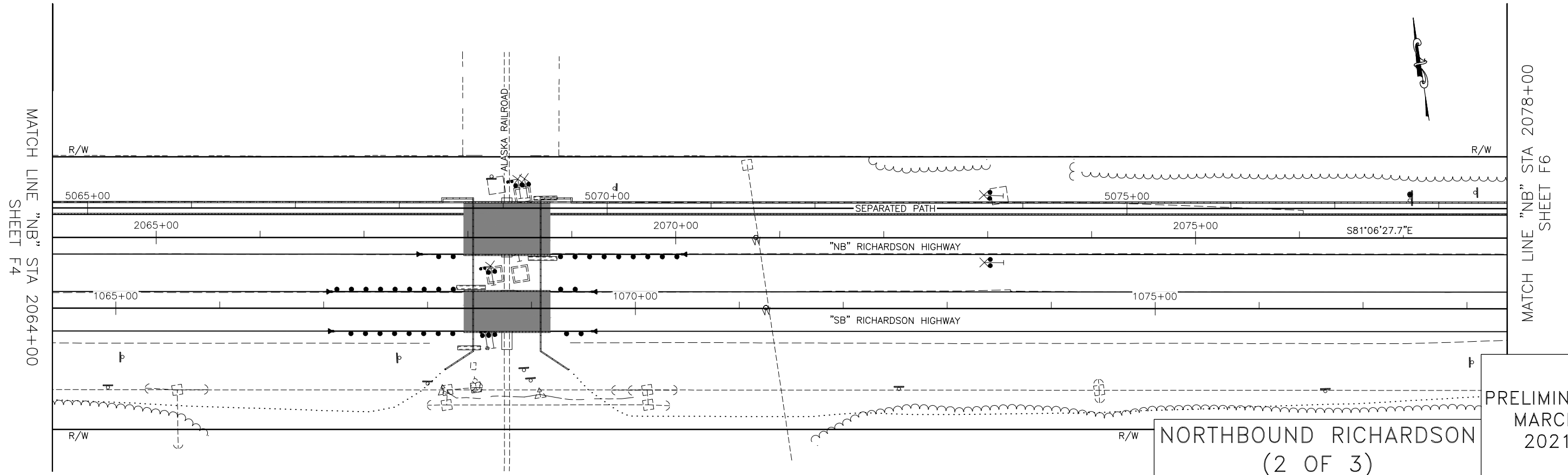
NORTHBOUND RICHARDSON
(1 OF 3)

PRELIMINARY
MARCH
2021

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
C:\pwworkdir\user001\work\053776\1395104\60734_F4_P1P-F4_Tue_Mar/23/21_10:26am



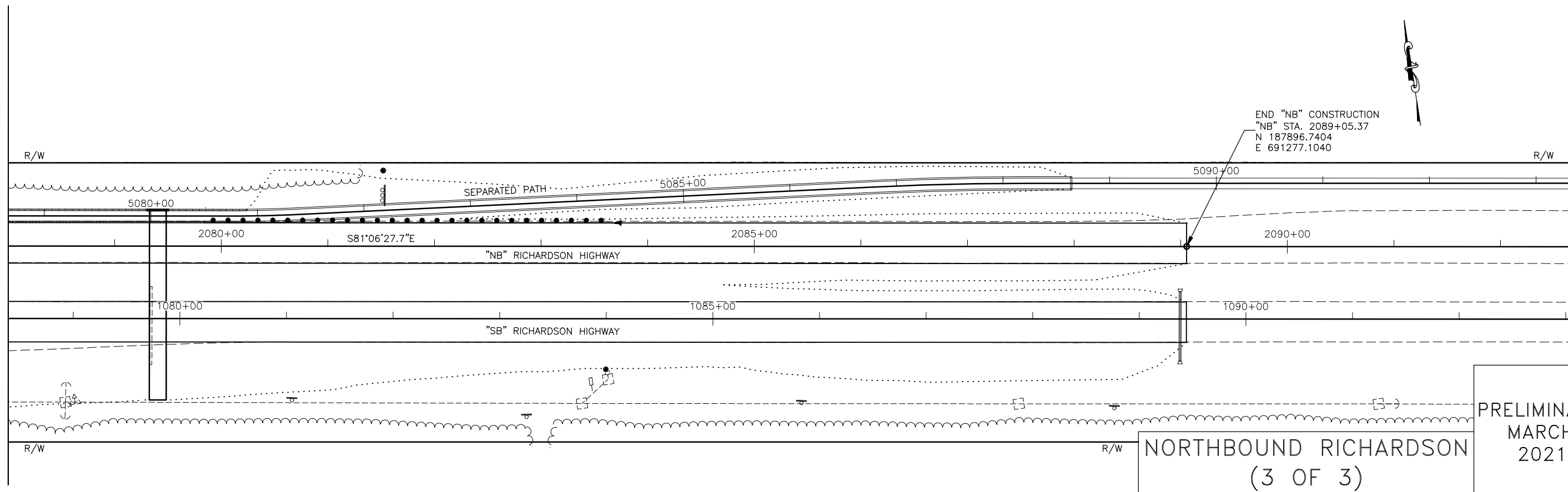
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F5	F9



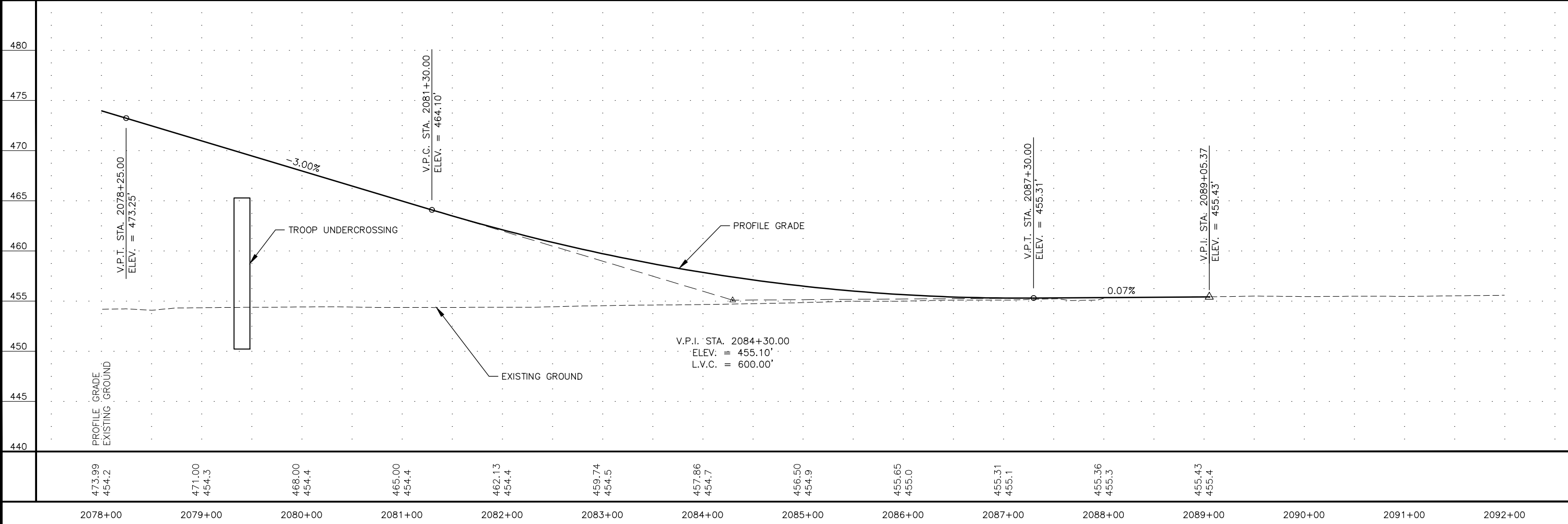
PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
 C:\pwworkid\user001\work\053776\1395104\60734_F5_P1P-F5_Tue_Mar/23/21_10.26am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F6	F9

MATCH LINE "NB" STA 2078+00
SHEET F5



PRELIMINARY
MARCH
2021



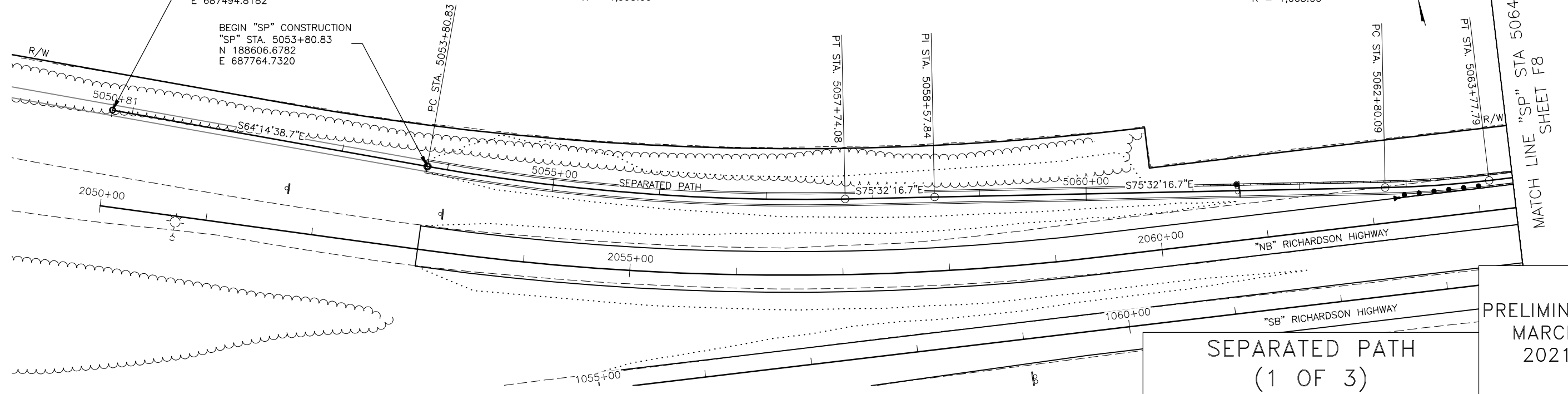
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F7	F9

P.I. STA. 5055+78.10
 N = 188,520.9604
 E = 687,942.3966
 $\Delta = 011^{\circ}17'38.0''$
 T = 197.26'
 L = 393.25'
 R = 1,995.00'

P.I. STA. 5063+28.98
 N = 188,333.1171
 E = 688,670.7239
 $\Delta = 005^{\circ}34'11.3''$
 T = 48.89'
 L = 97.70'
 R = 1,005.00'

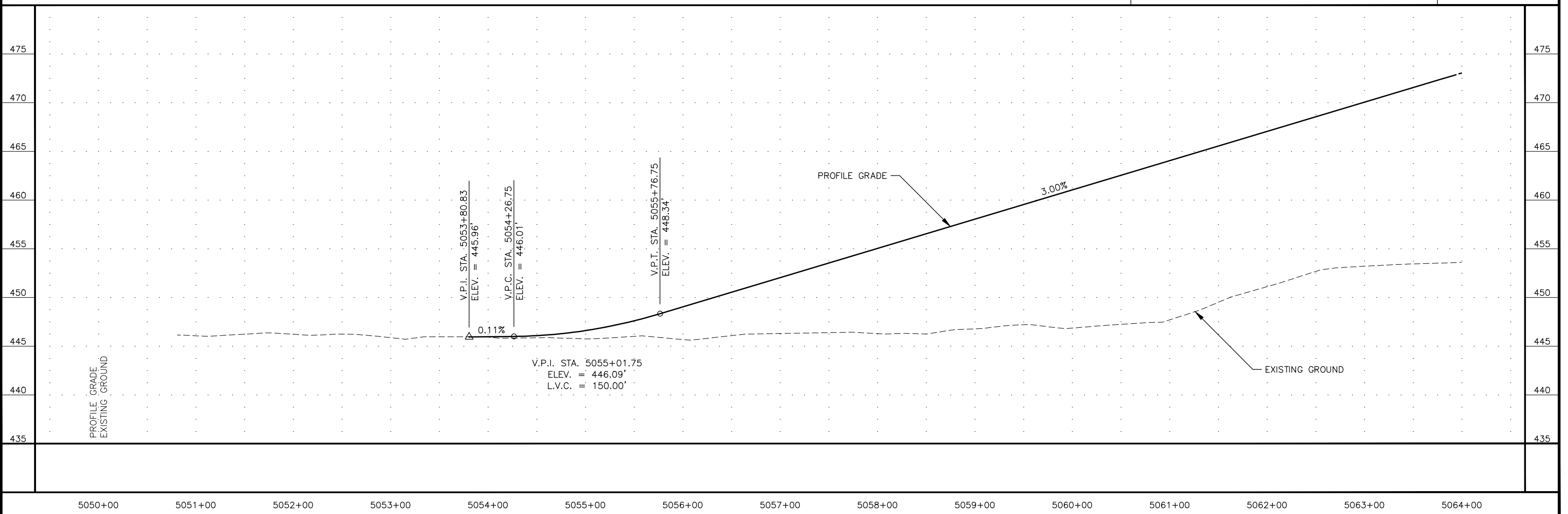
BEGIN "SP"
 "SP" STA. 5050+81.15
 N 188736.9036
 E 687494.8182

BEGIN "SP" CONSTRUCTION
 "SP" STA. 5053+80.83
 N 188606.6782
 E 687764.7320



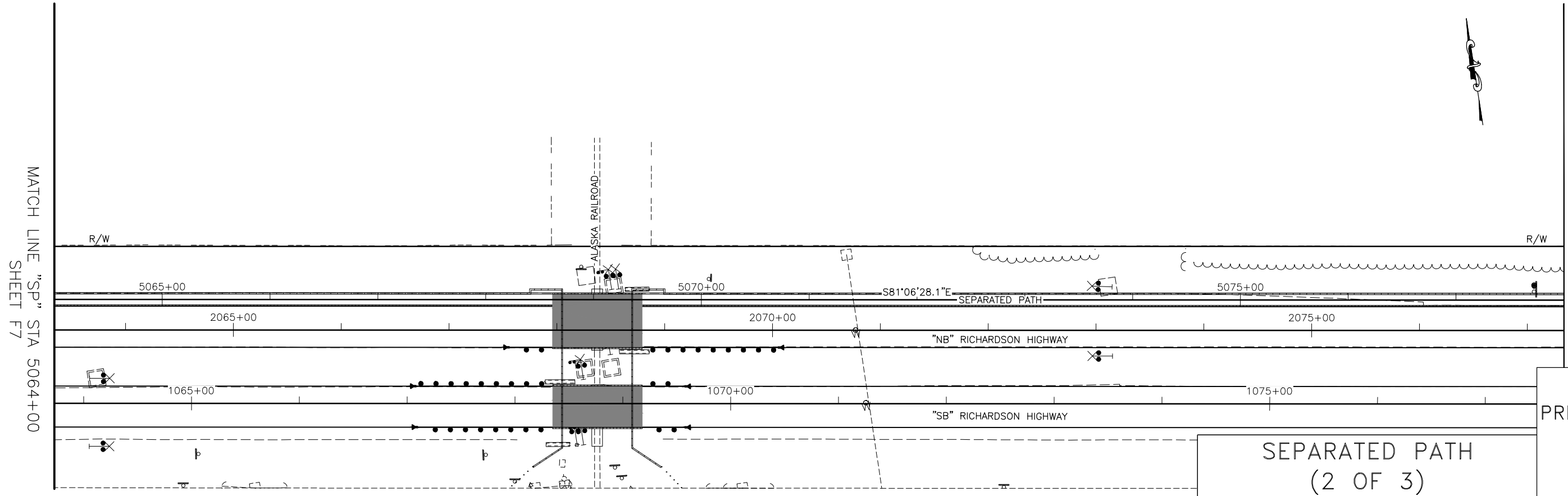
PRELIMINARY
 MARCH
 2021

SEPARATED PATH
 (1 OF 3)



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
 C:\pwworkdir\user001\work\053776\1395104\60734_F7_P1P-F7_Tue_Mar/23/21 10:27am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F8	F9

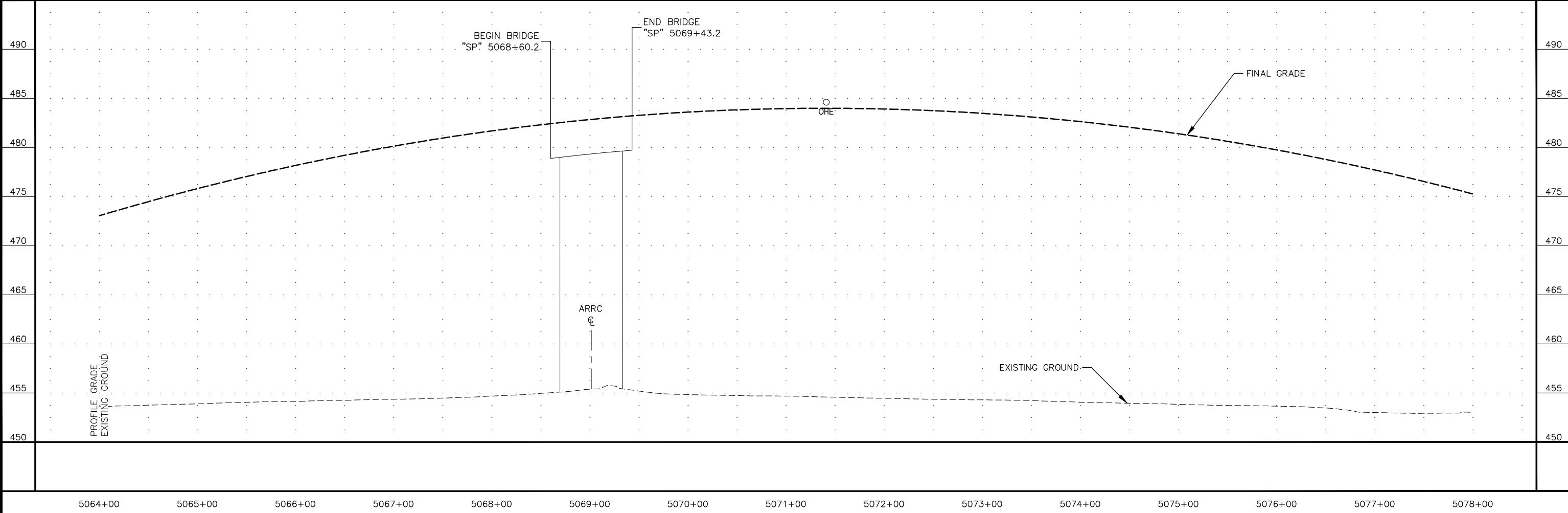


MATCH LINE "SP" STA 5064+00
SHEET F7

MATCH LINE "SP" STA 5078+00
SHEET F9

PRELIMINARY
MARCH
2021

SEPARATED PATH
(2 OF 3)



PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200
C:\pwworkdir\user001\work\001\4055776\1395104\60734_F8_P1P-F8_Tue_Mar/23/21 10:27am

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0A24033/Z607340000	2020	F9	F9

P.I. STA. 5081+07.41
 N = 188,058.2036
 E = 690,427.8526
 Δ = 002°45'42.3"
 T = 24.30'
 L = 48.59'
 R = 1,008.00'

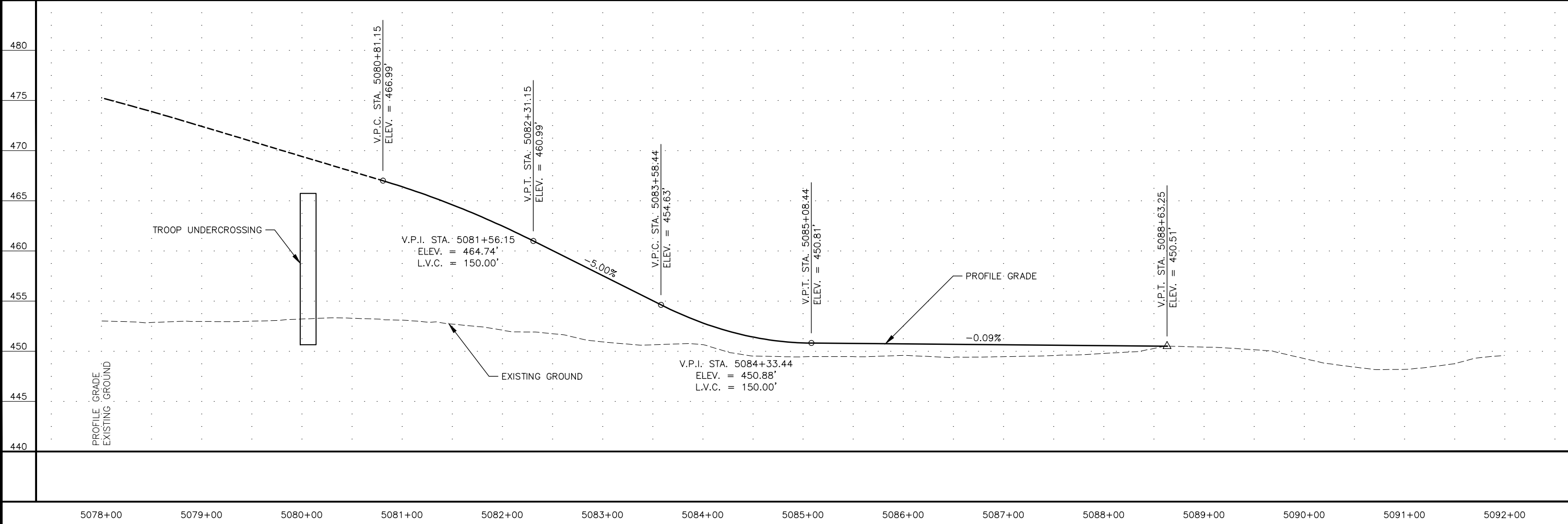
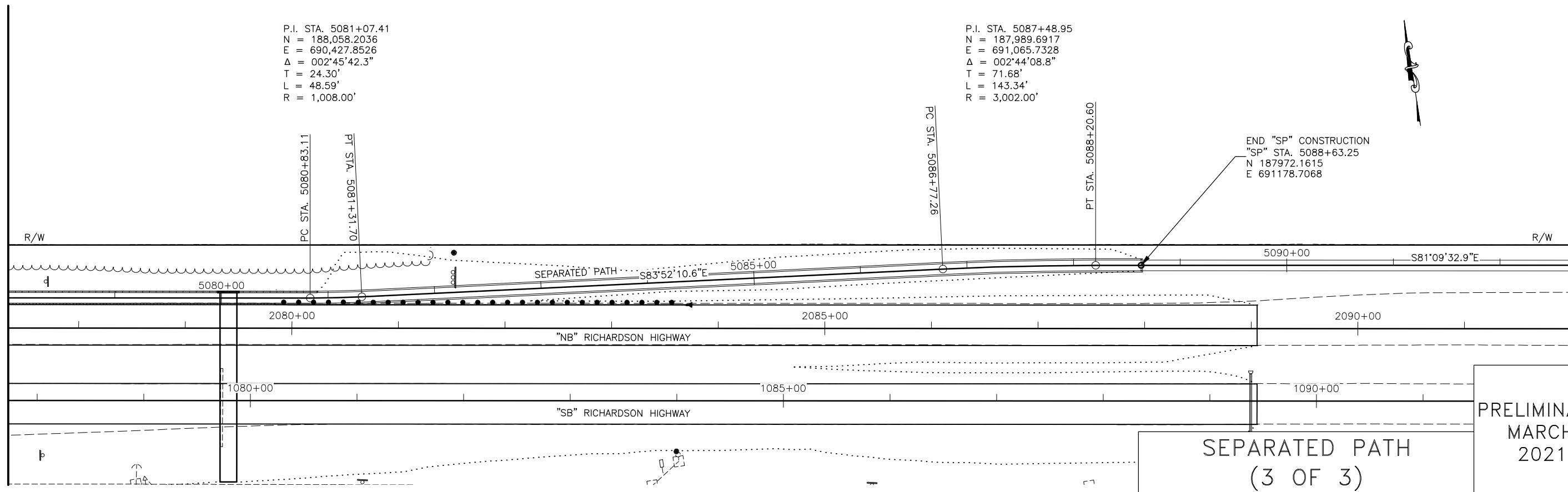
P.I. STA. 5087+48.95
 N = 187,989.6917
 E = 691,065.7328
 Δ = 002°44'08.8"
 T = 71.68'
 L = 143.34'
 R = 3,002.00'

END "SP" CONSTRUCTION
 "SP" STA. 5088+63.25
 N 187972.1615
 E 691178.7068

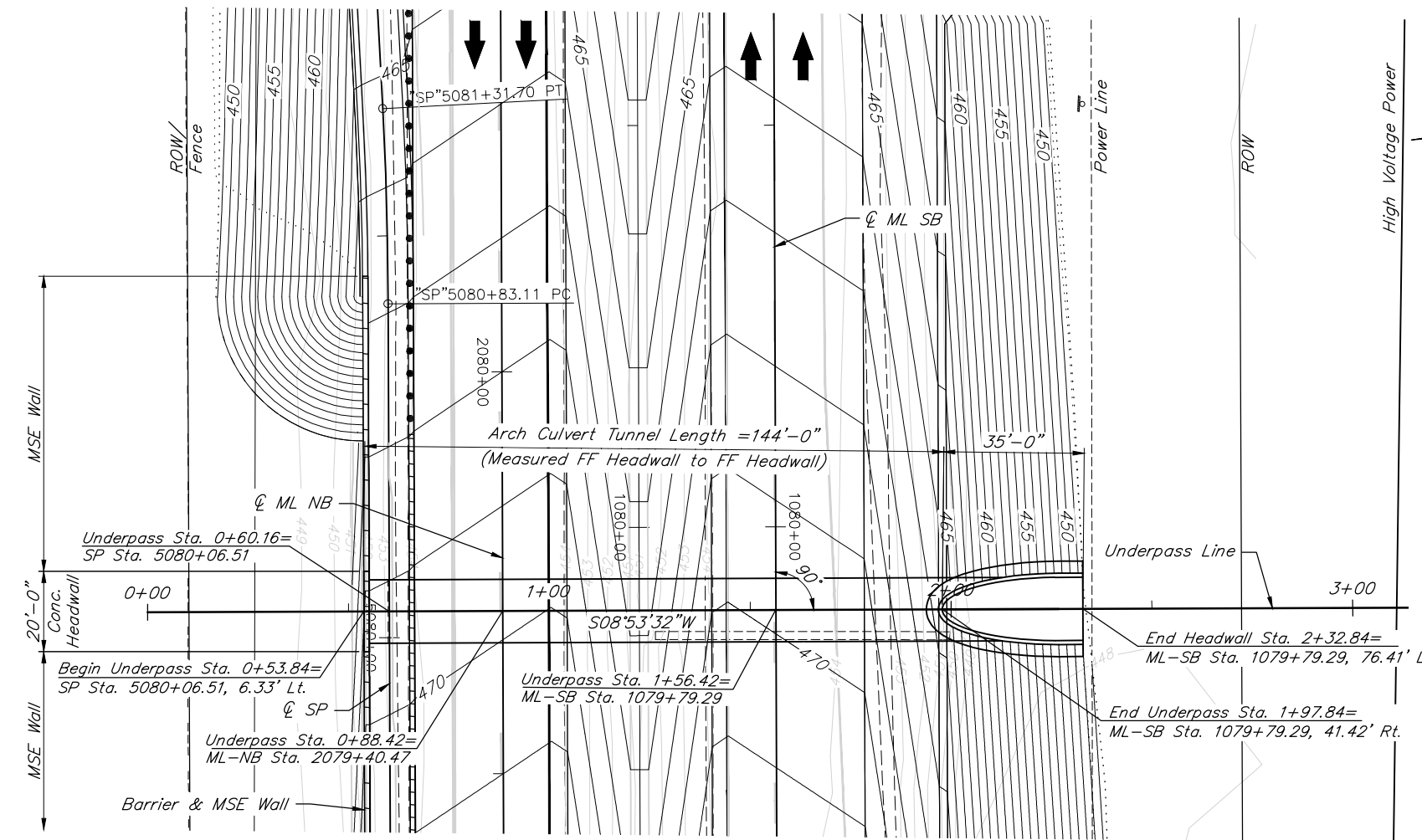
MATCH LINE "SP" STA 5078+00
SHEET F8

PRELIMINARY
MARCH
2021

SEPARATED PATH
(3 OF 3)

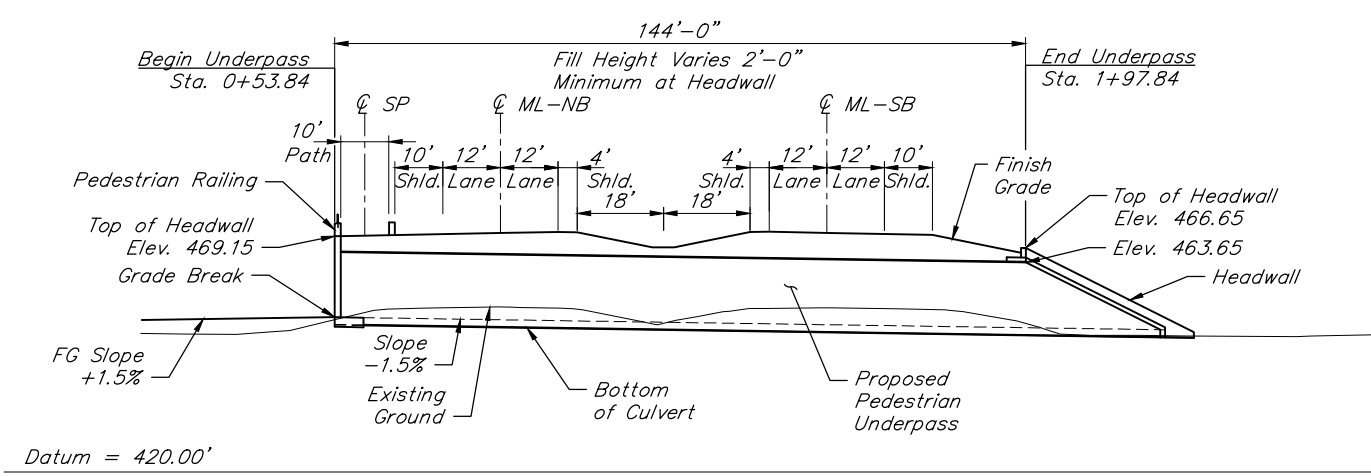
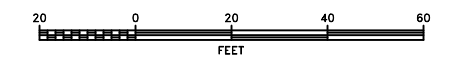


STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	X / X	2021	X	X

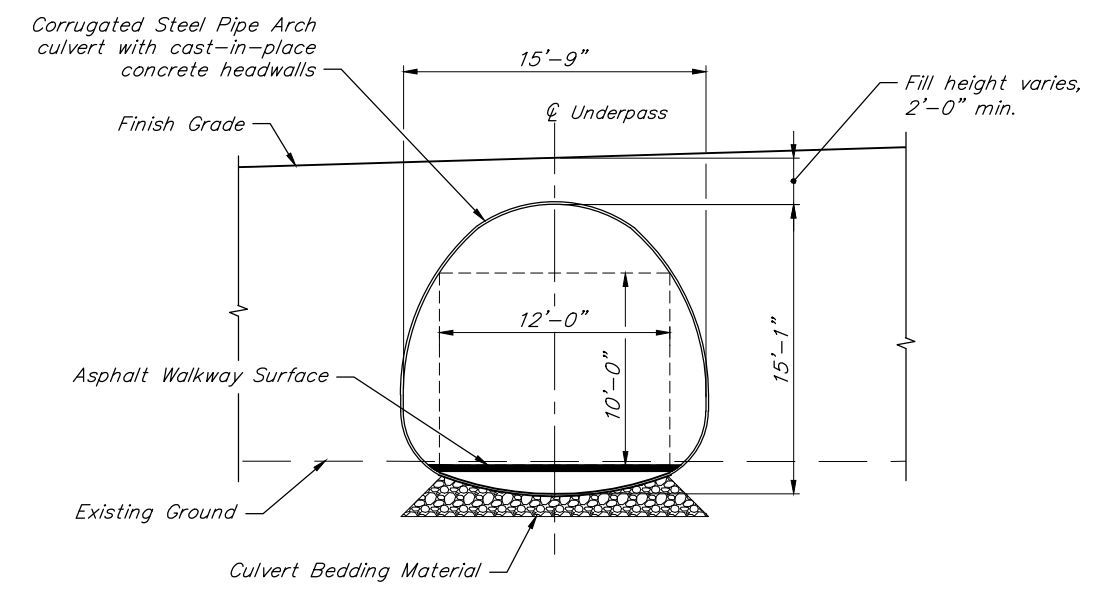
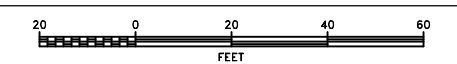


- GENERAL NOTES:**
- Design per AASHTO LRFD Bridge Design Specifications – 9th Edition, Seismic Design per AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2011 Edition.
 - Live Load: HL-93
Earth Load – 125 pcf moist unit weight vertical earth load

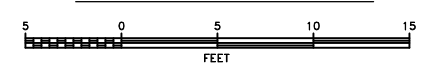
PEDESTRIAN UNDERPASS PLAN



PEDESTRIAN UNDERPASS ELEVATION



TYPICAL SECTION




PLANS DEVELOPED BY: CH2M HILL, INC
 ADDRESS: 949 E. 36TH AVENUE, SUITE 500, ANCHORAGE, AK 99508
 PHONE: (907) 762-1500
 CERTIFICATE OF AUTHORIZATION NUMBER: AECC6666
 PW_429410_XR-60734-PEDPRO2.dwg Mar 23, 2021 - 11:15am

DESIGNED BY: <i>Ben Romanaggi</i>	CHECKED: <i>Gary Conner</i>
DRAWN BY: <i>Daryl Monk</i>	CHECKED:
QUANTITIES BY:	CHECKED:

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
 AND PUBLIC FACILITIES
 BRIDGE SECTION

PRELIMINARY
 MARCH
 2021

RICHARDSON HIGHWAY
PEDESTRIAN UNDERPASS LAYOUT

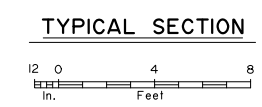
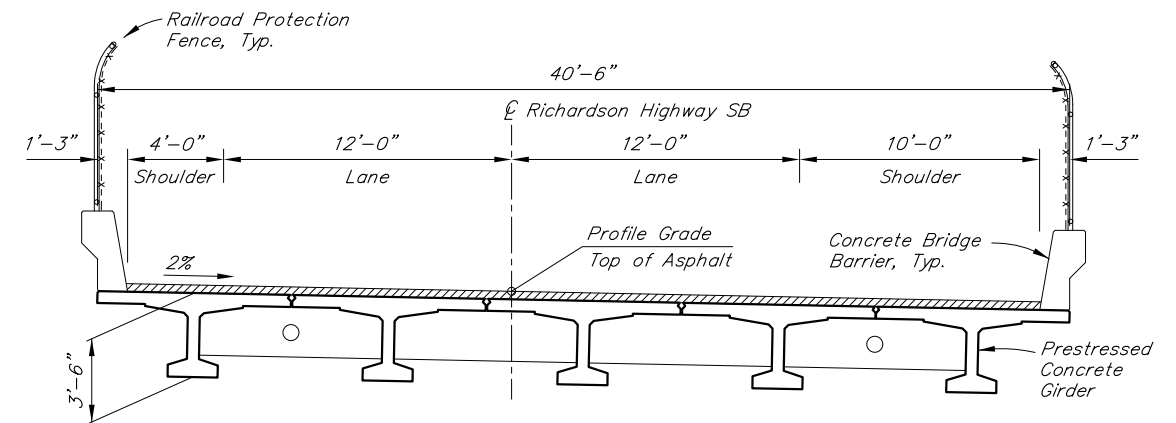
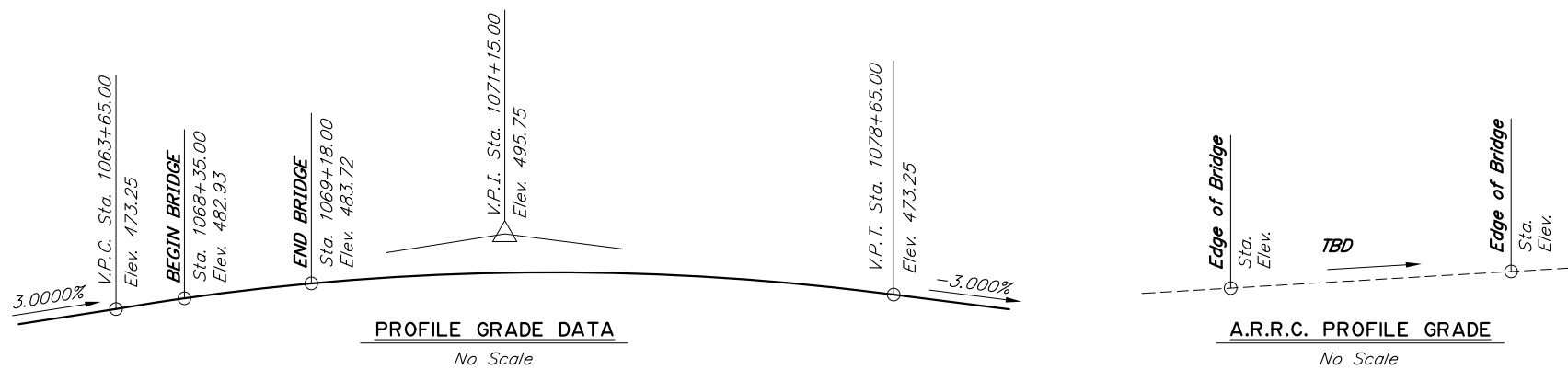


BRIDGE NO. _____
 DWG. NO. S-1

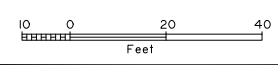
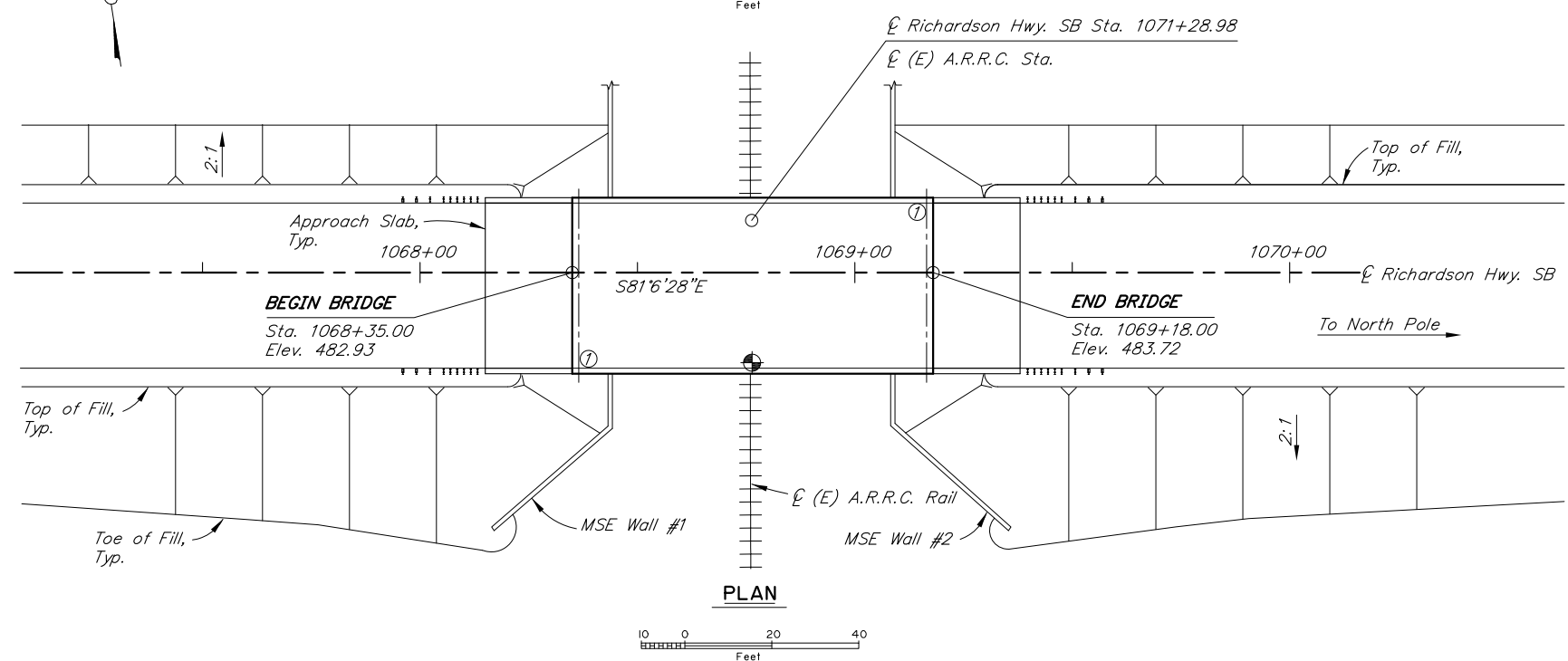
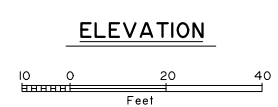
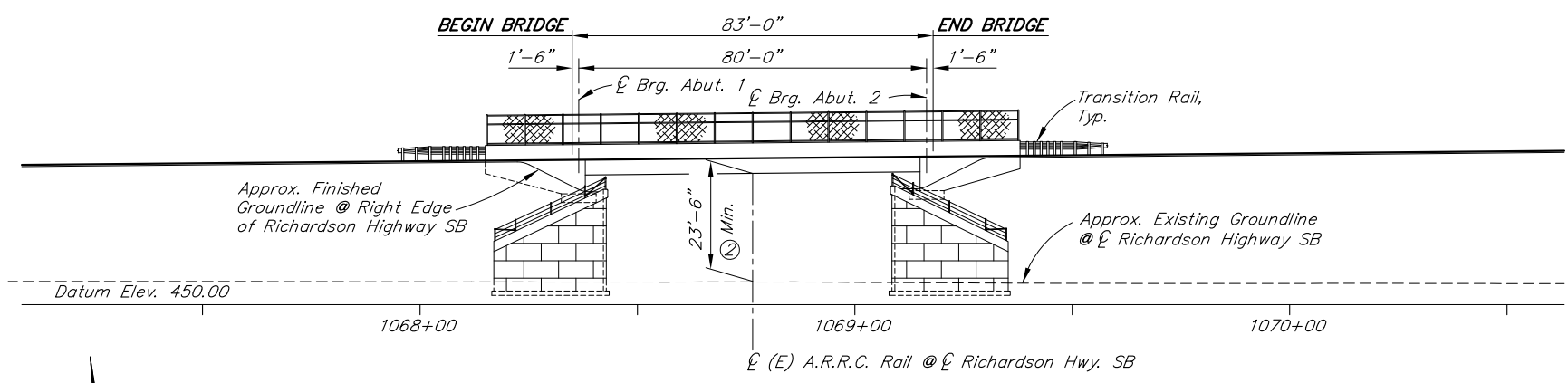
APPENDIX F

PRELIMINARY BRIDGE PLANS

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2020	N1	TtlShts



BRIDGE DRAWING INDEX	
TITLE	DWG. NO.
GENERAL LAYOUT	1
SITE PLAN	2
RETAINING WALL LAYOUT	3
RETAINING WALL DETAILS	4
ABUTMENT 1	5
ABUTMENT 2	6
ABUTMENT DETAILS	7
WINGWALLS	8
FRAMING PLAN AND TYPICAL SECTION	9
GIRDERS	10
GIRDER DETAILS	11
APPROACH SLABS	12
CONCRETE BRIDGE BARRIER	13
RAILROAD PROTECTION FENCE	14
THREE BEAM TRANSITION	15
LOG OF TEST BORINGS	16-




PRELIMINARY PLAN

- ① Approximate location of Bridge Number Plate.
- ② Vertical clearance between Top of rail and lowest girder.
- ⊕ Minimum vertical clearance.

DESIGNED BY: Designer	CHECKED BY: Checker	LAYOUT BY: Designer	CHECKED BY: Checker
DRAWN BY: Drafter	CHECKED BY: Designer	SPECIFICATIONS BY: DESIGNER	P S & E COMPARED: Checker
QUANTITIES BY: Designer	CHECKED BY: Checker	APPROVAL RECOMMENDED BY:	Engineer

STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES**
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

**RICHARDSON HIGHWAY OVERHEAD
MP 359 SOUTHBOUND**
RICHARDSON HIGHWAY
GENERAL LAYOUT


BRIDGE NO. 2366
DWG. NO. 1

R:\cadd\Rich_359\2366-GENERAL.Fri, Mar/05/21 11:38am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2020	N2	TtIShts

GENERAL NOTES

DESIGN:..... AASHTO LRFD Bridge Design Specifications, 2020 Edition, with latest interim specifications.
 Seismic design per AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2011 with latest interim revisions.

LIVE LOAD:..... HL-93

DEAD LOAD:..... Includes 50 psf for all wearing surfaces.

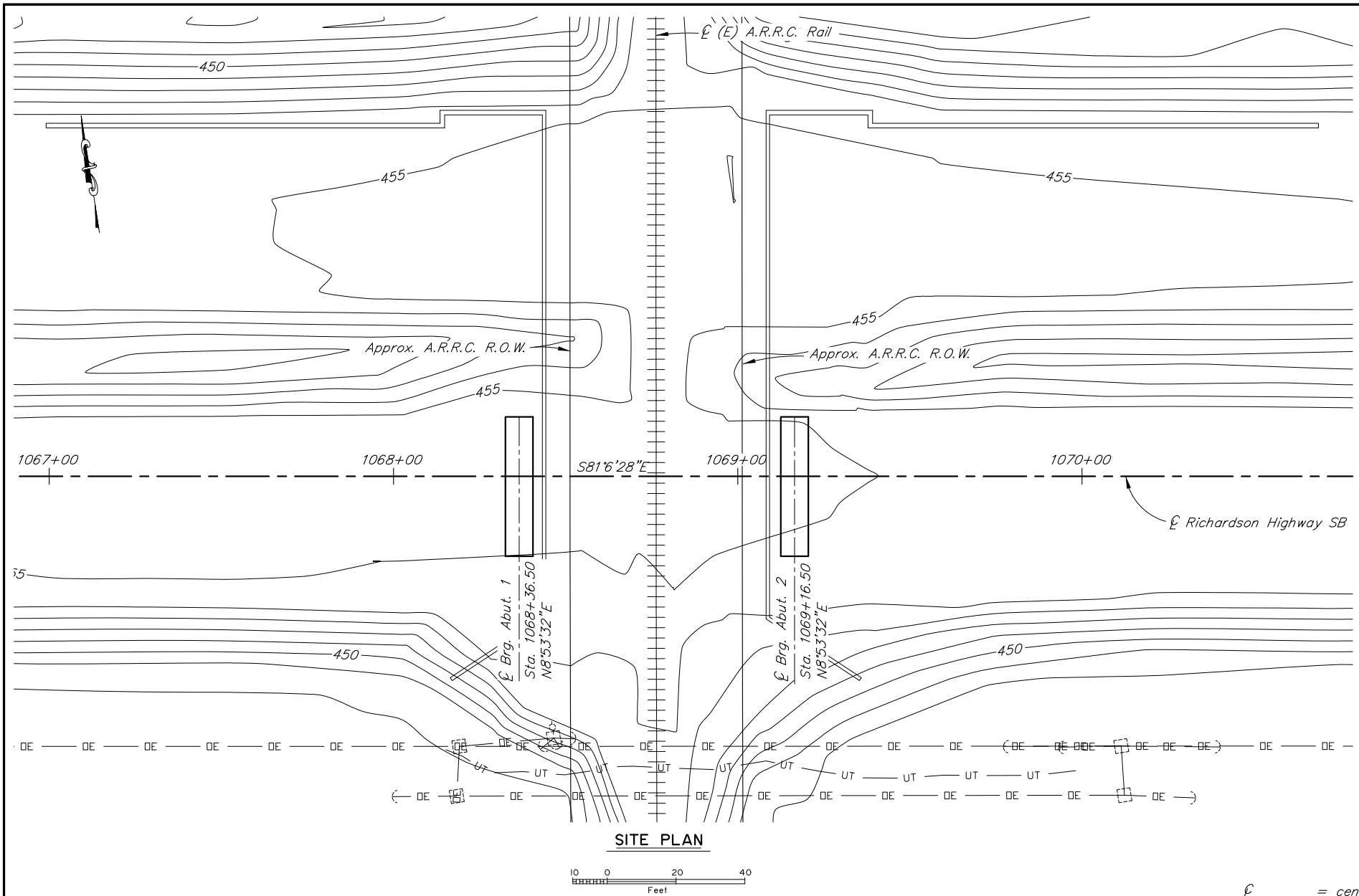
SEISMIC PARAMETERS:..... PGA = 0.28
 S_s = 0.65
 S_i = 0.21
 Site Class = C
 Liquefaction Potential = Low
 AASHTO 7% probability of exceedance in 75 years.

REINFORCEMENT:..... ASTM A706, Grade 60, F_y = 60,000 psi
 ASTM A970 Headed bars, Class HA.
 Space reinforcement evenly unless otherwise noted.

PRESTRESSED CONCRETE:..... See Girder Dwg.

CONCRETE:..... Class A Concrete unless otherwise noted, f'c = 4,000 psi

STRUCTURAL STEEL:..... ASTM A709, Grade 36T3, F_y = 36,000 psi
 Galvanize structural steel in accordance with AASHTO M111 unless noted otherwise.



LOCATION	STRENGTH I FACTORED LOAD (KSF)	NOMINAL BEARING RESISTANCE (KSF)	BEARING RESISTANCE FACTOR, φ
Abutment 1			0.45
Abutment 2			0.45

ITEM NO.	ITEM	PAY UNIT	ESTIMATING UNIT	SUBST.	SUPERST.	TOTAL QUANTITY
203.0003.0000	Unclassified Excavation	CY	CY			
205.0006.0000	Structural Fill	CY	CY	528	---	528
501.0001.0000	Class A Concrete	LS	CY	110.1	25.6	135.7
501.0007.0000	Precast Concrete Member, 81'-6" Decked Bulb-Tee	EA	EA	---	7	7
503.0001.0000	Reinforcing Steel	LS	LBS	14,170	---	14,170
503.0002.0000	Epoxy-Coated Reinforcing Steel	LS	LBS	---	3,380	3,380
507.0004.0000	Concrete Bridge Barrier Railroad Protection Fence	LF	LF	---	246.0	246.0
507.000X.0003	Cable Safety Railing	LF	LF	---	180	180
508.0001.0000	Waterproofing Membrane, Spray-Applied	LS	SF	---	3,154	3,154
511.0001.0000	Mechanically Stabilized Earth Wall	SF	SF	4,988	---	4,988
606.0016.0000	Transition Rail	EA	EA	---	4	4

Item numbers are for reference only. Quantities shown are not necessarily the pay quantities nor the total quantity of the particular item.

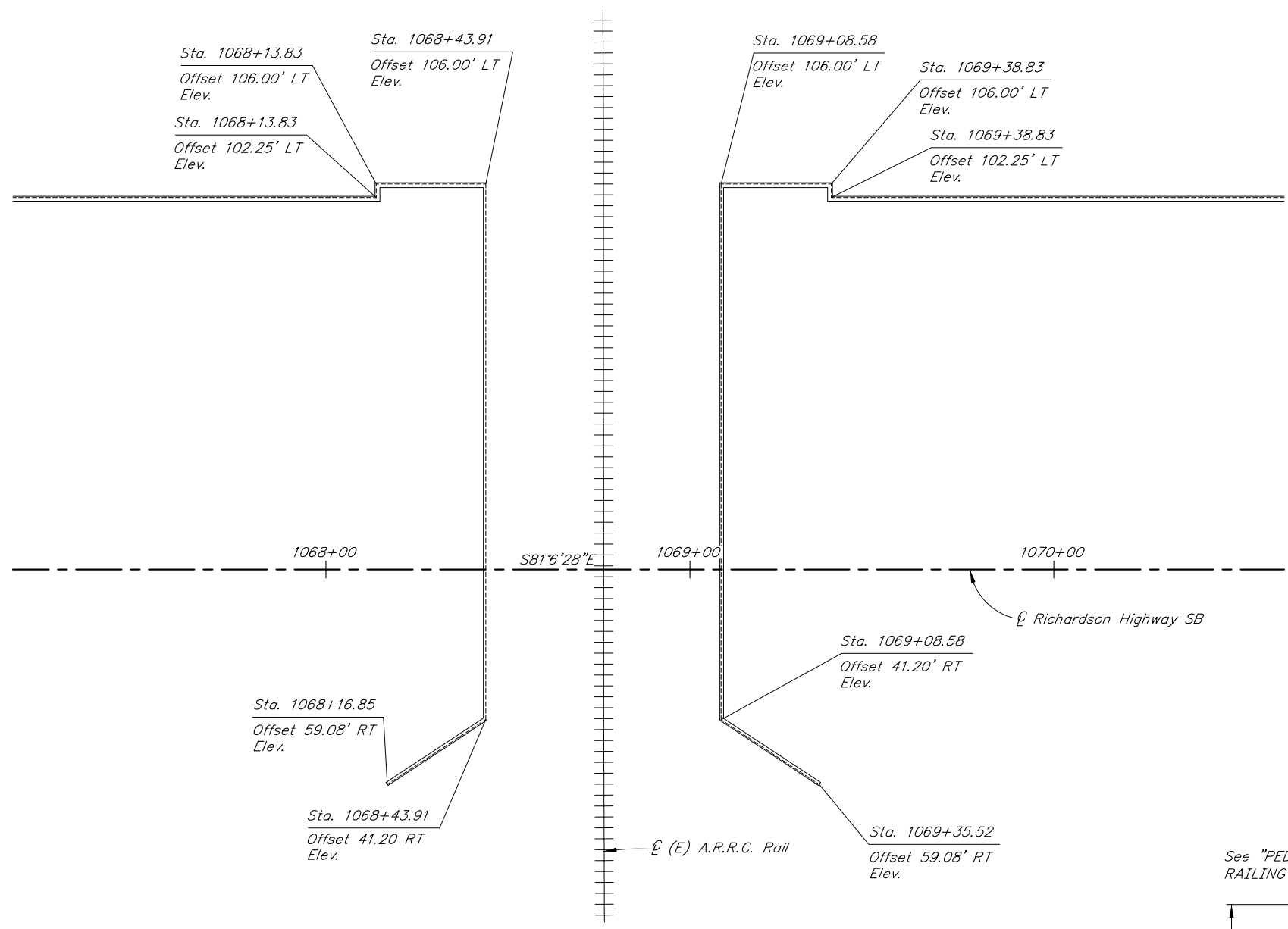
ABBREVIATIONS:

- ℄ = centerline
- ℄ = plate
- & = and
- @ = at
- ∅ = diameter
- ± = approximate
- Abut. = abutment
- Approx. = approximate
- A.R.R.C. = Alaska rail road company
- b.f. = back/dirt face
- bot. = bottom
- Br. = bridge
- btwn. = between
- Brg. = bearings
- C.G. = center of gravity
- C.I.P. = cast in place
- CJP = complete joint penetration
- Clr. = clear, clearance
- CMP = corrugated metal pipe
- CY = cubic yard
- Dia. = diameter
- Dwg. = drawing
- E = expansion
- (E) = existing
- EA = each
- Elev. = elevation
- e.f. = each face
- e.w. = each way
- Ext. = exterior
- F = fixed
- f.f. = front/air face
- f'c = specified concrete compressive strength
- f'ci = specified concrete compressive strength at release
- Ft. = feet
- Fy = yield stress
- Galv. = galvanize
- H.S. = high strength
- Hwy. = highway
- ID = internal diameter
- Int. = interior
- Jt. = joint
- K = kips
- ksf = 1000 pounds per square foot
- ksi = 1000 pounds per square inch
- LBS or lb = pounds
- LF = linear foot
- LS = lump sum
- LT. = left
- max. = maximum
- min. = minimum
- MSE = mechanically stabilized earth
- n.f. = near face
- No. = number
- o.c. = on center
- O.H.W. = ordinary high water
- OE — OE — = overhead electrical line
- pcf = pounds per cubic foot
- psf = pounds per square foot
- psi = pounds per square inch
- R = radius
- R.O.W. = right of way
- RT. = right
- Rd. = road
- spcs. = space, spaces
- Sta. = station
- SF = square feet
- SY = square yard
- Std. = standard
- Symm. = symmetric
- UT — UT — = underground telephone line
- Typ. = typical
- UT = ultrasonic testing
- V.P.C. = point of vertical curve
- V.P.I. = point of vertical intersection
- V.P.T. = point of vertical tangent
- w/ = with

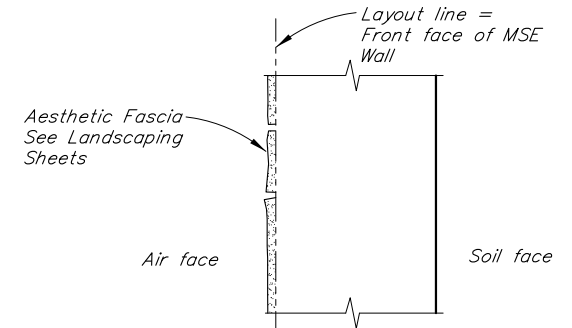
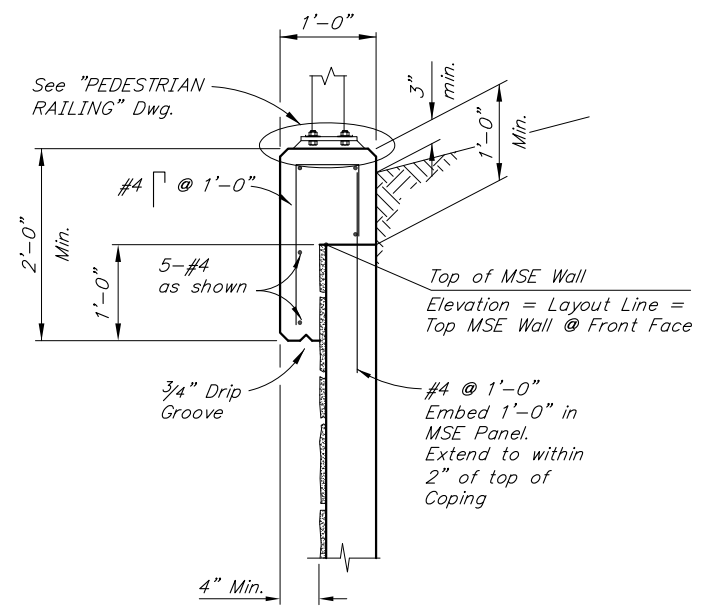
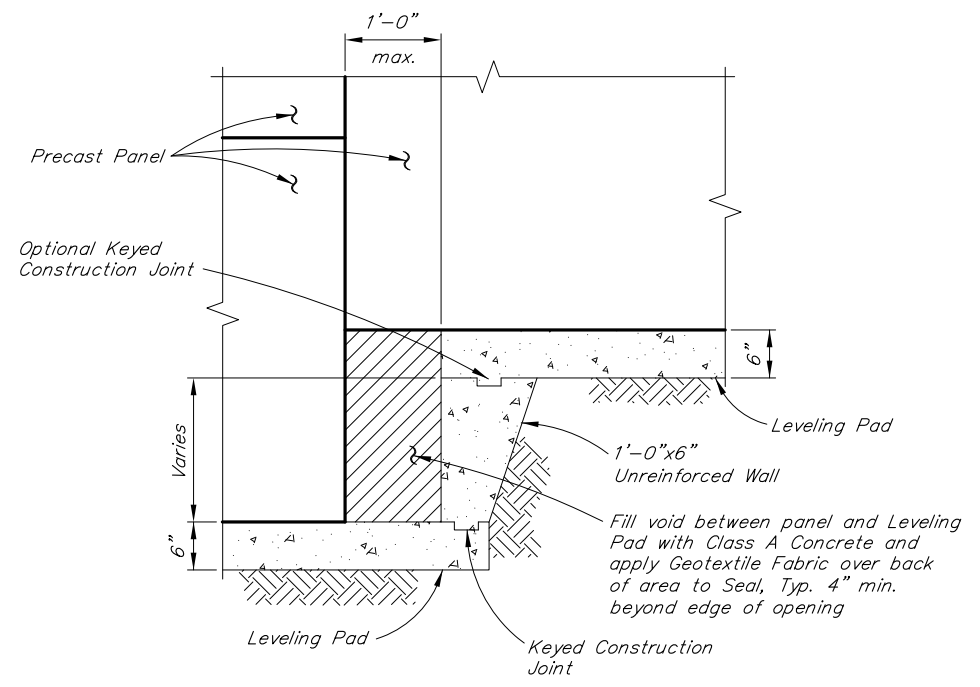
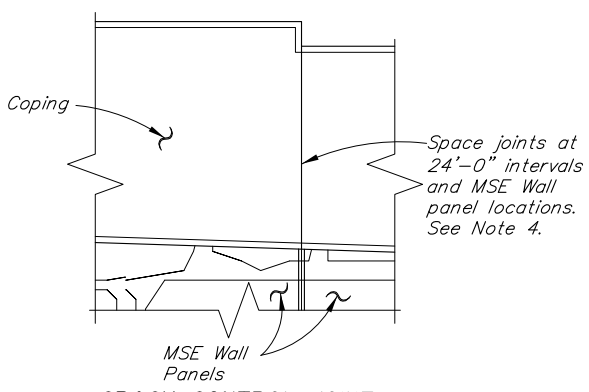
DESIGNED BY: Designer	CHECKED: Checker	FOUNDATIONS REVIEWED BY: Engineer	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION 3132 Channel Drive Juneau, Alaska 99801 907-465-2975	RICHARDSON HIGHWAY OVERHEAD MP 359 SOUTHBOUND RICHARDSON HIGHWAY SITE PLAN	 BRIDGE NO. 2366 DWG. NO. 2
DRAWN BY: Drafter	CHECKED: Designer	PRELIMINARY PLAN			
QUANTITIES BY: Designer	CHECKED: Checker				

R:\cadd\Rich 359\2366-SITE PLAN Fr. Mar/05/21 11:38am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2021	N3	TtiShts



MSE WALL LAYOUT



- NOTES:**
- Cover all joints at wingwalls on back side of walls with geotextile fabric. Apply adhesive coating on concrete only and not on geotextile fabric. Do not apply adhesive within 2" of joints.
 - See "WEAKENED PLANE JOINT" on "SHEET PILE WALL DETAILS" Dwg for joint detail. Install on exposed surfaces only.
 - Maintain Layout Line under approach slabs. See "SIDEWALK AND BARRIER DETAILS".

R:\cadd\Rich 359\2366-WALL LAYOUT.Fri, Mar/05/21 11:38am

DESIGNED BY: Designer	CHECKED: Checker
DRAWN BY: Sam Sallie	CHECKED: Designer
QUANTITIES BY: Designer	CHECKED: Checker

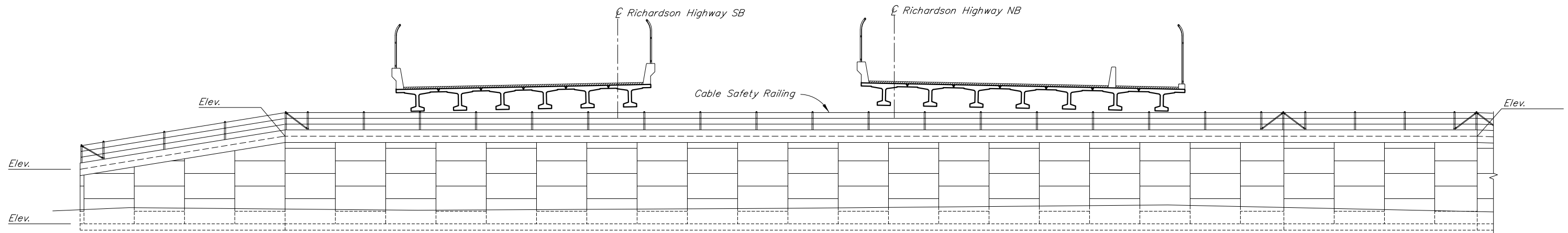
PRELIMINARY PLAN

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

RICHARDSON HIGHWAY OVERHEAD
MP 359 SOUTHBOUND
RICHARDSON HIGHWAY
RETAINING WALL LAYOUT

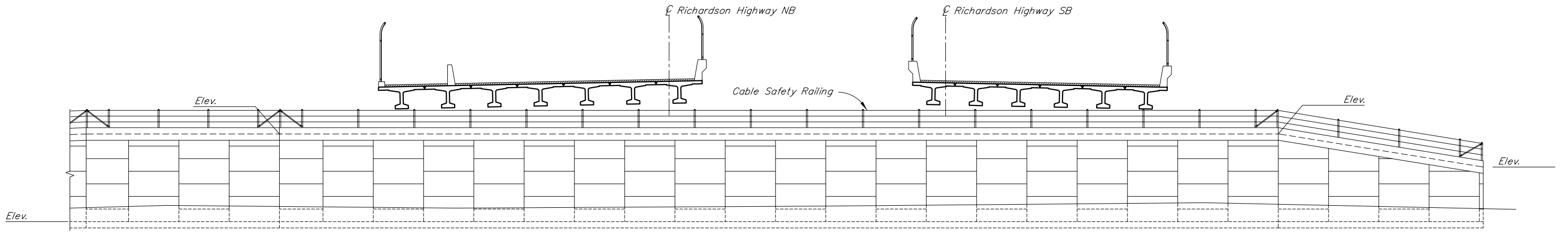
BRIDGE NO. 2366
DWG. NO. 3

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2021	N4	TtlShts



DEVELOPED ELEVATION - NEAR END MSE WALL

(Looking Back on Station)



DEVELOPED ELEVATION - FAR END MSE WALL

(Looking Ahead on Station)



R:\cadd\Rich 359\2366-WALL DETAILS Fri, Mar/05/21 11:38am

DESIGNED BY:	Designer	CHECKED:	Checker
DRAWN BY:	Sam Sollie	CHECKED:	Designer
QUANTITIES BY:	Designer	CHECKED:	Checker

PRELIMINARY PLAN

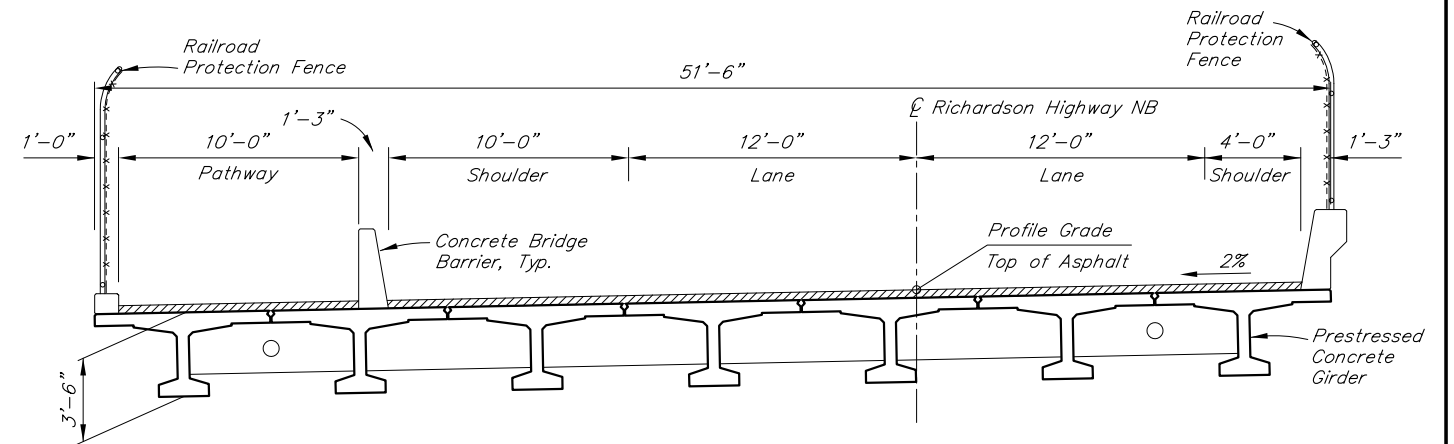
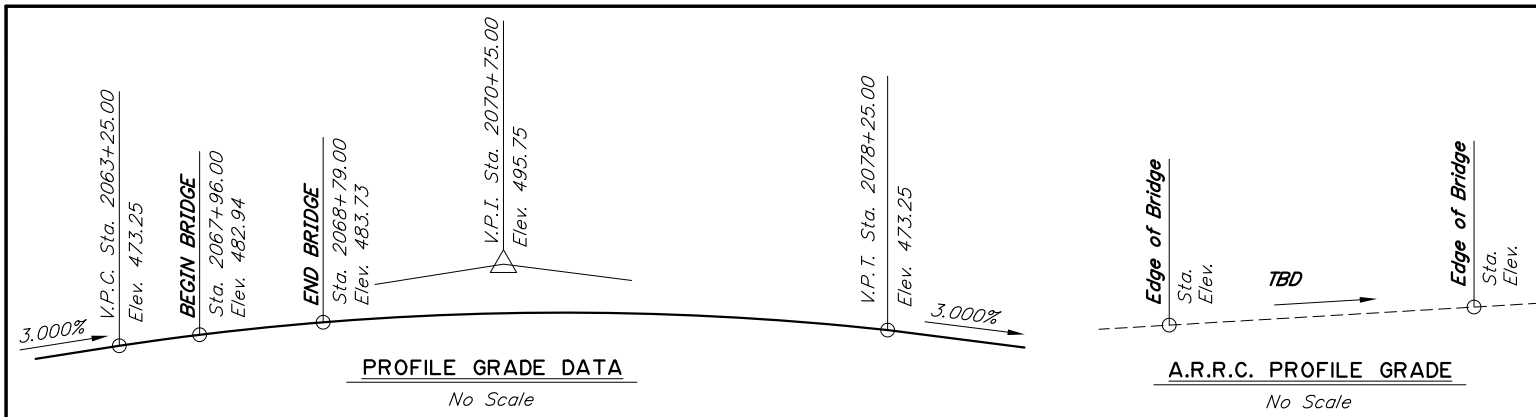
STATE OF ALASKA
**DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES**
BRIDGE SECTION
3132 Channel Drive
Juneau, Alaska 99801
907-465-2975

**RICHARDSON HIGHWAY OVERHEAD
MP 359 SOUTHBOUND**
RICHARDSON HIGHWAY
RETAINING WALL DETAILS

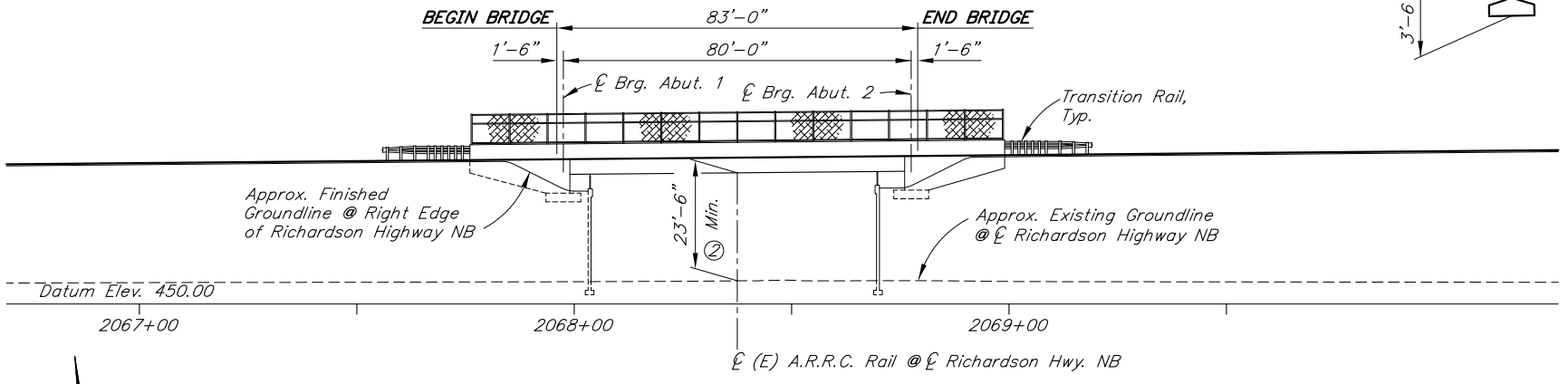


BRIDGE NO. 2366
DWG. NO. 4

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2020	N1	TtlShts

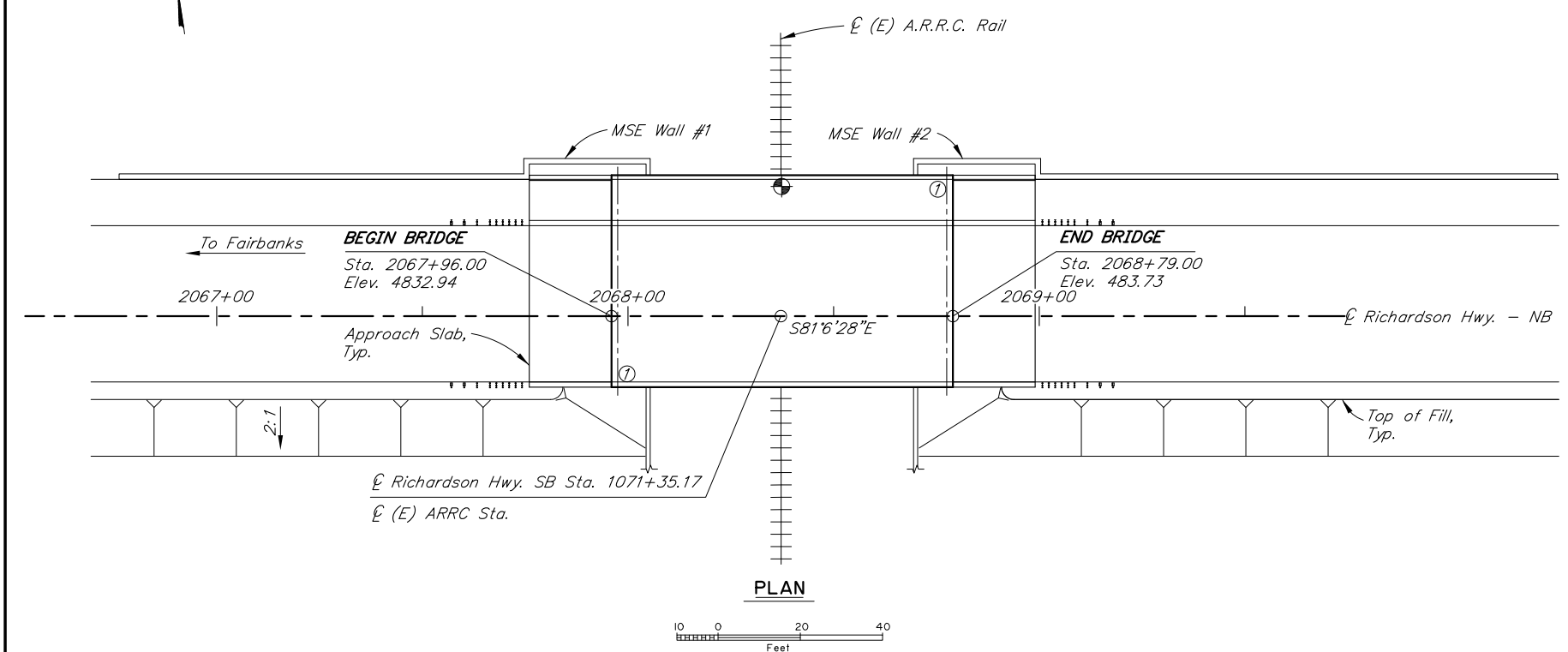


TYPICAL SECTION
 12 0 4 8
 In. Feet



ELEVATION
 10 0 20 40
 Feet

BRIDGE DRAWING INDEX	
TITLE	DWG. NO.
GENERAL LAYOUT	1
SITE PLAN	2
ABUTMENT 1	3
ABUTMENT 2	4
ABUTMENT DETAILS	5
WINGWALLS	6
FRAMING PLAN AND TYPICAL SECTION	7
GIRDERS	8
GIRDER DETAILS	9
APPROACH SLABS	10
CONCRETE BRIDGE BARRIER	11
RAILROAD PROTECTION FENCE	12
THREE BEAM TRANSITION	13
LOG OF TEST BORINGS	14.



PLAN
 10 0 20 40
 Feet


PRELIMINARY PLAN

- ① Approximate location of Bridge Number Plate.
- ② Vertical clearance between Top of rail and lowest girder.
- ⊕ Minimum vertical clearance.

DESIGNED BY: Designer	CHECKED BY: Checker	LAYOUT BY: Designer	CHECKED BY: Checker
DRAWN BY: Drafter	CHECKED BY: Designer	SPECIFICATIONS BY: DESIGNER	P S & E COMPARED: Checker
QUANTITIES BY: Designer	CHECKED BY: Checker	APPROVAL RECOMMENDED BY:	Engineer

STATE OF ALASKA
 DEPARTMENT OF TRANSPORTATION
 AND PUBLIC FACILITIES
 BRIDGE SECTION
 3132 Channel Drive
 Juneau, Alaska 99801
 907-465-2975

**RICHARDSON HIGHWAY OVERHEAD
 MP 359 NORTHBOUND
 RICHARDSON HIGHWAY
 GENERAL LAYOUT**


 BRIDGE NO. 2367
 DWG. NO. 1

R:\cadd\Rich_359\2367-GENERAL.Fri, Mar/05/21 11:41am

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	Z607340000	2020	N2	TtIShts

GENERAL NOTES

DESIGN:..... AASHTO LRFD Bridge Design Specifications, 2020 Edition, with latest interim specifications.

Seismic design per AASHTO Guide Specifications for LRFD Seismic Bridge Design, 2011 with latest interim revisions.

LIVE LOAD:..... HL-93

DEAD LOAD:..... Includes 50 psf for all wearing surfaces.

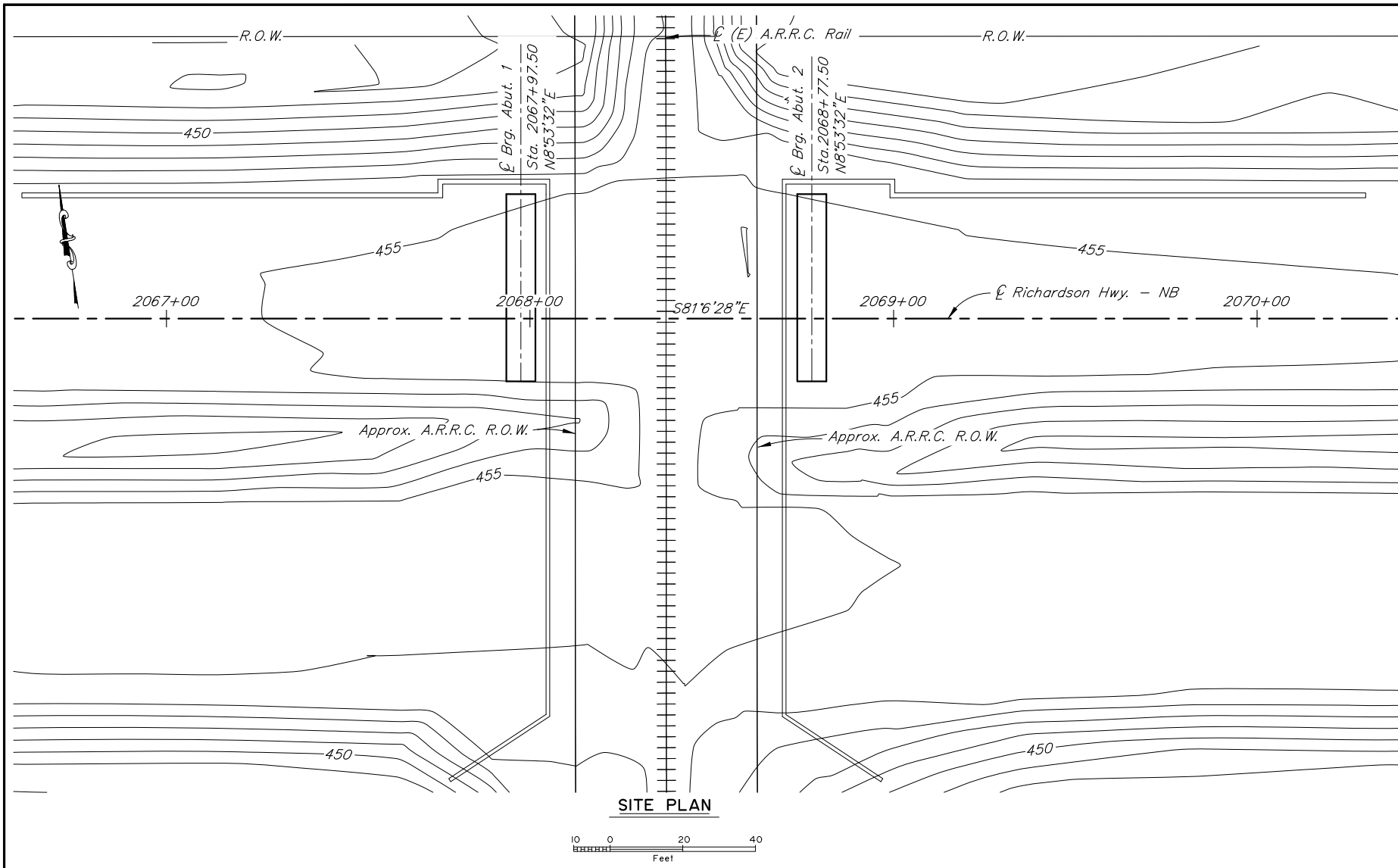
SEISMIC PARAMETERS:..... PGA = 0.28
 S_s = 0.65
 S₁ = 0.21
 Site Class = C
 Liquefaction Potential = Low
 AASHTO 7% probability of exceedance in 75 years.

REINFORCEMENT:..... ASTM A706, Grade 60, F_y = 60,000 psi
 ASTM A970 Headed bars, Class HA.
 Space reinforcement evenly unless otherwise noted.

PRESTRESSED CONCRETE:..... See Girder Dwg.

CONCRETE:..... Class A Concrete unless otherwise noted, f'c = 4,000 psi

STRUCTURAL STEEL:..... ASTM A709, Grade 36T3, F_y = 36,000 psi
 Galvanize structural steel in accordance with AASHTO M111 unless noted otherwise.



SITE PLAN
 0 20 40
 Feet

LOCATION	STRENGTH I FACTORED LOAD (KSF)	NOMINAL BEARING RESISTANCE (KSF)	BEARING RESISTANCE FACTOR, φ
Abutment 1			0.45
Abutment 2			0.45

ABBREVIATIONS:

- ℄ = centerline
- ℄ = plate
- & = and
- @ = at
- ∅ = diameter
- ± = approximate
- Abut. = abutment
- Approx. = approximate
- A.R.R.C. = Alaska rail road company
- b.f. = back/dirt face
- bot. = bottom
- Br. = bridge
- btwn. = between
- Brg. = bearings
- C.G. = center of gravity
- C.I.P. = cast in place
- CJP = complete joint penetration
- Clr. = clear, clearance
- CMP = corrugated metal pipe
- CY = cubic yard
- Dia. = diameter
- Dwg. = drawing
- E = linear foot
- (E) = existing
- EA = each
- Elev. = elevation
- e.f. = each face
- e.w. = each way
- Ext. = exterior
- F = fixed
- f.f. = front/air face
- f'c = specified concrete compressive strength
- f'ci = specified concrete compressive strength at release
- Ft. = feet
- Fy = yield stress
- Galv. = galvanize
- H.S. = high strength
- Hwy. = highway
- ID = internal diameter
- Int. = interior
- Jt. = joint
- K = kips
- ksf = 1000 pounds per square foot
- ksi = 1000 pounds per square inch
- LBS or lb = pounds
- LF = linear foot
- LS = lump sum
- LT. = left
- max. = maximum
- min. = minimum
- MSE = mechanically stabilized earth
- n.f. = near face
- No. = number
- o.c. = on center
- O.H.W. = ordinary high water
- pcf = pounds per cubic foot
- psf = pounds per square foot
- psi = pounds per square inch
- R = radius
- R.O.W. = right of way
- RT. = right
- Rd. = road
- spcs. = space, spaces
- Sta. = station
- SF = square feet
- SY = square yard
- Std. = standard
- Symm. = symmetric
- Typ. = typical
- UT = ultrasonic testing
- V.P.C. = point of vertical curve
- V.P.I. = point of vertical intersection
- V.P.T. = point of vertical tangent
- w/ = with

ITEM NO.	ITEM	PAY UNIT	ESTIMATING UNIT	SUBST.	SUPERST.	TOTAL QUANTITY
205.0006.0000	Structural Fill	CY	CY	651	---	651
501.0001.0000	Class A Concrete	LS	CY	132.0	31.4	163.4
501.0007.0000	Precast Concrete Member, 81'-6" Decked Bulb-Tee	EA	EA	---	7	7
503.0001.0000	Reinforcing Steel	LS	LBS	17,160	---	17,160
503.0002.0000	Epoxy-Coated Reinforcing Steel	LS	LBS	---	4,030	4,030
507.0002.0000	Pedestrian Railing Railroad Protection Fence	LF	LF	---	123.0	123.0
507.0004.0000	Concrete Bridge Barrier	LF	LF	---	123.0	123.0
507.0004.0000	Concrete Bridge Barrier Railroad Protection Fence	LF	LF	---	123.0	123.0
508.0001.0000	Waterproofing Membrane, Spray-Applied	LS	SF	---	3,964	3,964
606.0016.0000	Transition Rail	EA	EA	---	4	4

Item numbers are for reference only. Quantities shown are not necessarily the pay quantities nor the total quantity of the particular item.

DESIGNED BY: Designer	CHECKED: Checker	FOUNDATIONS REVIEWED BY: Engineer	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION 3132 Channel Drive Juneau, Alaska 99801 907-465-2975	RICHARDSON HIGHWAY OVERHEAD MP 359 NORTHBOUND RICHARDSON HIGHWAY SITE PLAN	 BRIDGE NO. 2367 DWG. NO. 2
PRELIMINARY PLAN					
DRAWN BY: Drafter	CHECKED: Designer				
QUANTITIES BY: Designer	CHECKED: Checker				

R:\cadd\Rich 359\2367-SITE PLAN Fr. Mar/05/21 11:41am

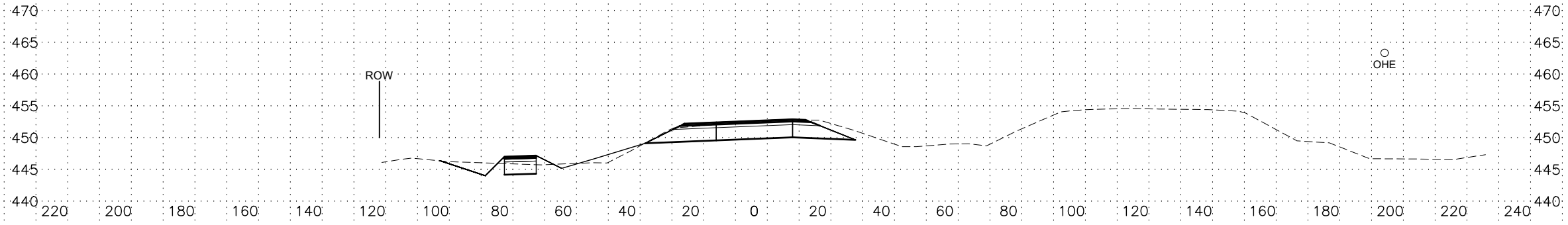
APPENDIX G

UTILITY CONFLICT LIST AND CROSS SECTIONS

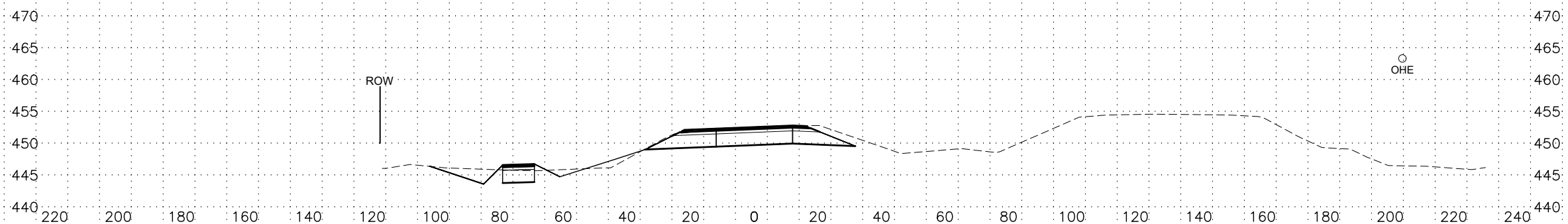
UTILITY CONFLICT TABLE

FR STA	TO STA	OFF	LENGTH (FT)	UTILITY	DESCRIPTION	CONFLICT	ADJ/REL/SAL	NOTES
1064+05		RT		ARRC	Railroad advanced warning signal	Railroad to be grade separated. Signal no longer required.	Salvage.	
1064+05		LT		ARRC	Railroad advanced warning signal	Railroad to be grade separated. Signal no longer required.	Salvage.	
1068+58		RT		ARRC	Railroad signal/gate	Railroad to be grade separated. Signal no longer required.	Salvage.	
1068+64		LT		ARRC	Railroad signal/gate	Railroad to be grade separated. Signal no longer required.	Salvage.	
2068+50		RT		ARRC	Railroad signal/gate	Railroad to be grade separated. Signal no longer required.	Salvage.	
2068+53		LT		ARRC	Railroad signal/gate	Railroad to be grade separated. Signal no longer required.	Salvage.	
2073+15		RT		ARRC	Railroad advanced warning signal	Railroad to be grade separated. Signal no longer required.	Salvage.	
2073+15		LT		ARRC	Railroad advanced warning signal	Railroad to be grade separated. Signal no longer required.	Salvage.	
1068+15	1069+98	RT	183	AC	Underground comm	Comm is adjacent to grade separation. Possible conflicts with roadway slopes.	Possible relocation.	
1061+21	1078+93	RT	1772	GVEA	Overhead electric	Overhead electric lines runs parallel on south side of roadway. Several pole conflicts with roadway slopes.	Possible relocation/adjust.	
1071+08	1071+44	LT/RT	244	GVEA	Overhead electric	Overhead electric line crosses the roadway near the railroad.	Relocate/adjust.	

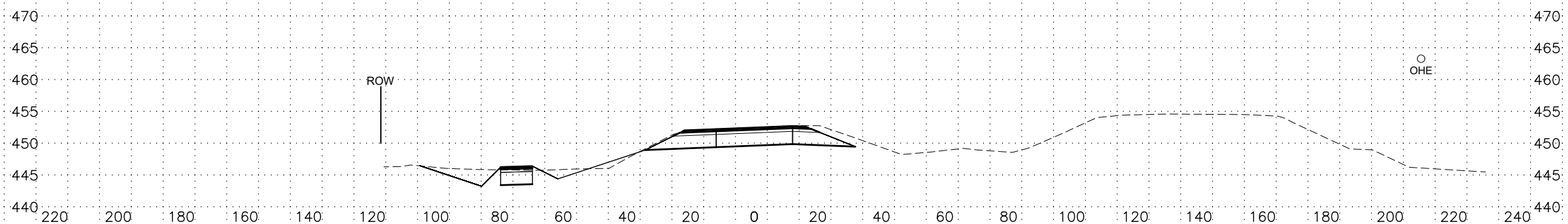
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-1 Thu Nov/19/20 02:19pm



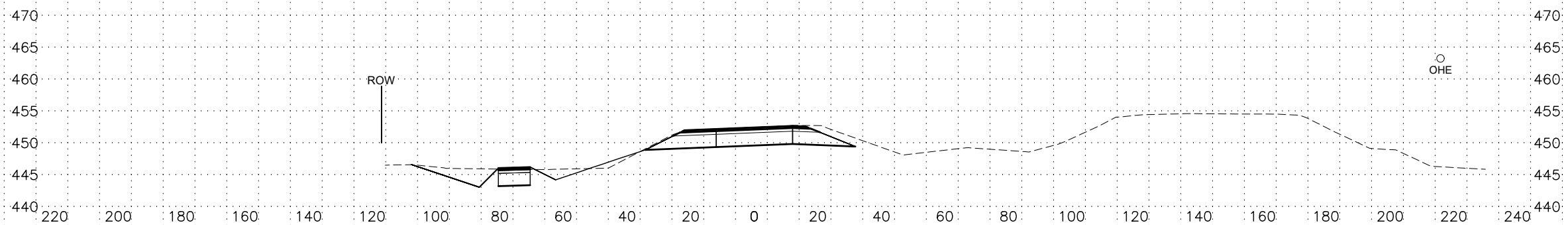
2054+50



2054+25



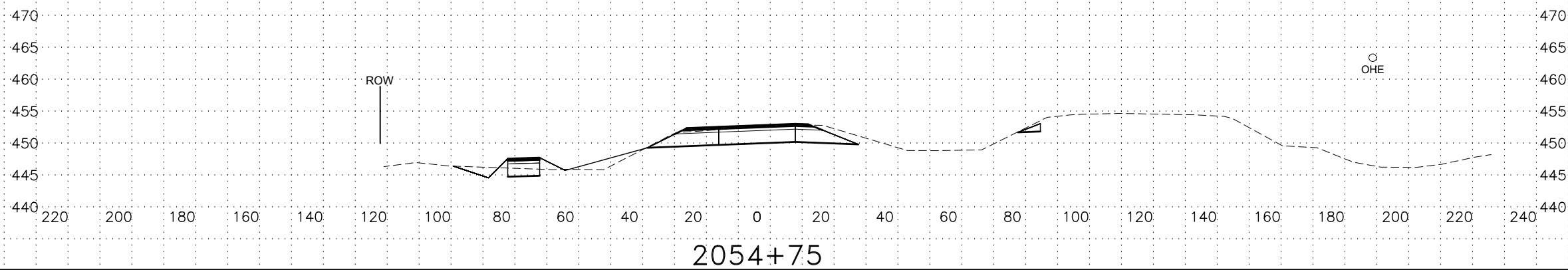
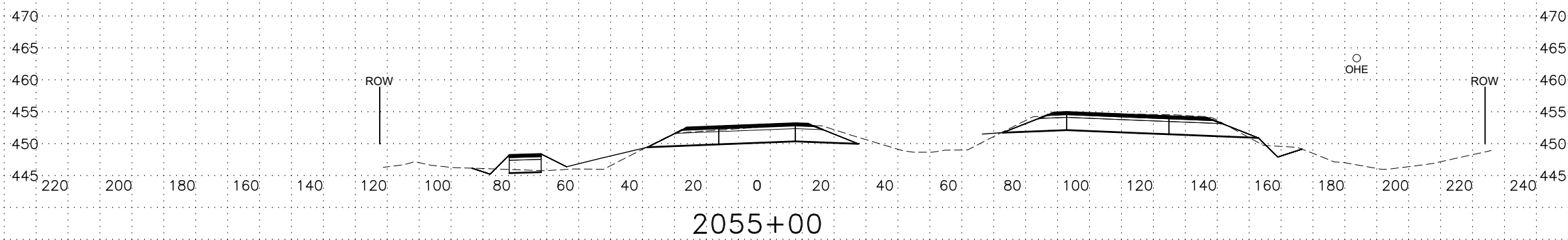
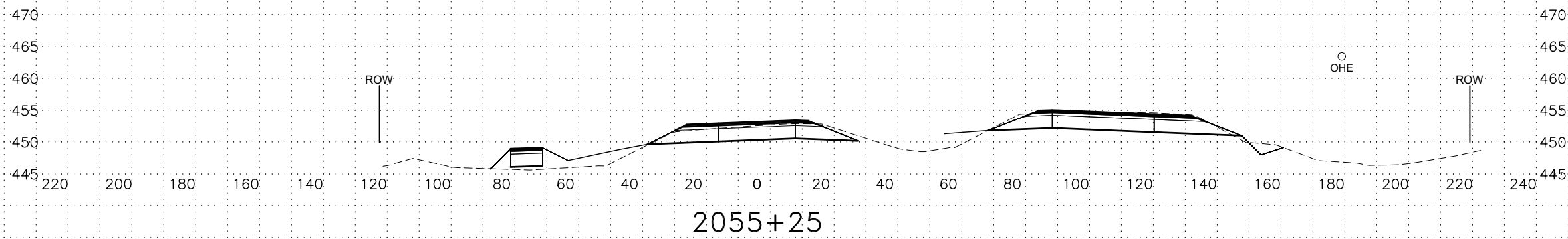
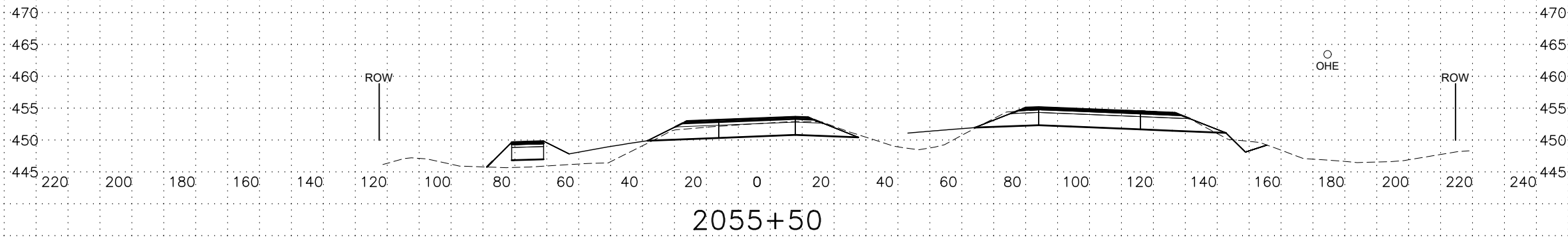
2054+00



2053+75

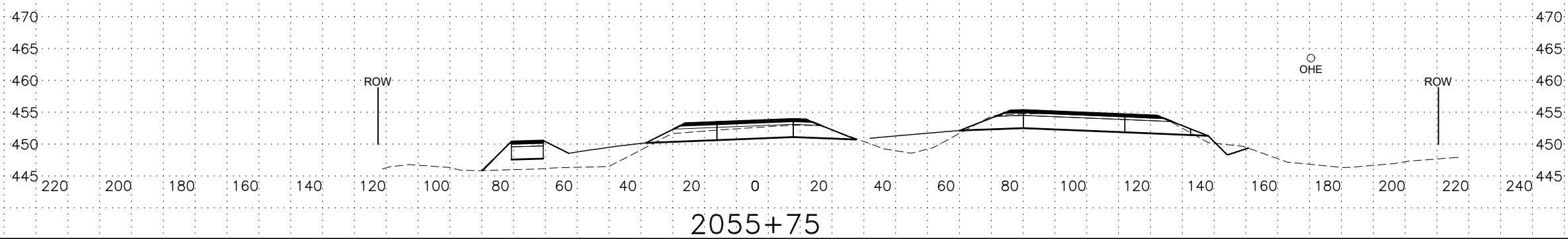
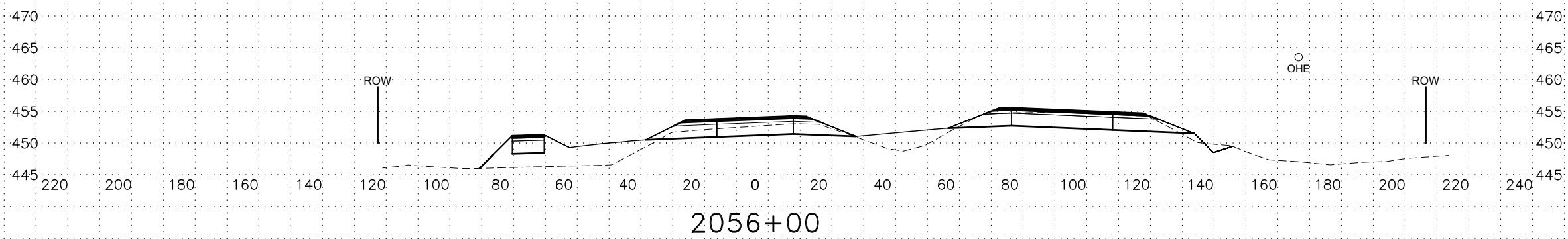
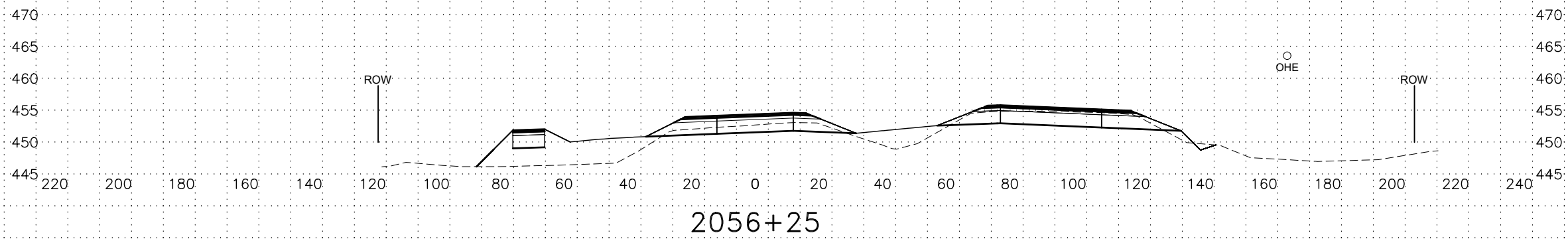
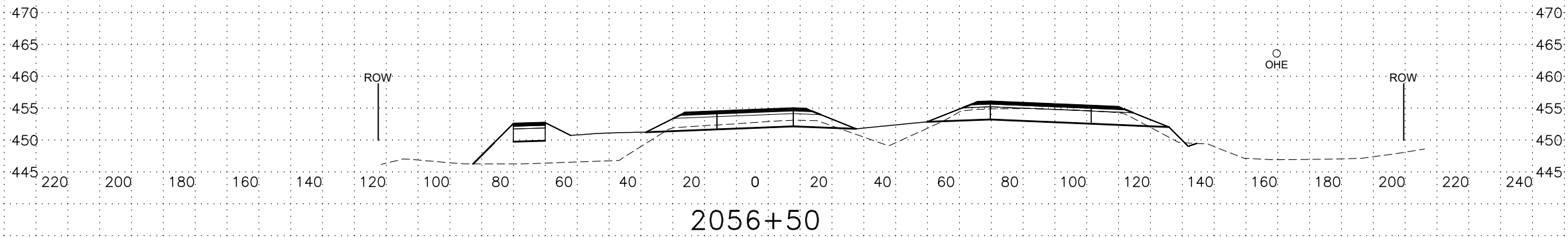
LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-2_Thu_Nov/19/20 02:20pm



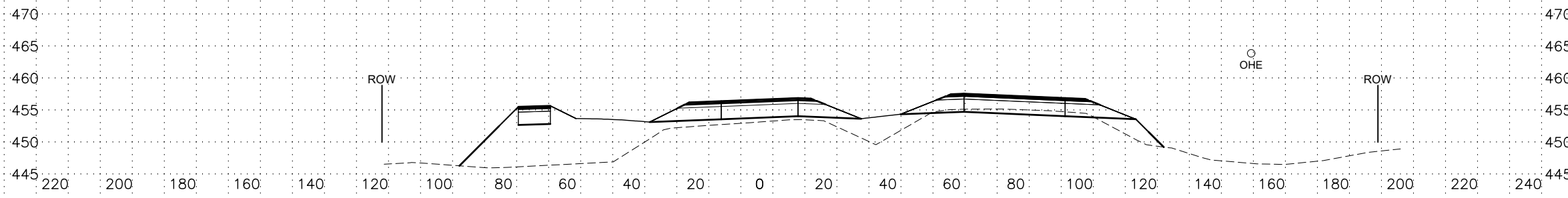
LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

C:\pw_workdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-3 Thu Nov/19/20 02:20pm

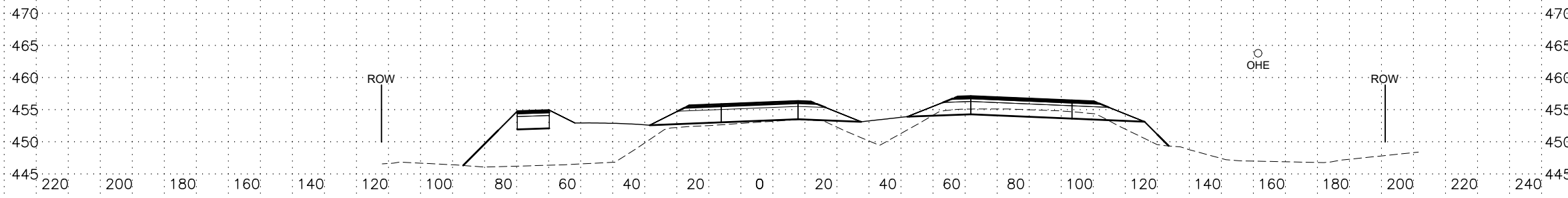


LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

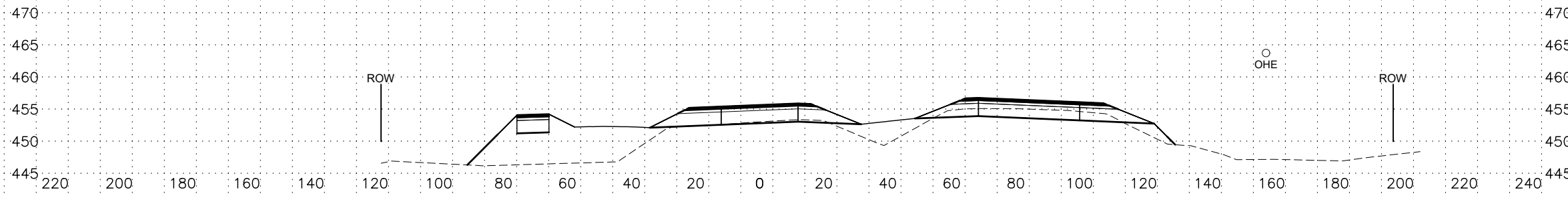
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-4_Thu_Nov/19/20 02:20pm



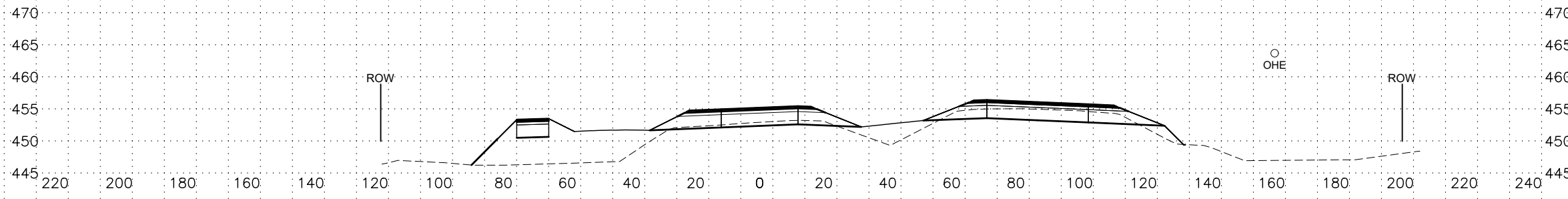
2057+50



2057+25



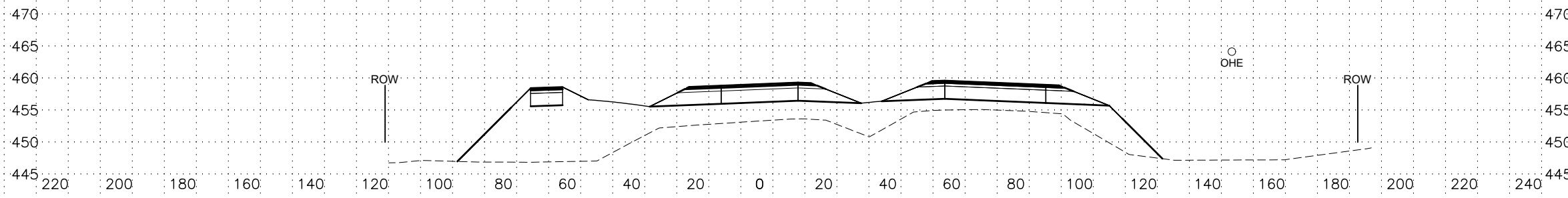
2057+00



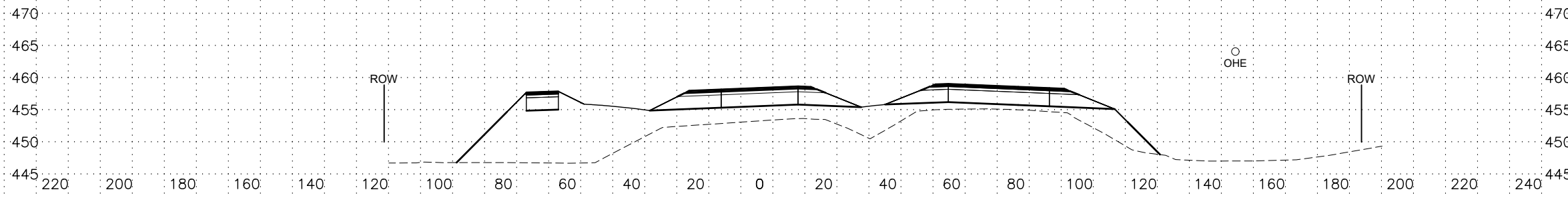
2056+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

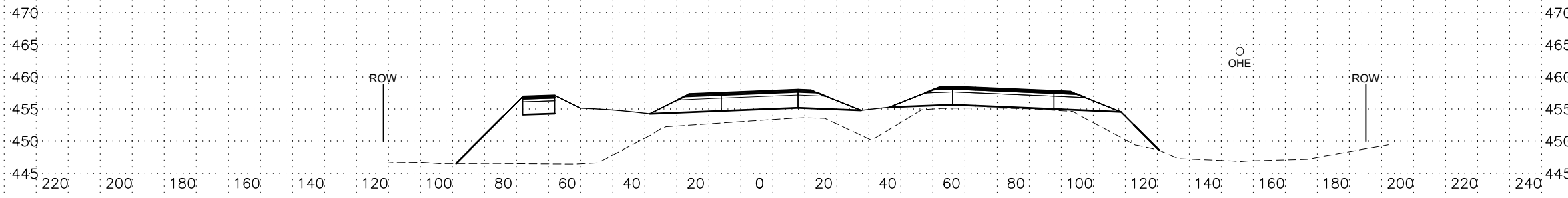
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-5 Thu Nov/19/20 02:20pm



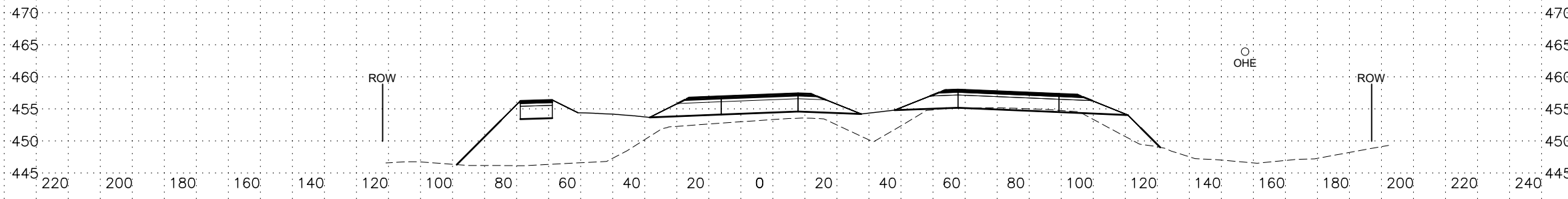
2058+50



2058+25



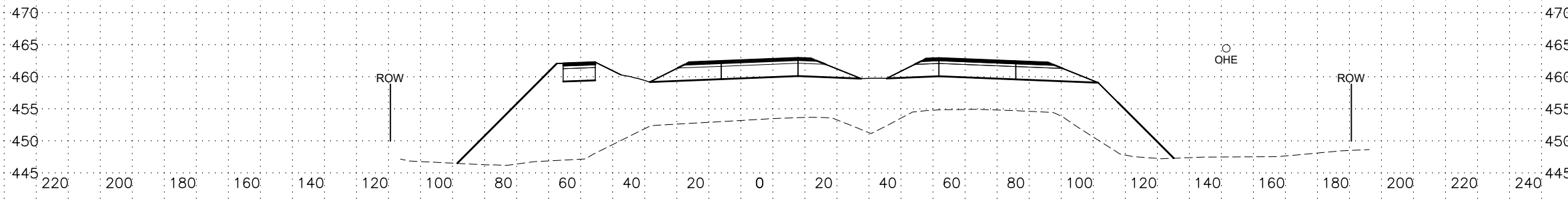
2058+00



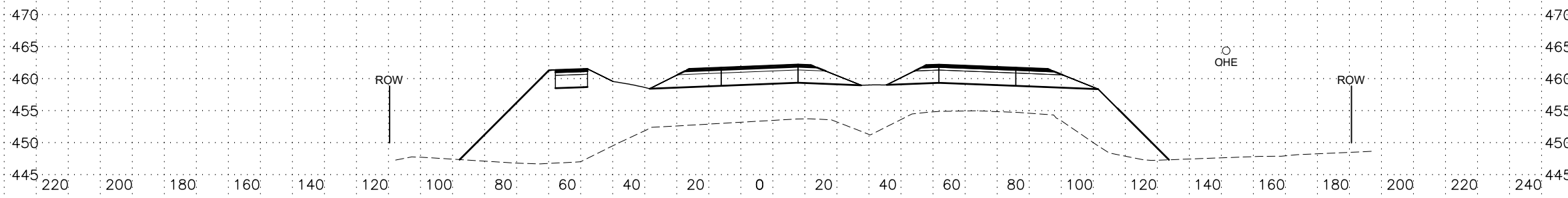
2057+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

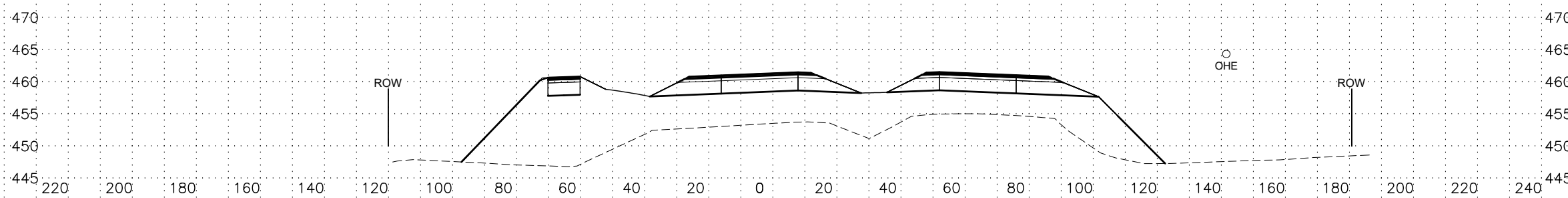
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-6 Thu Nov/19/20 02:20pm



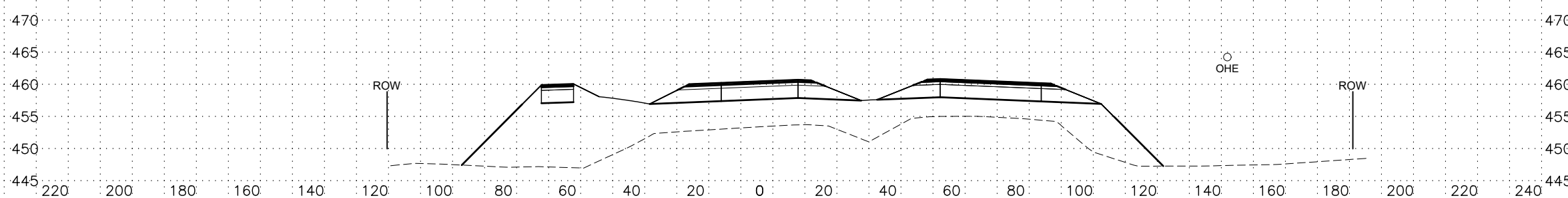
2059+75



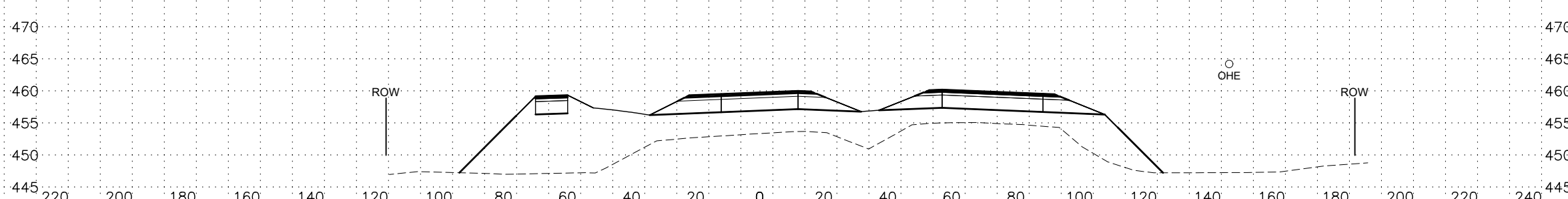
2059+50



2059+25



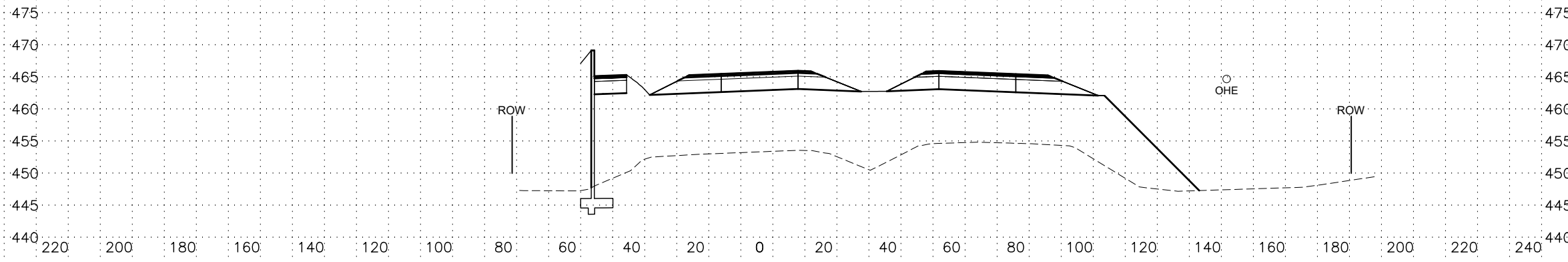
2059+00



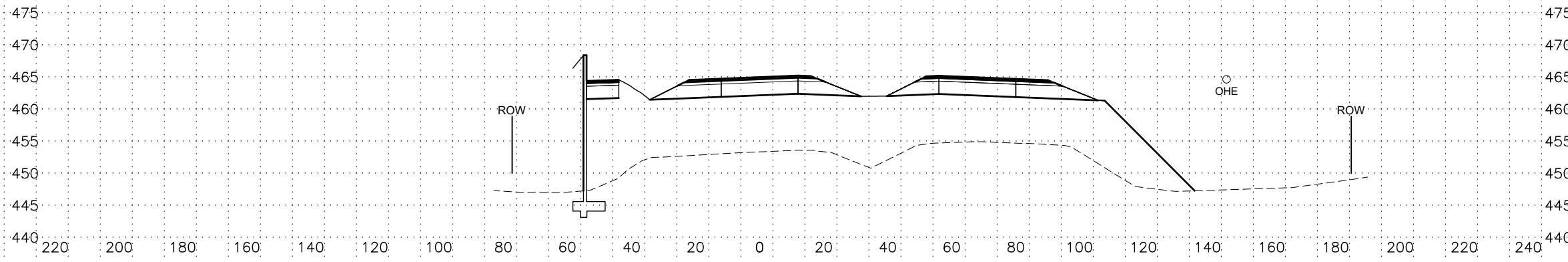
2058+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

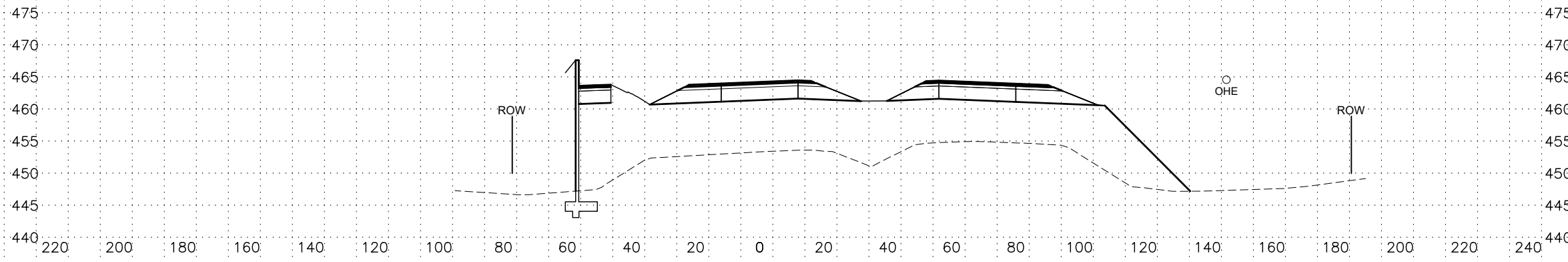
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-7 Thu Nov/19/20 02:20pm



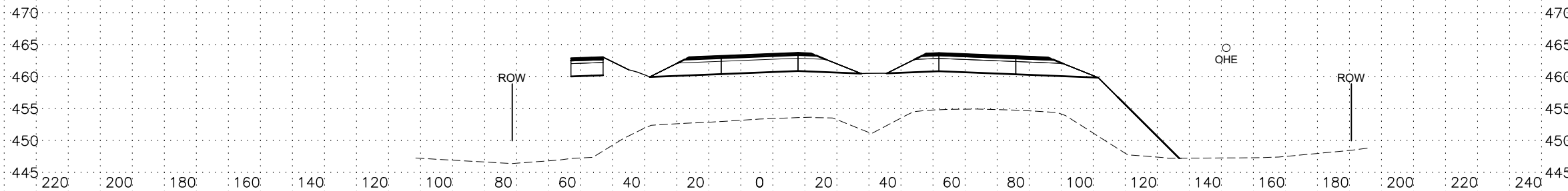
2060+75



2060+50



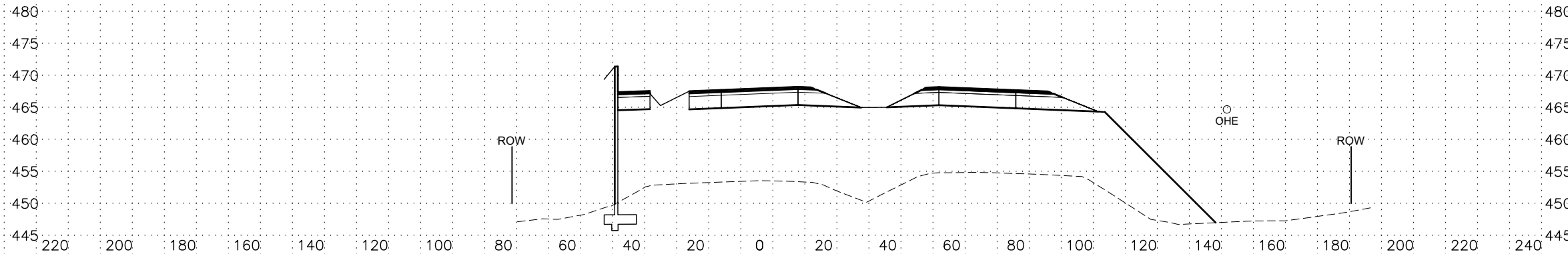
2060+25



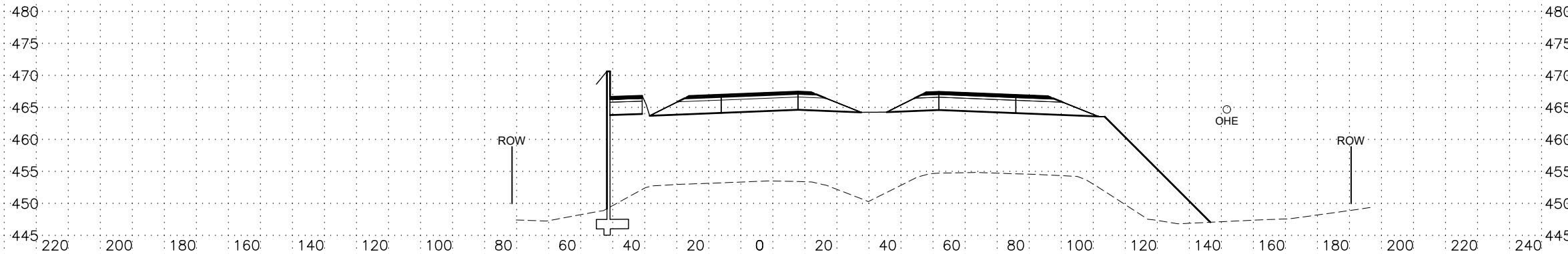
2060+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

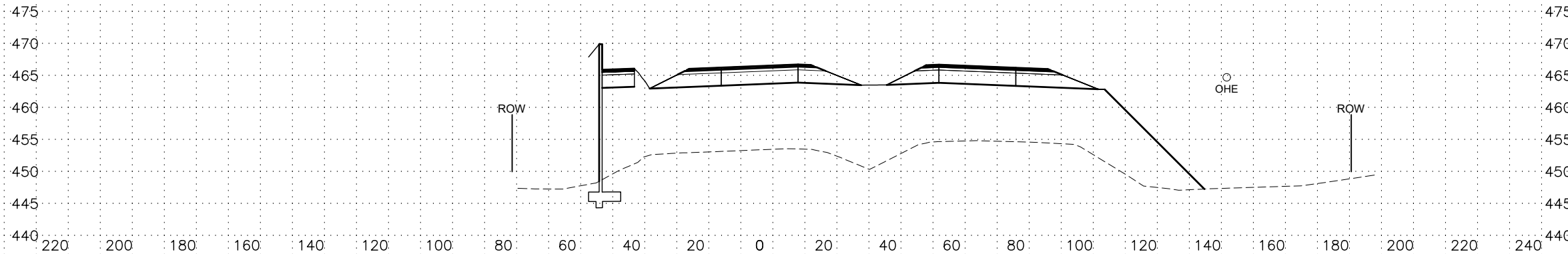
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-8_Thu_Nov/19/20 02:20pm



2061+50



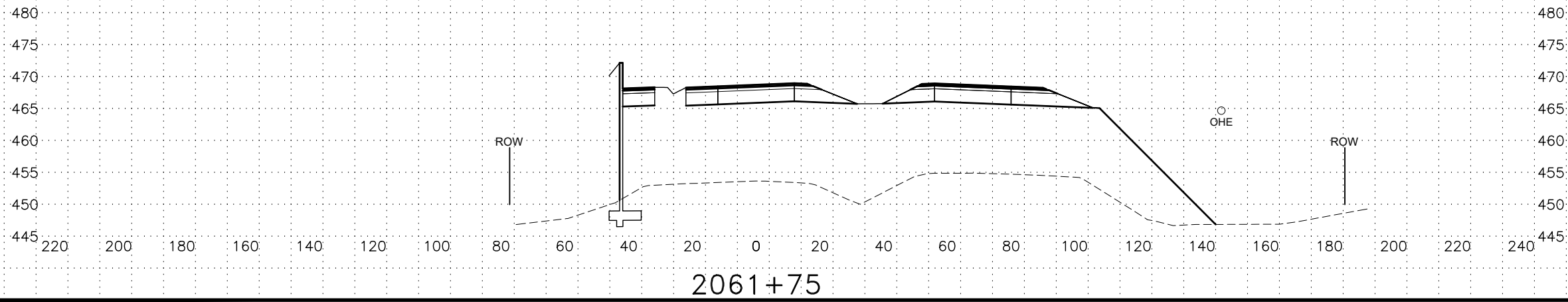
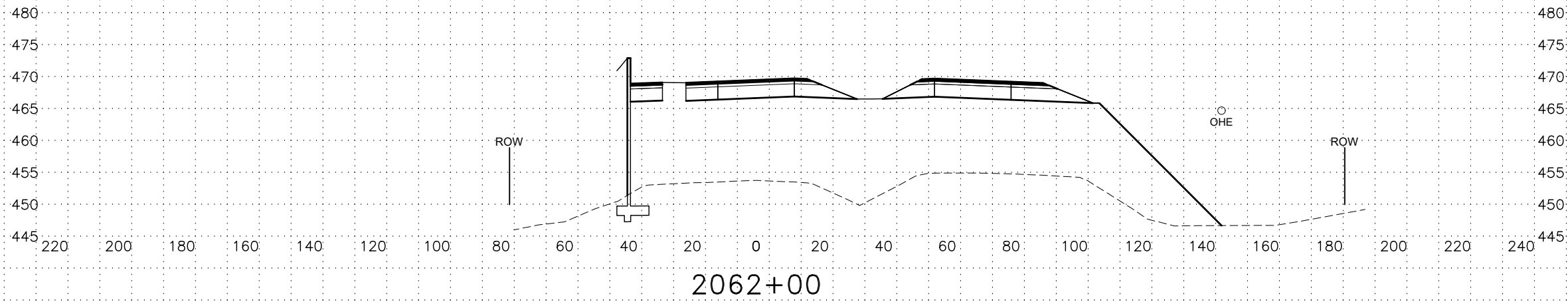
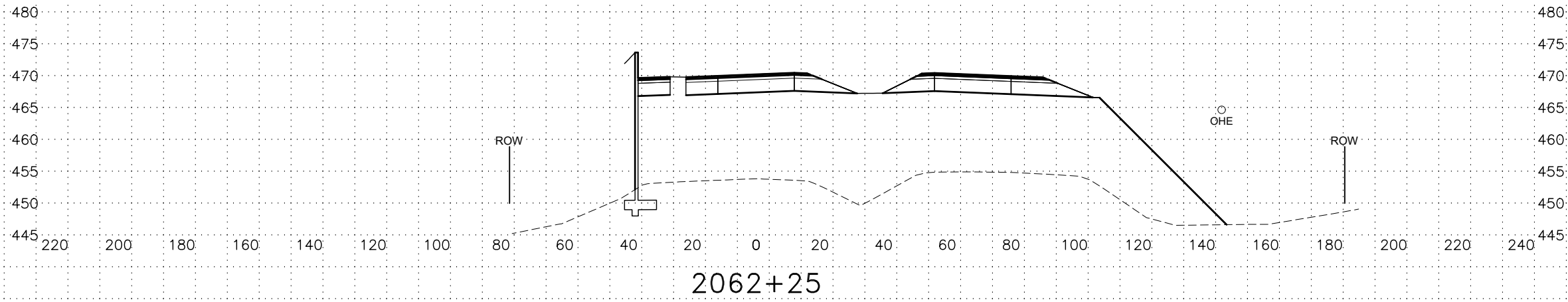
2061+25



2061+00

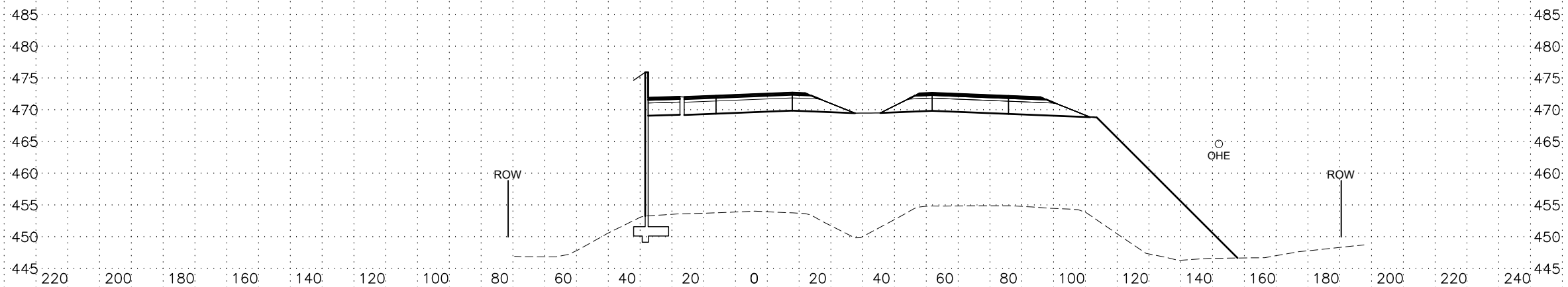
LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-9_Thu, Nov/19/20 02:20pm

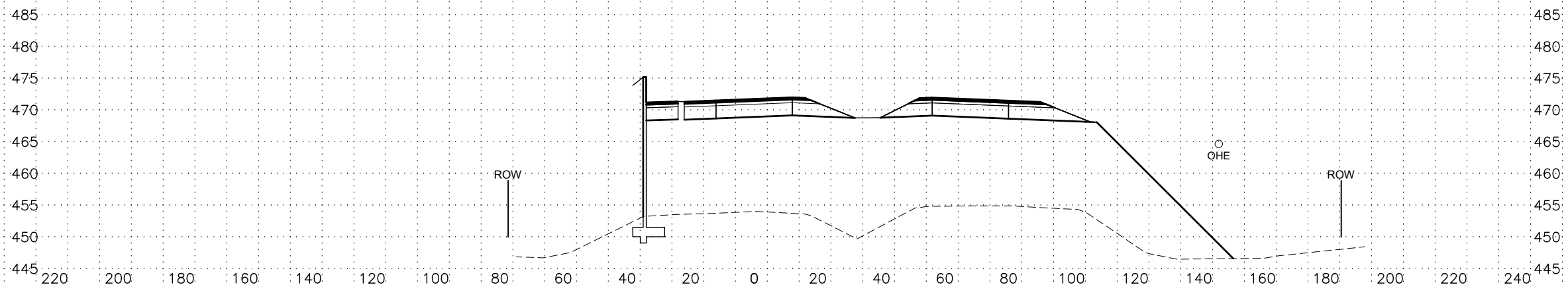


LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

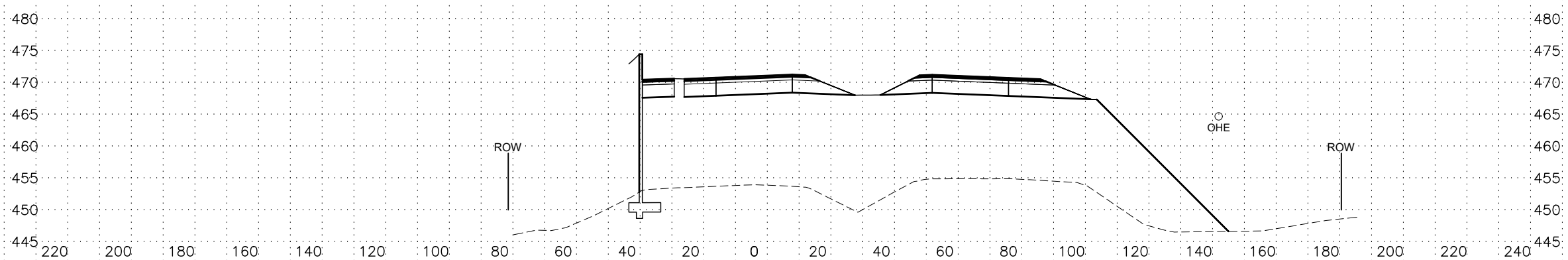
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-10_Thu, Nov/19/20 02:20pm



2063+00



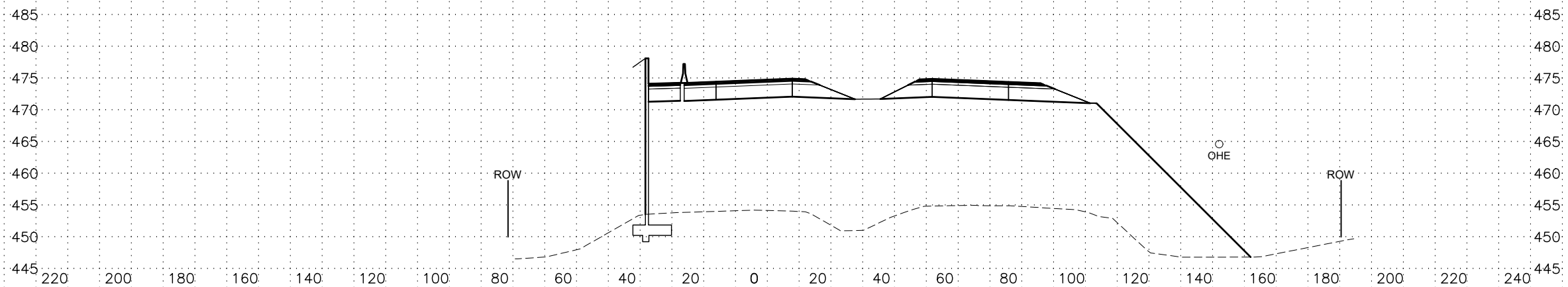
2062+75



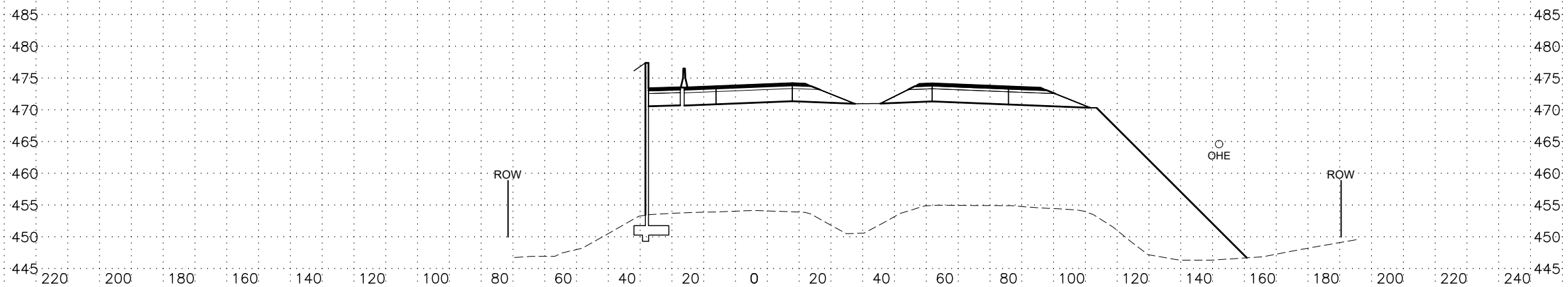
2062+50

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

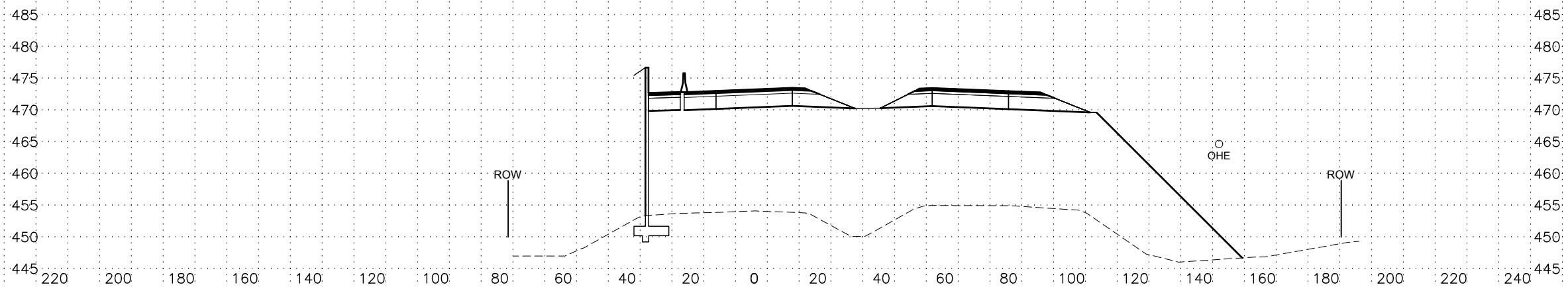
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-11_Thu_Nov/19/20 02:20pm



2063+75



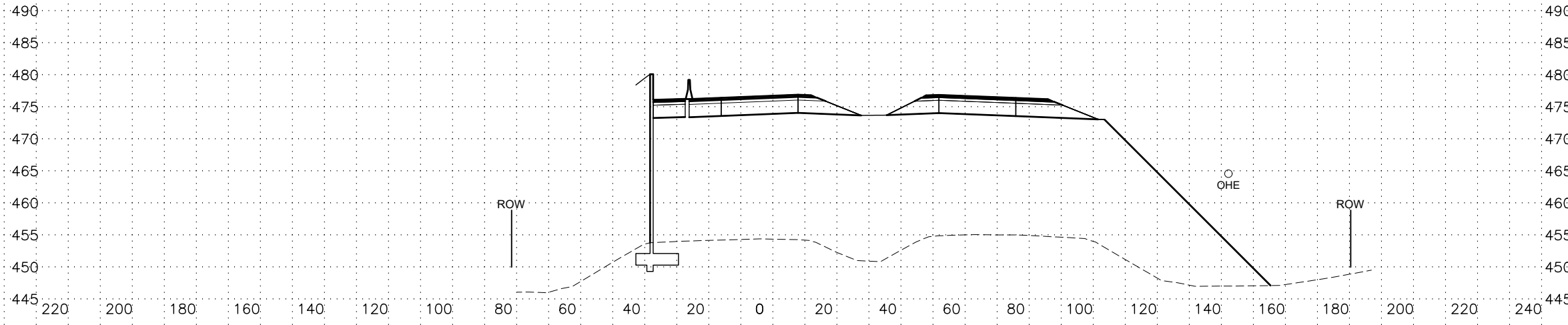
2063+50



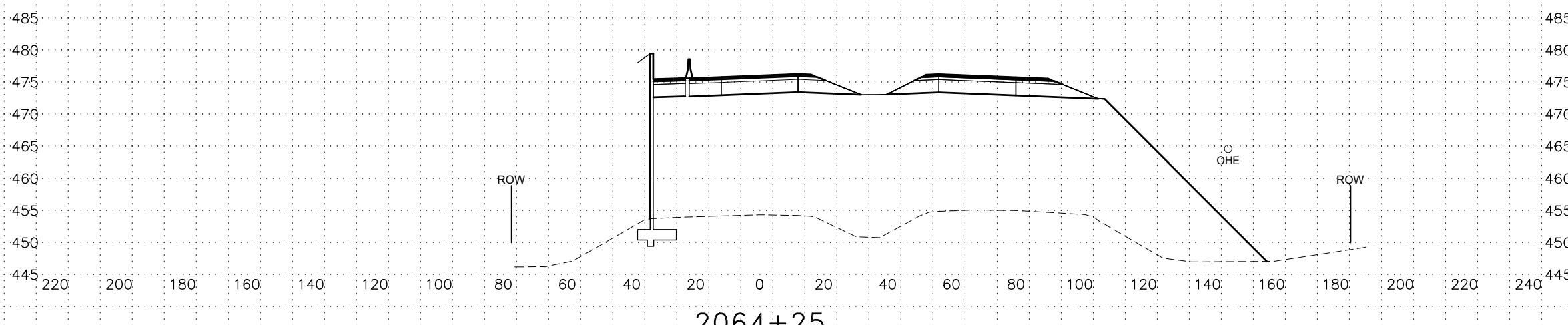
2063+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

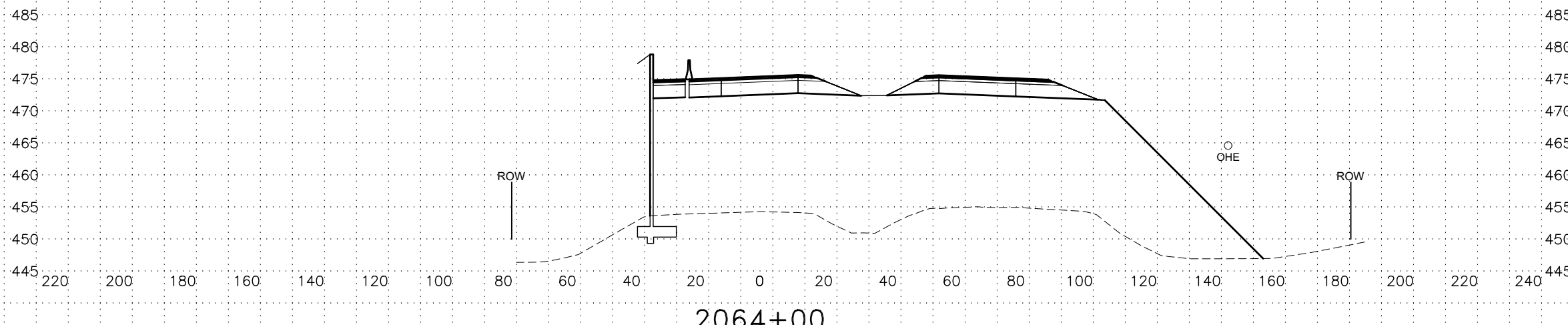
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-12_Thu, Nov/19/20 02:20pm



2064+50



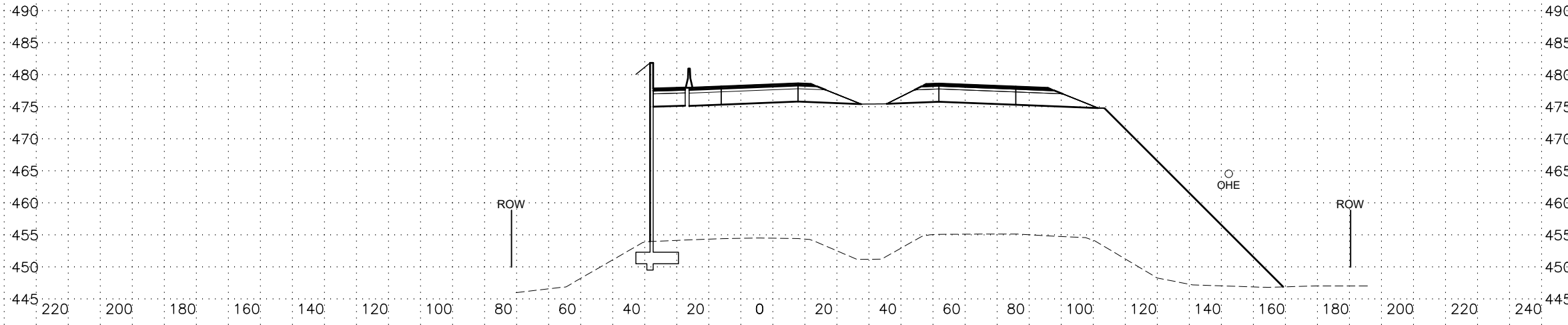
2064+25



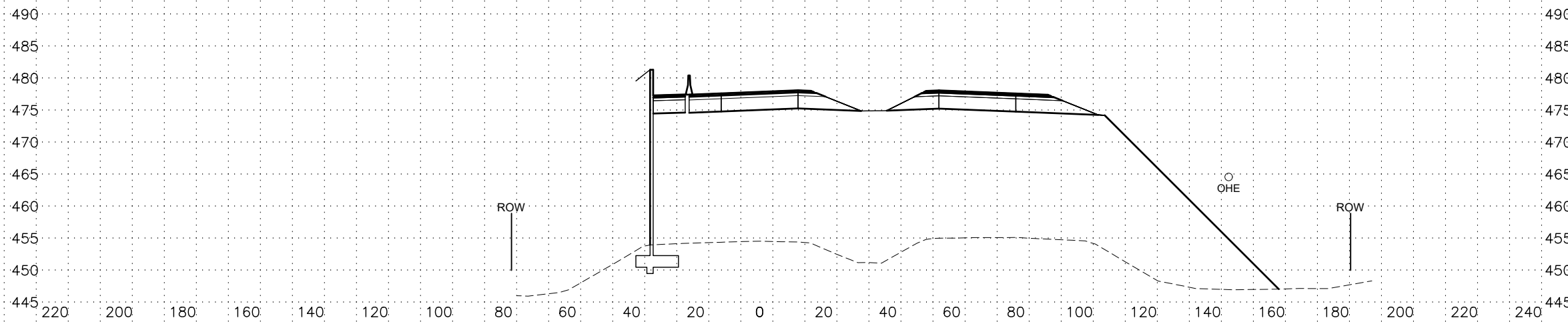
2064+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

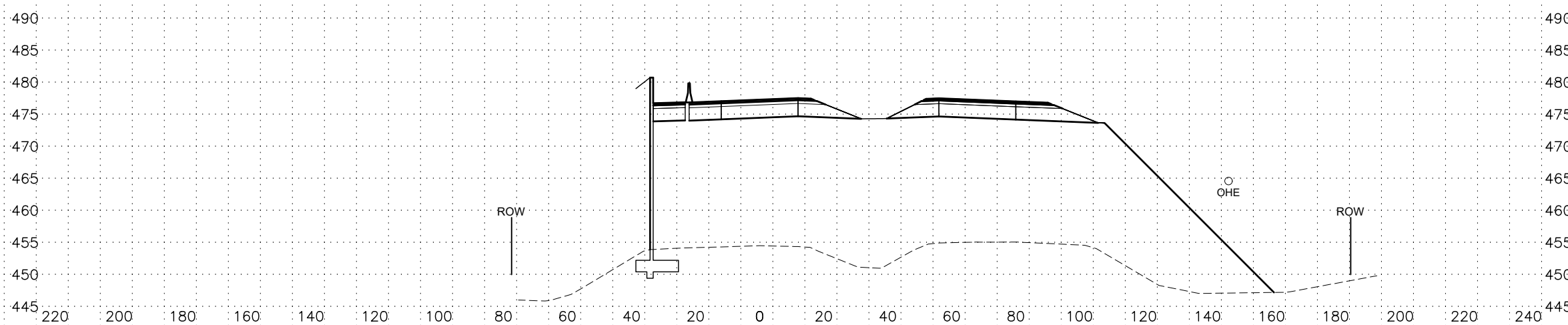
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-13_Thu, Nov/19/20 02:20pm



2065+25



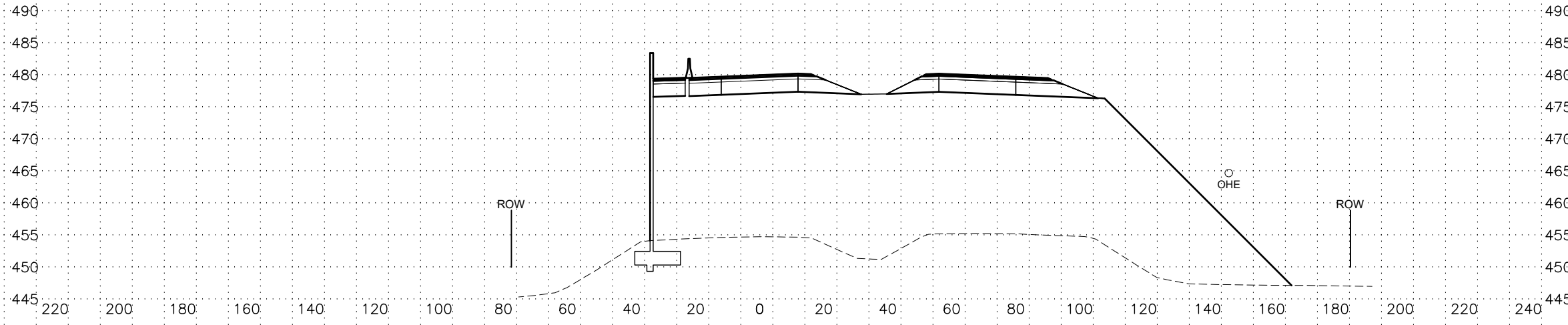
2065+00



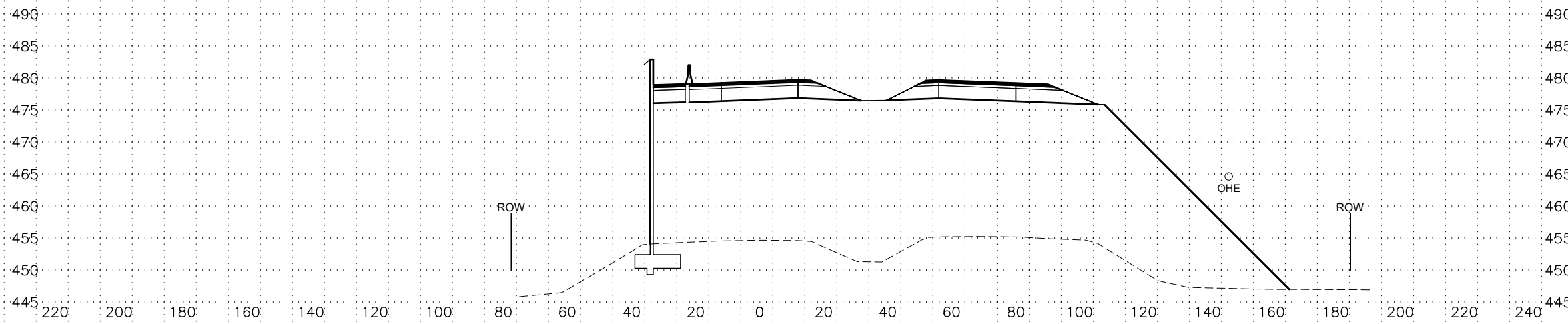
2064+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

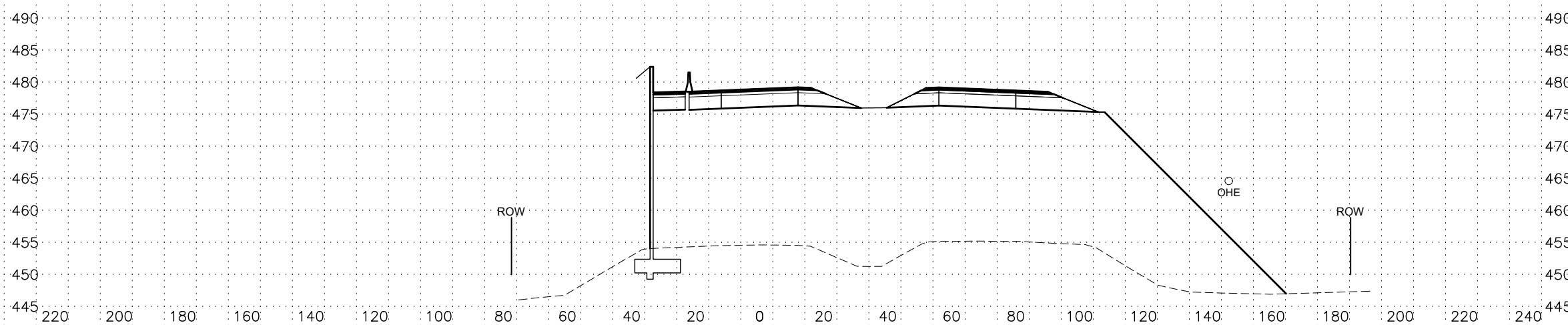
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-14_Thu, Nov/19/20 02:20pm



2066+00



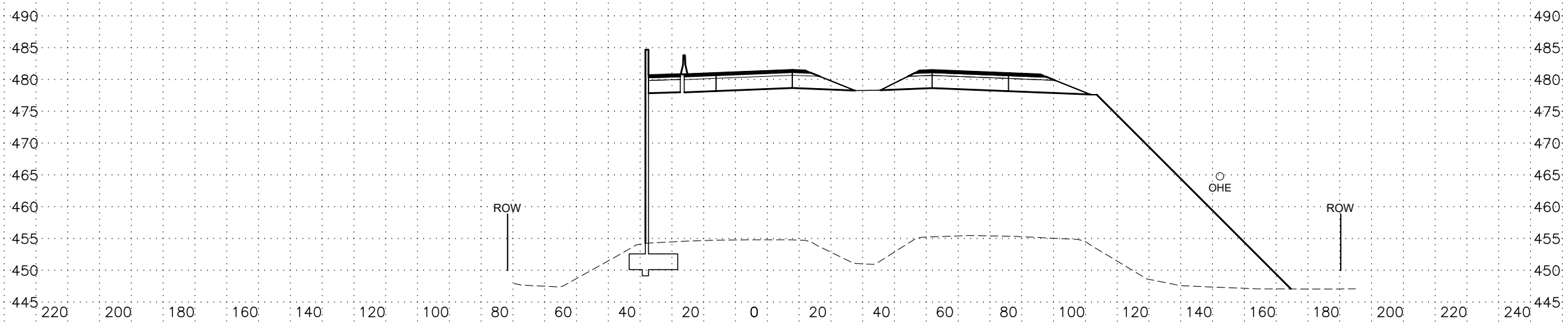
2065+75



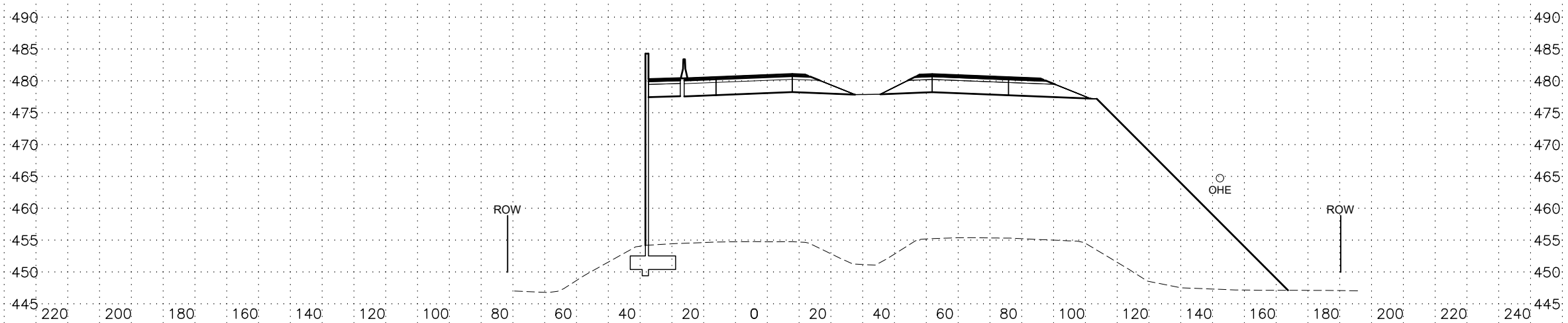
2065+50

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

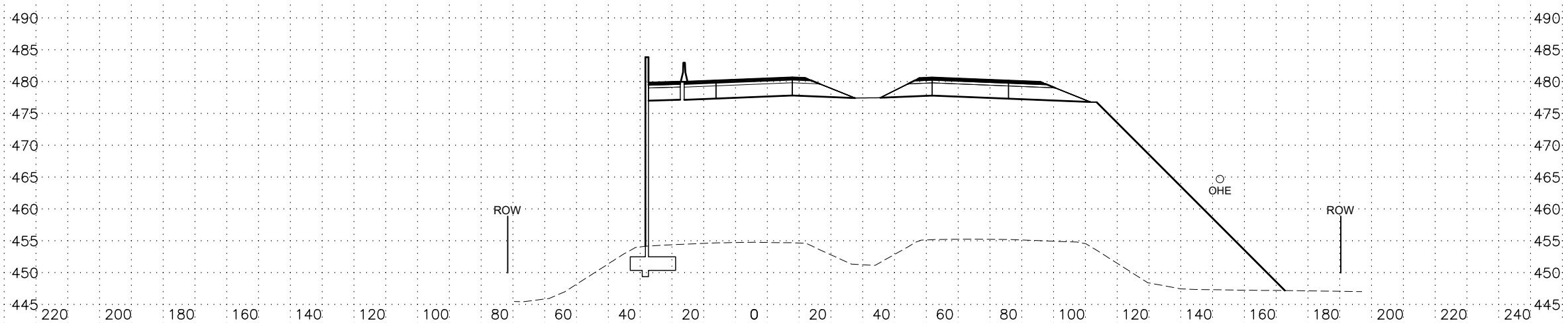
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-15_Thu, Nov/19/20 02:21pm



2066+75



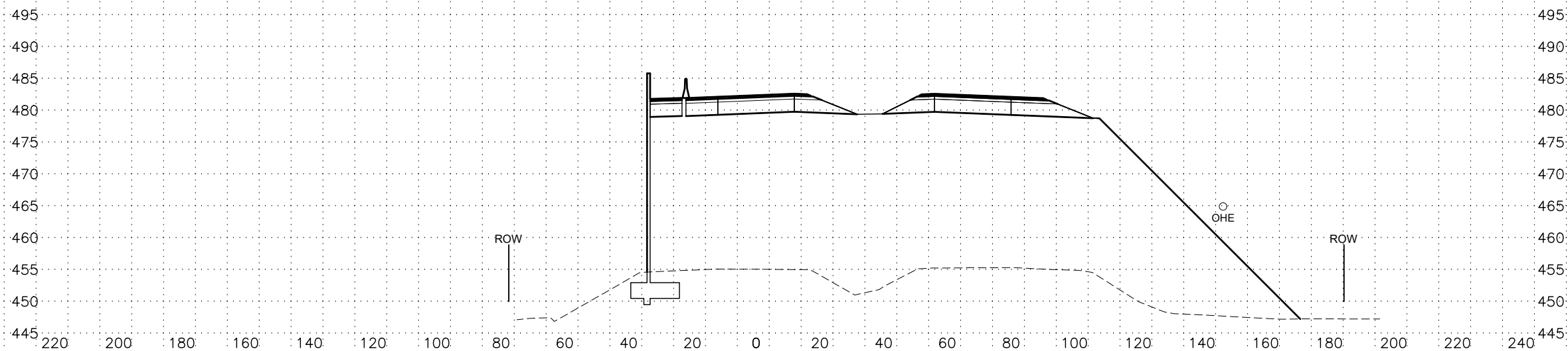
2066+50



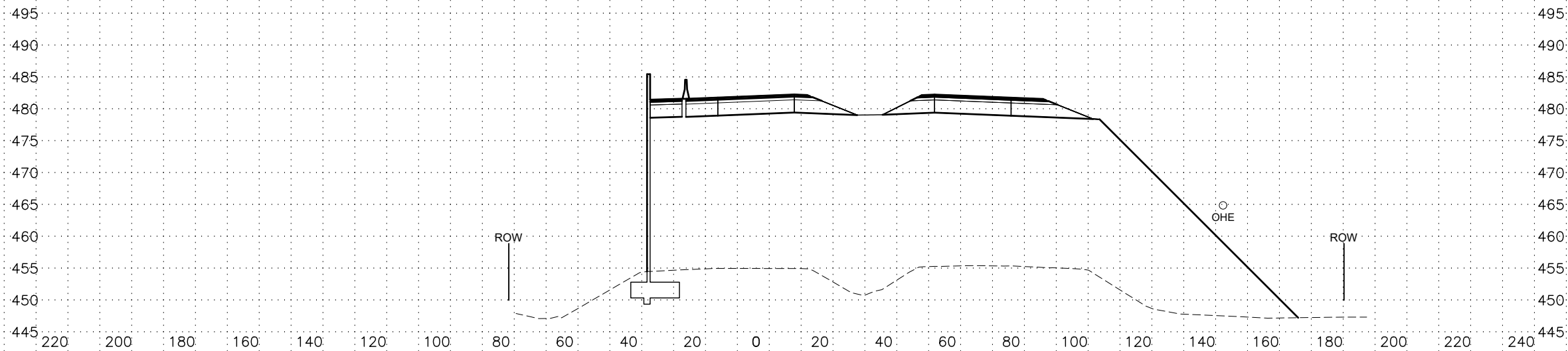
2066+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

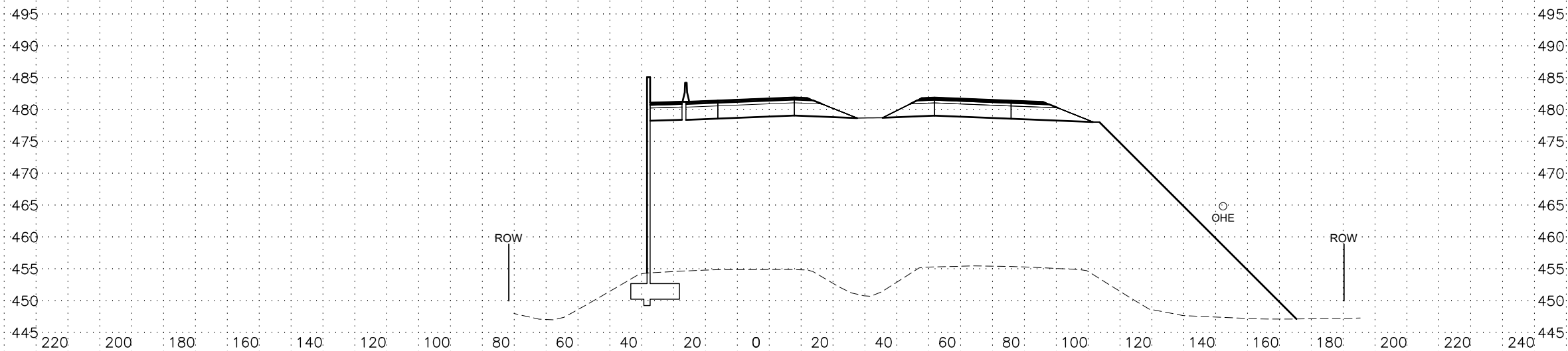
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-16_Thu, Nov/19/20 02:21pm



2067+50



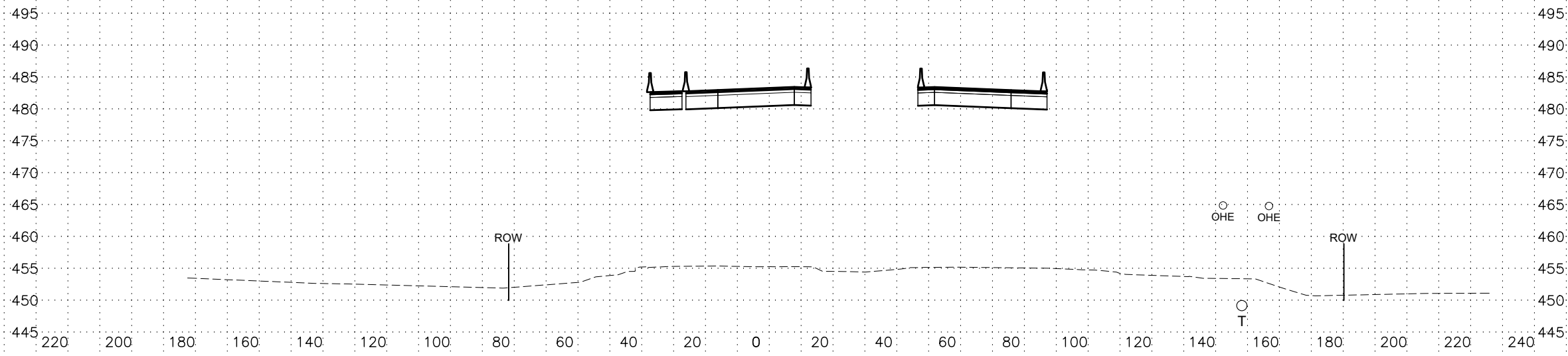
2067+25



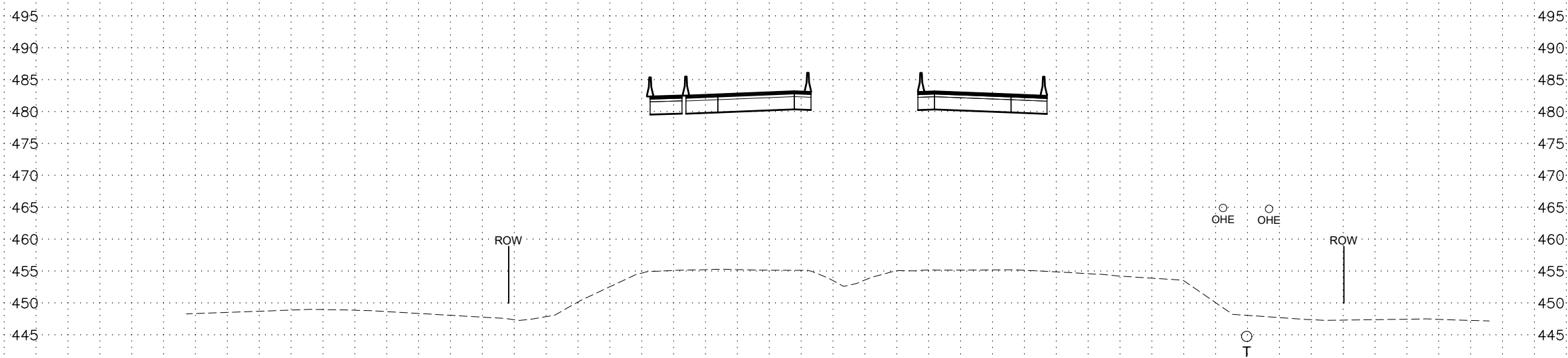
2067+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

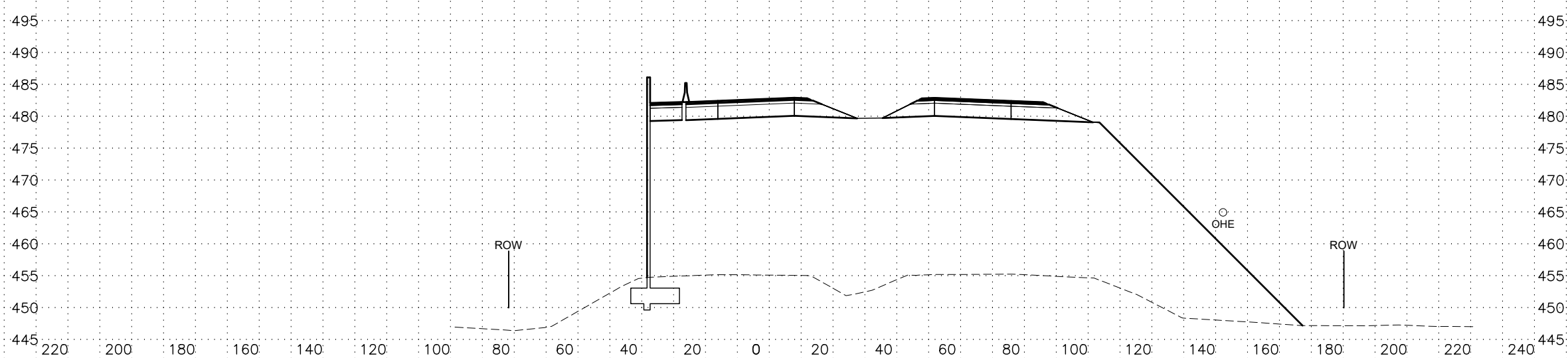
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-17_Thu, Nov/19/20 02:21pm



2068+25



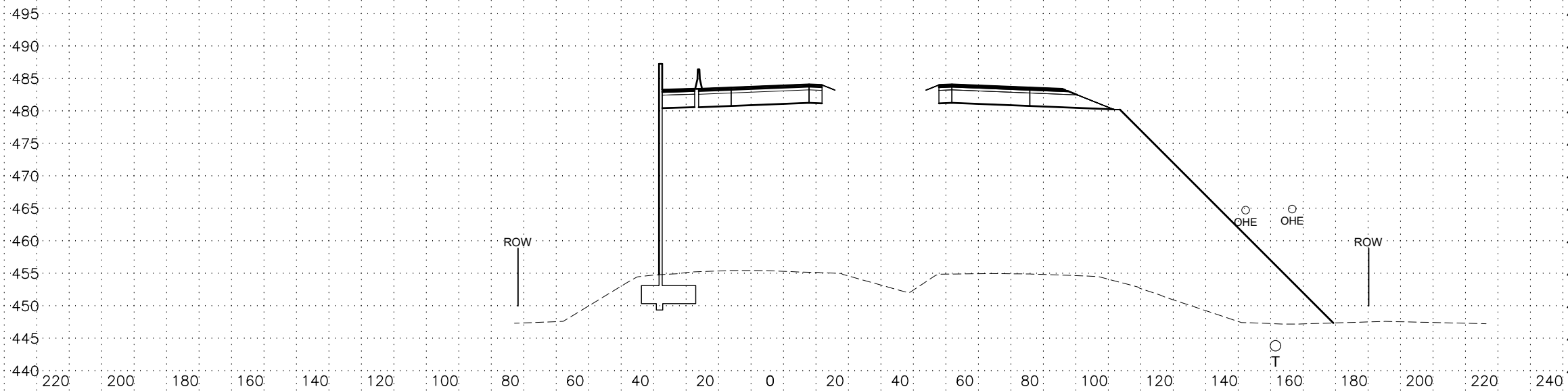
2068+00



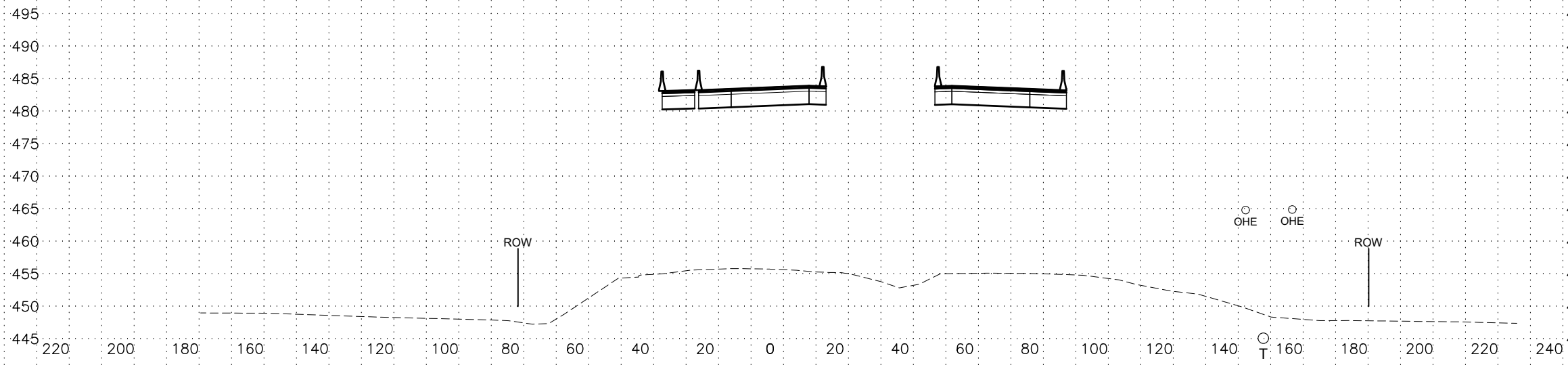
2067+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

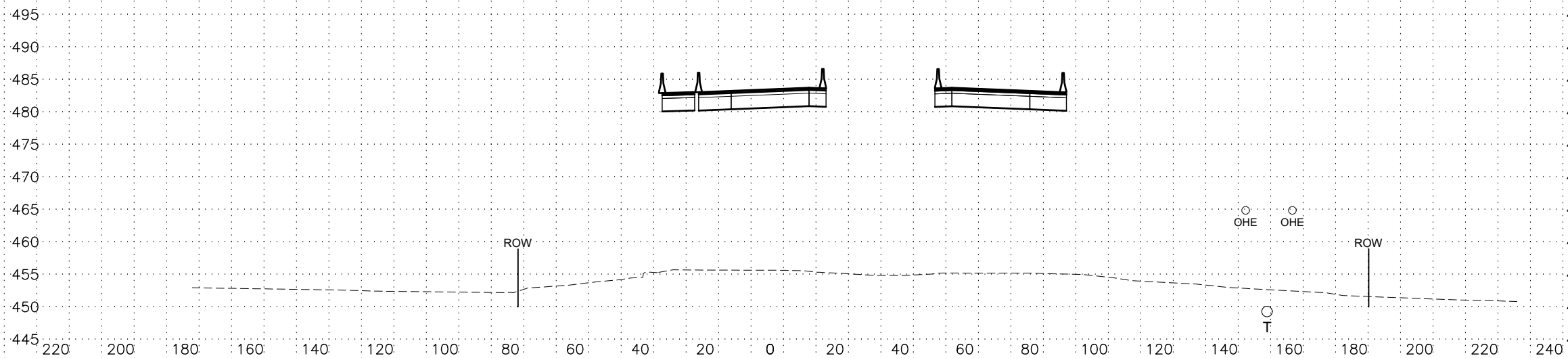
C:\pwworkdir\den001\ch2mnhil_jc065526\0663105\XR-60734-XS-18_Thu, Nov/19/20 02:21pm



2069+00



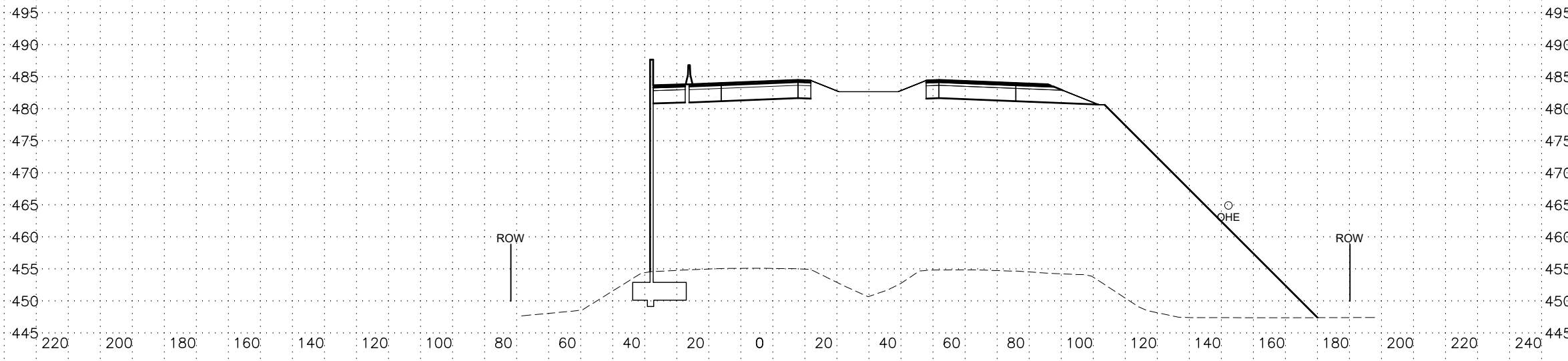
2068+75



2068+50

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

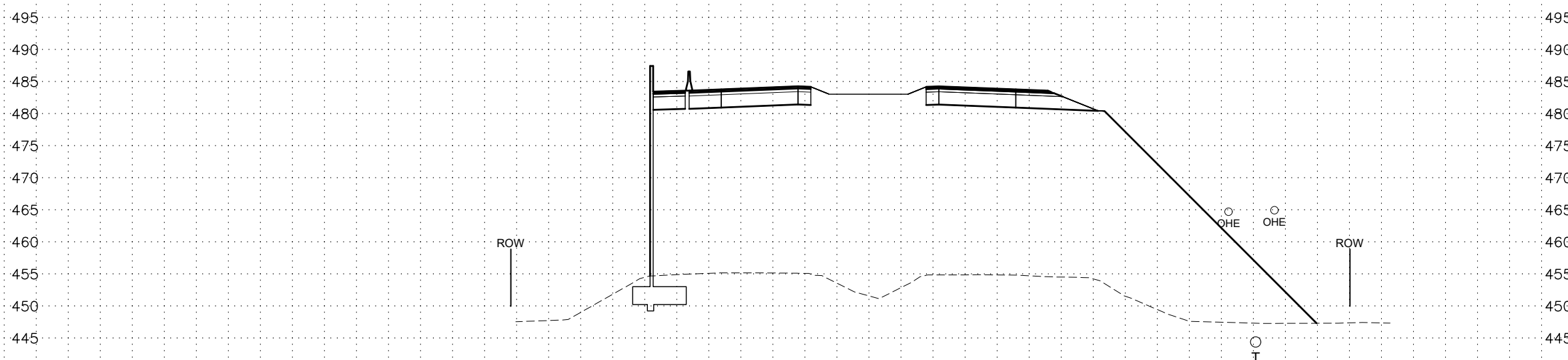
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-19_Thu_Nov/19/20_02:21pm



2069+75



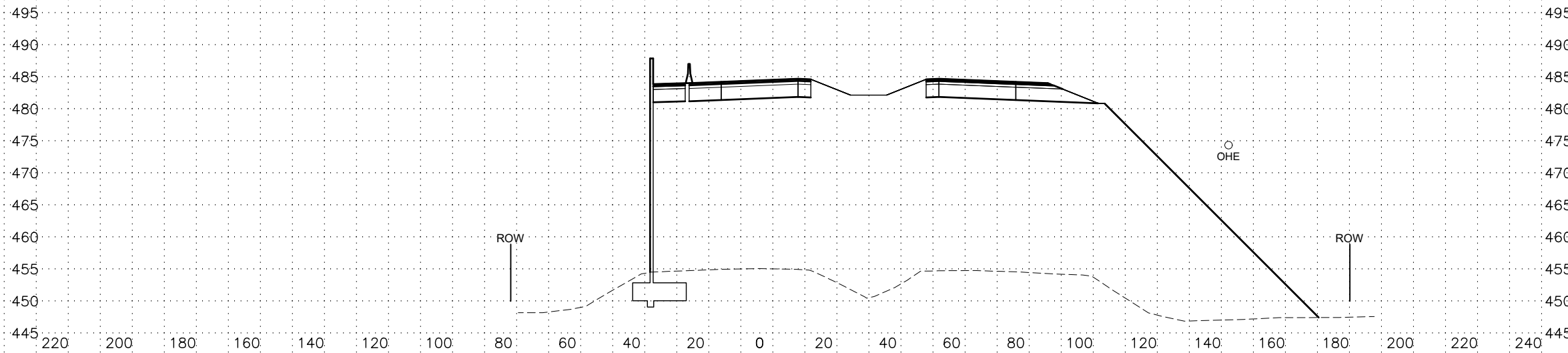
2069+50



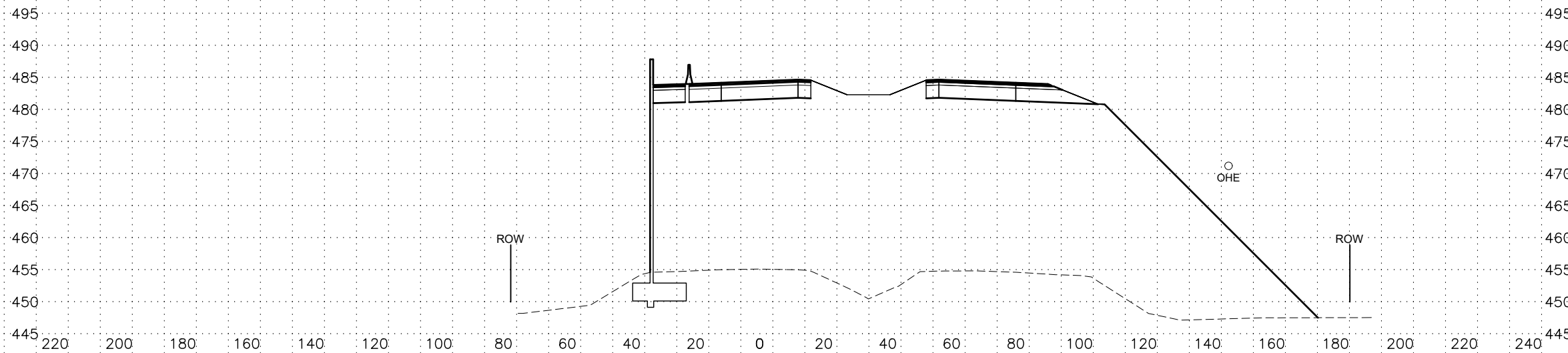
2069+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

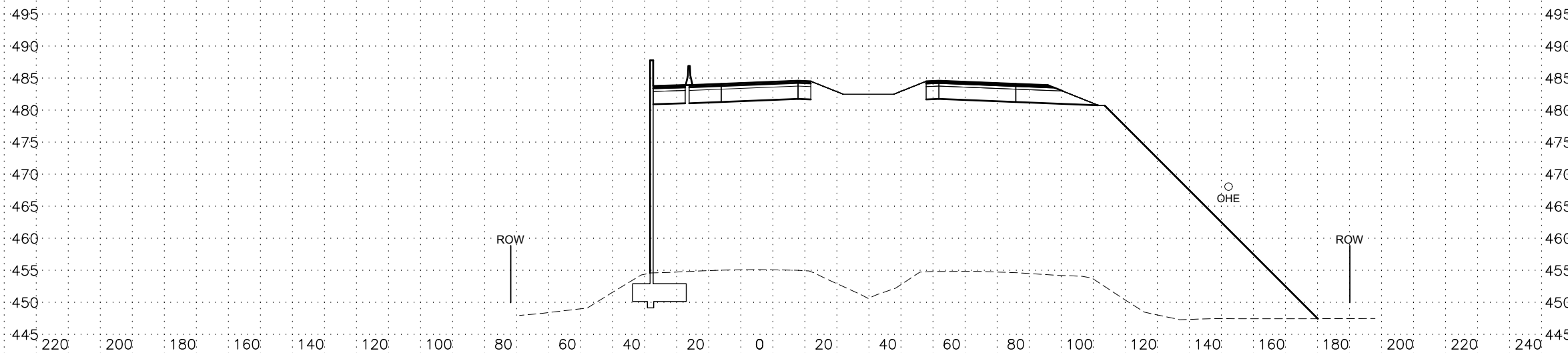
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-20_Thu, Nov/19/20 02:21pm



2070+50



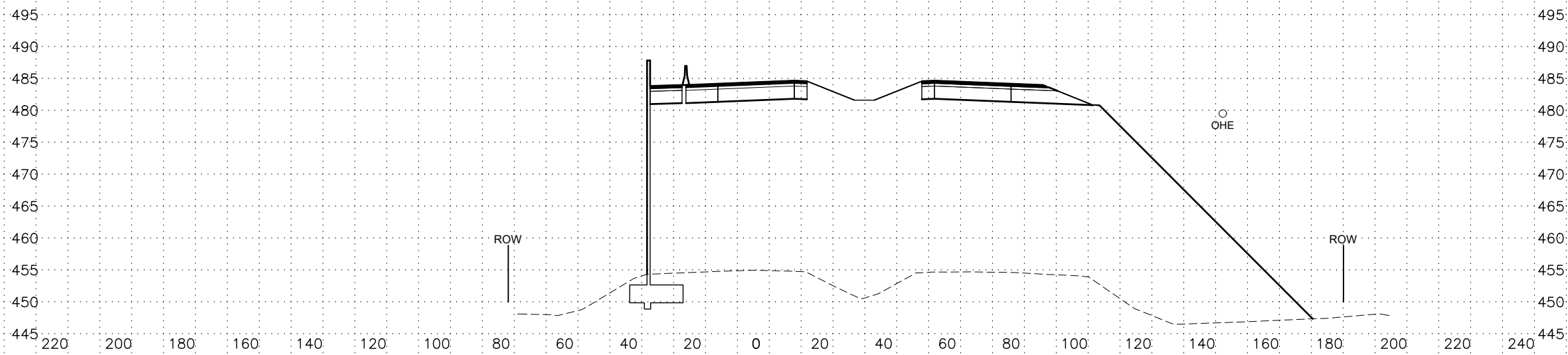
2070+25



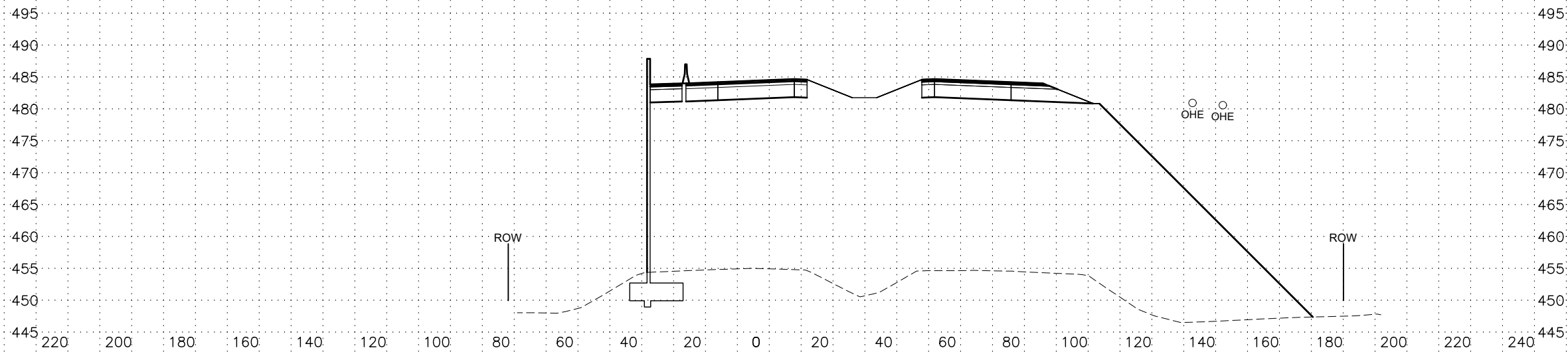
2070+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

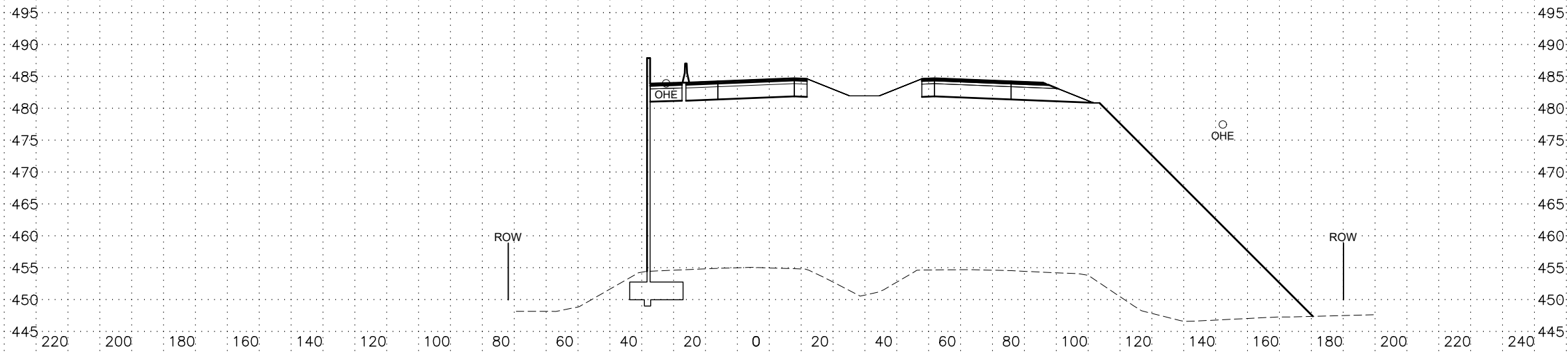
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-21_Thu, Nov/19/20 02:21pm



2071+25



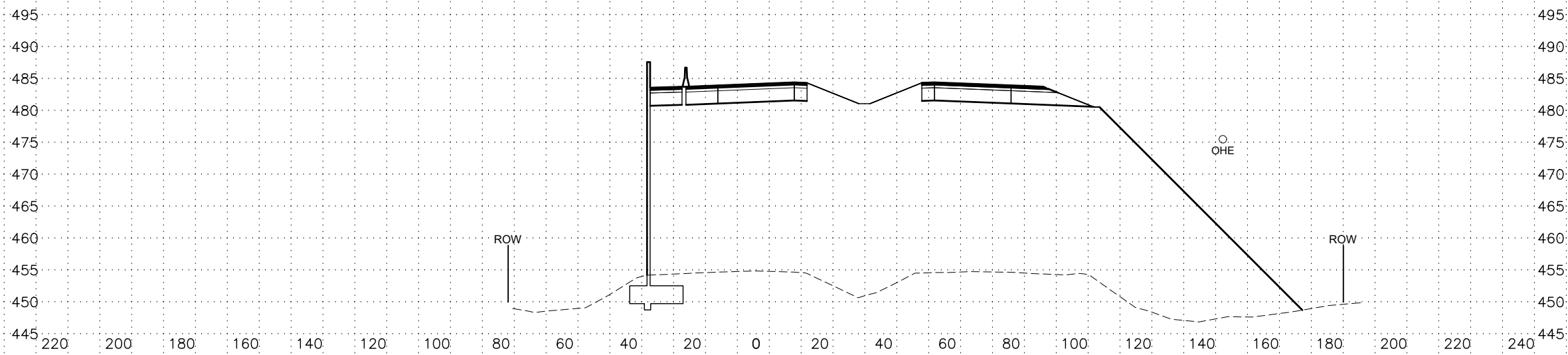
2071+00



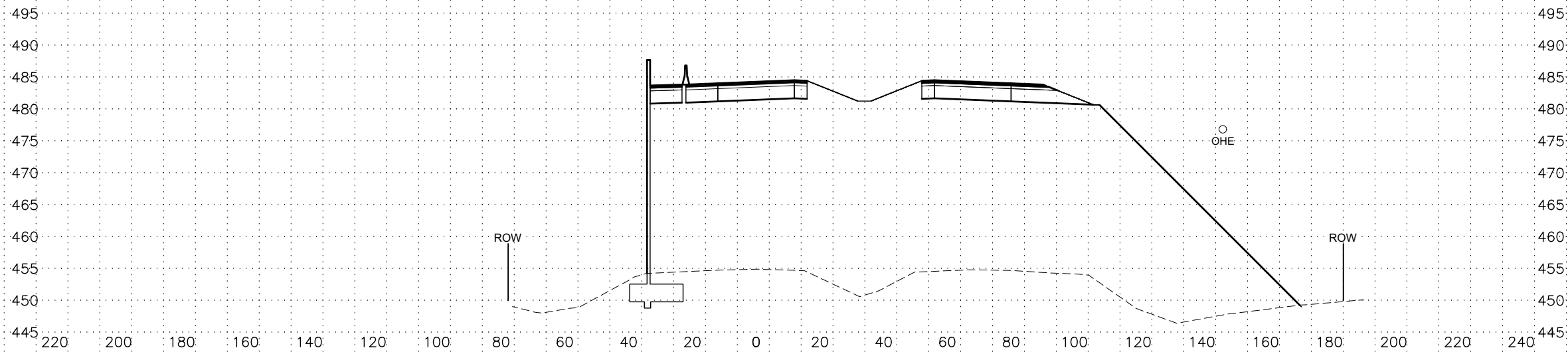
2070+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

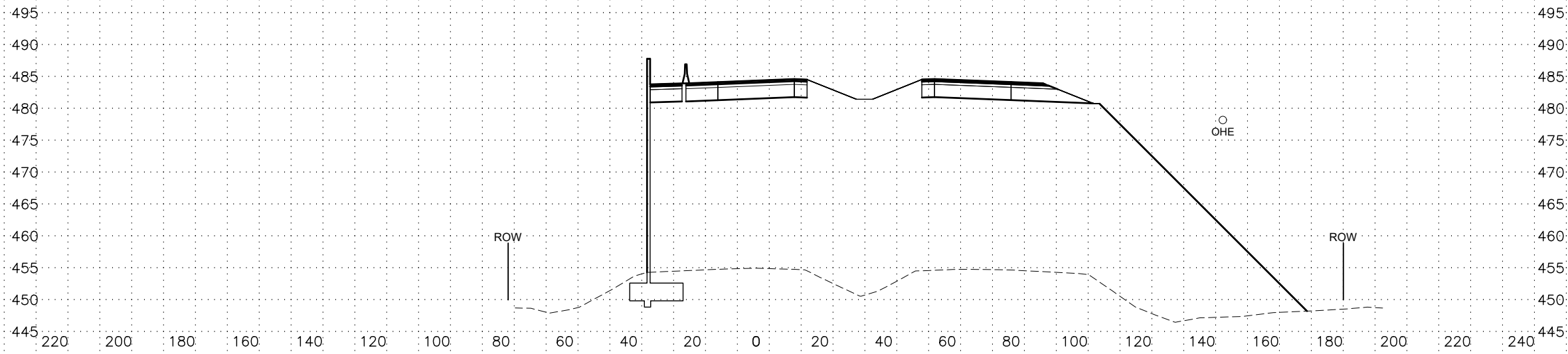
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-22_Thu, Nov/19/20 02:21pm



2072+00



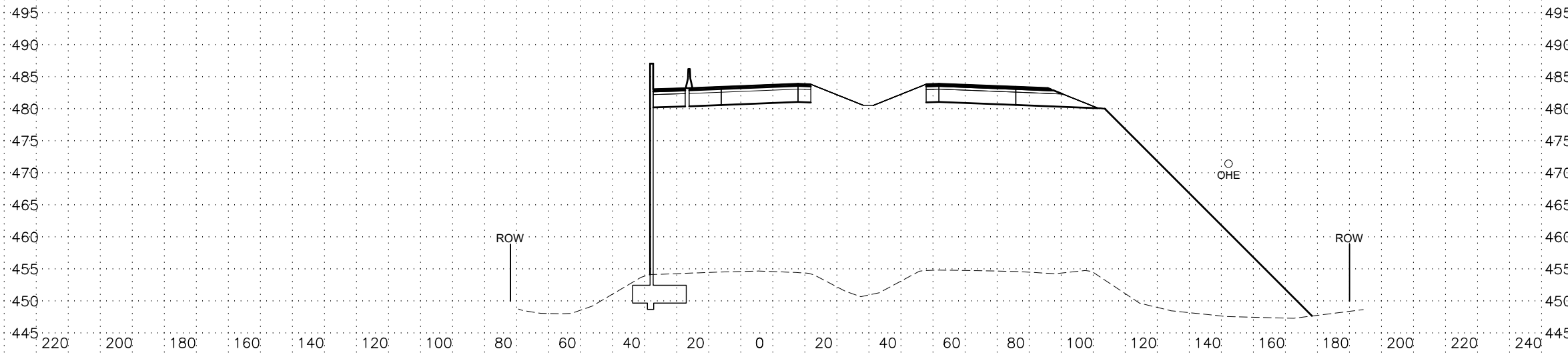
2071+75



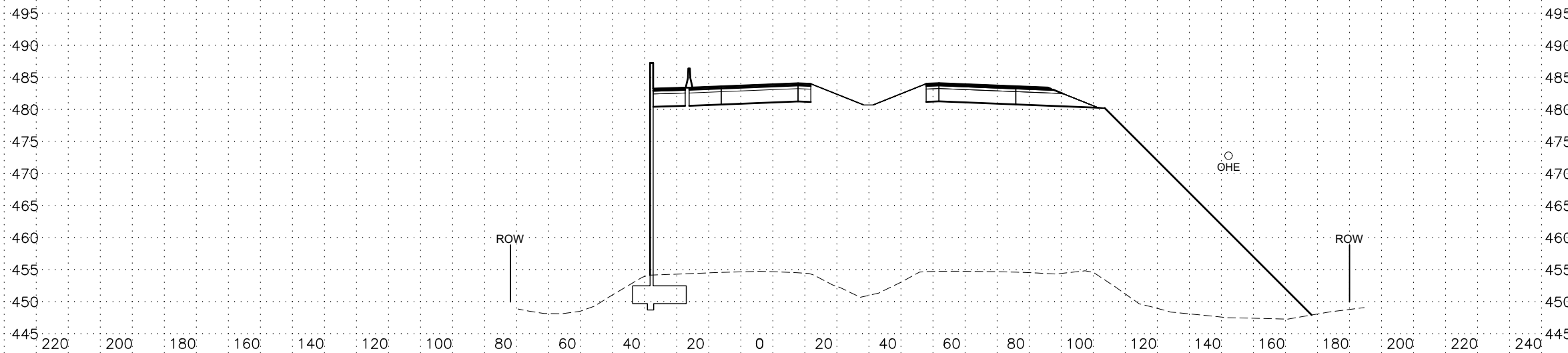
2071+50

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

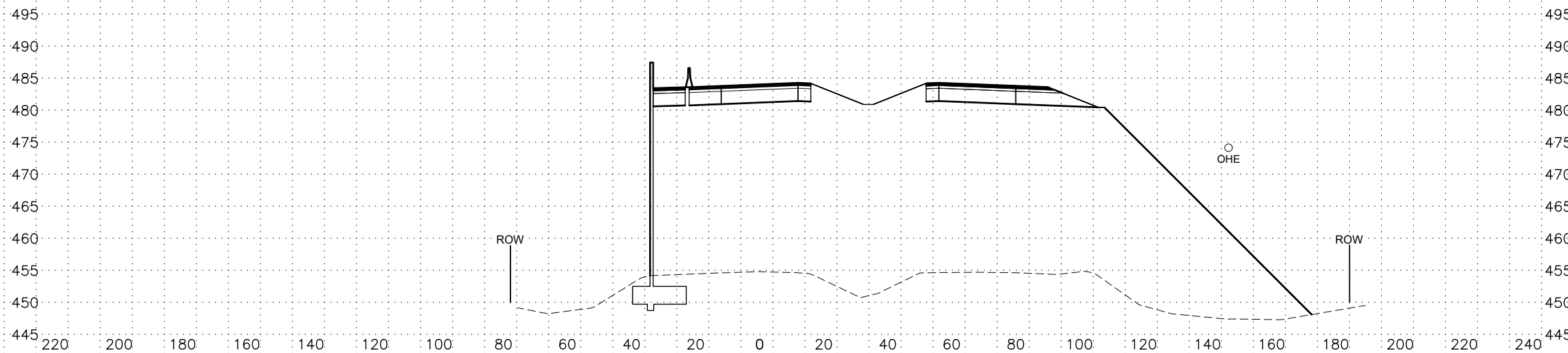
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-23_Thu, Nov/19/20 02:21pm



2072+75



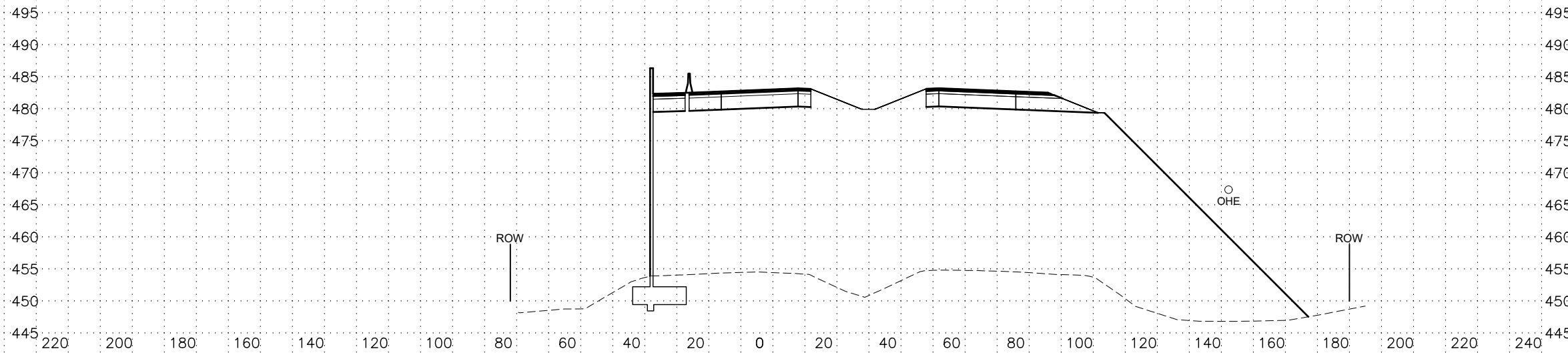
2072+50



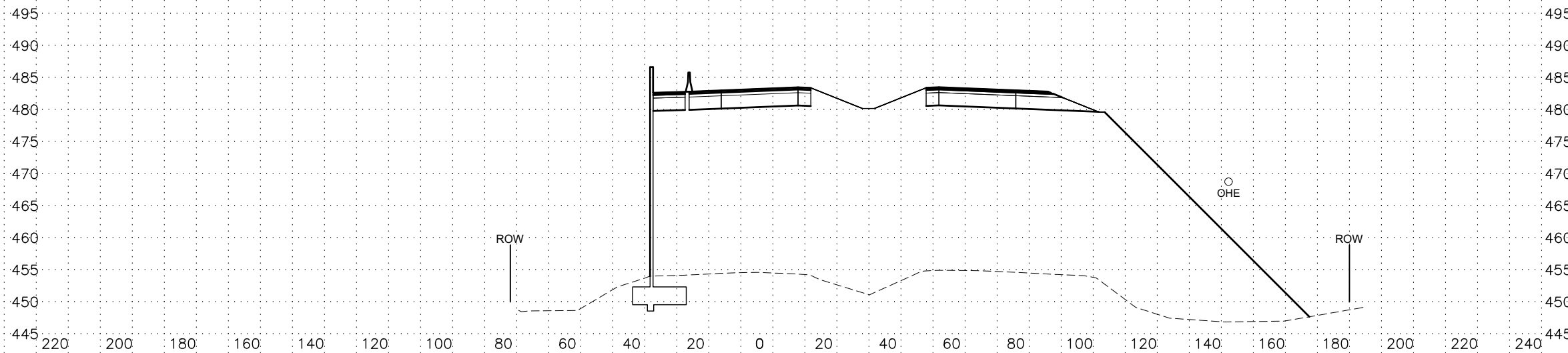
2072+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

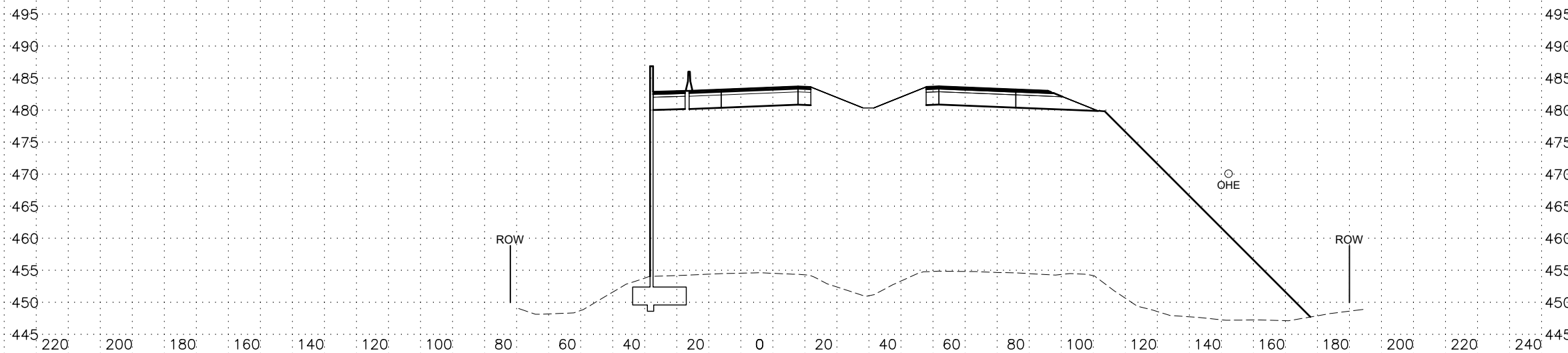
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-24_Thu, Nov/19/20 02:21pm



2073+50



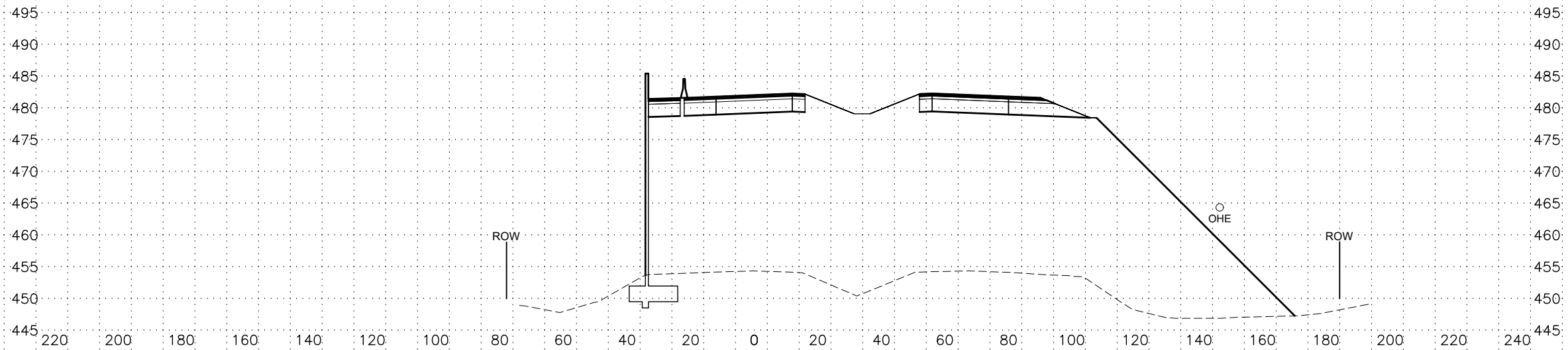
2073+25



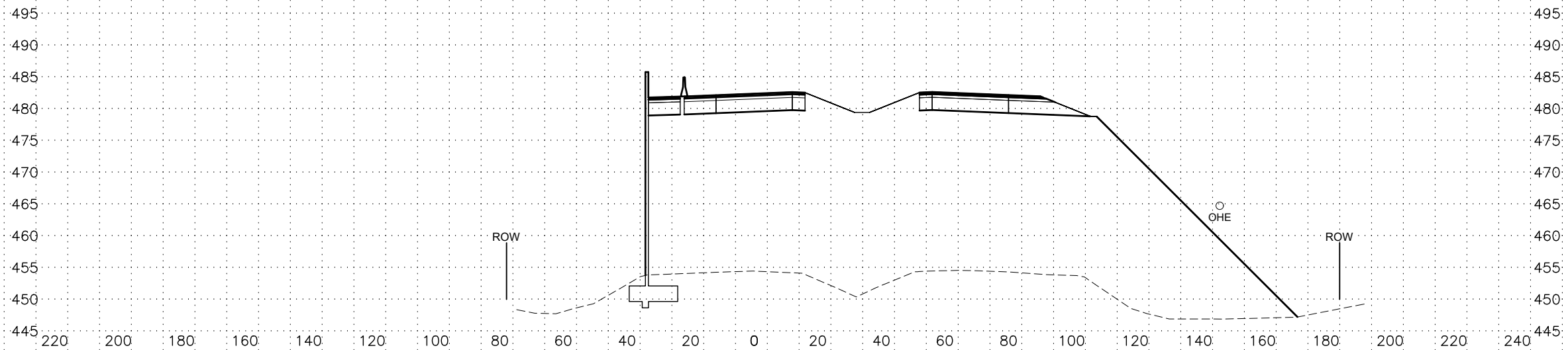
2073+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

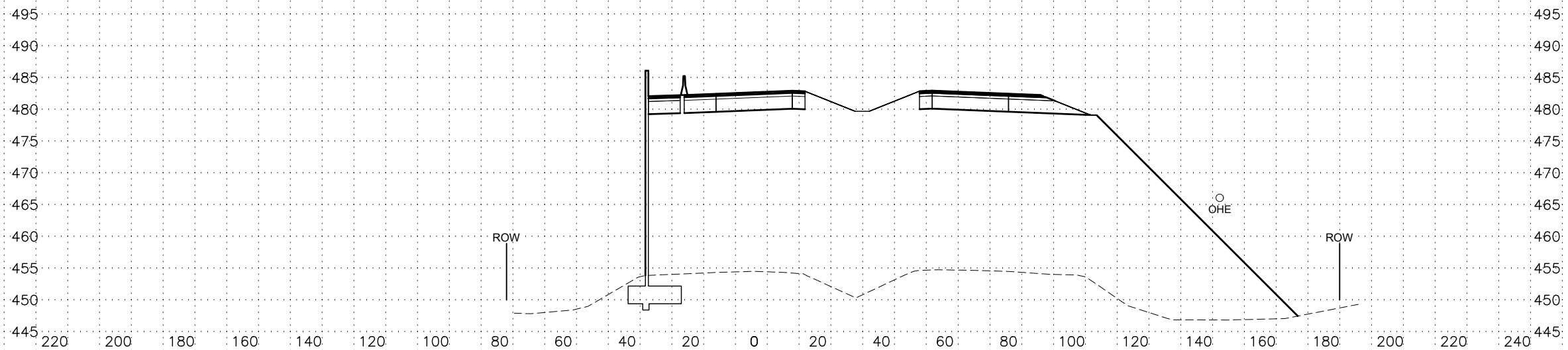
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-25_Thu, Nov/19/20 02:21pm



2074+25



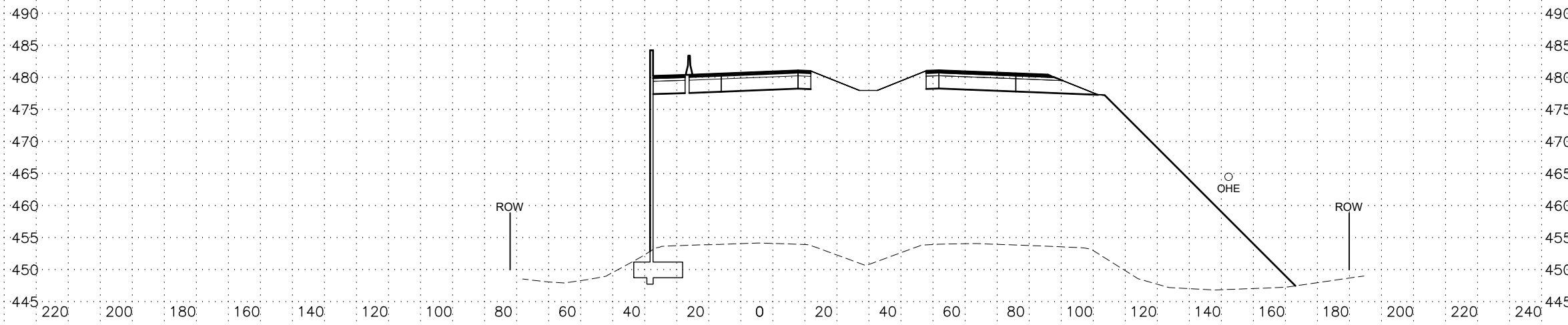
2074+00



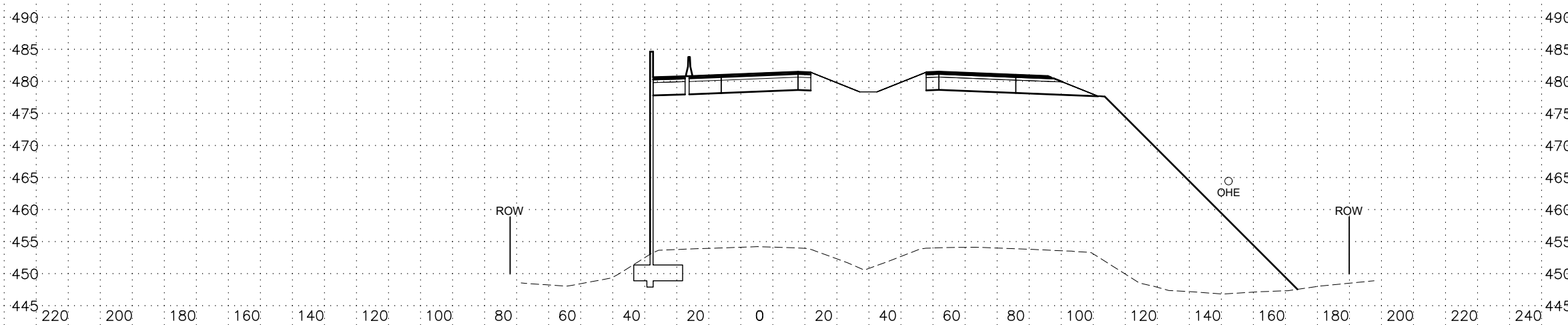
2073+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

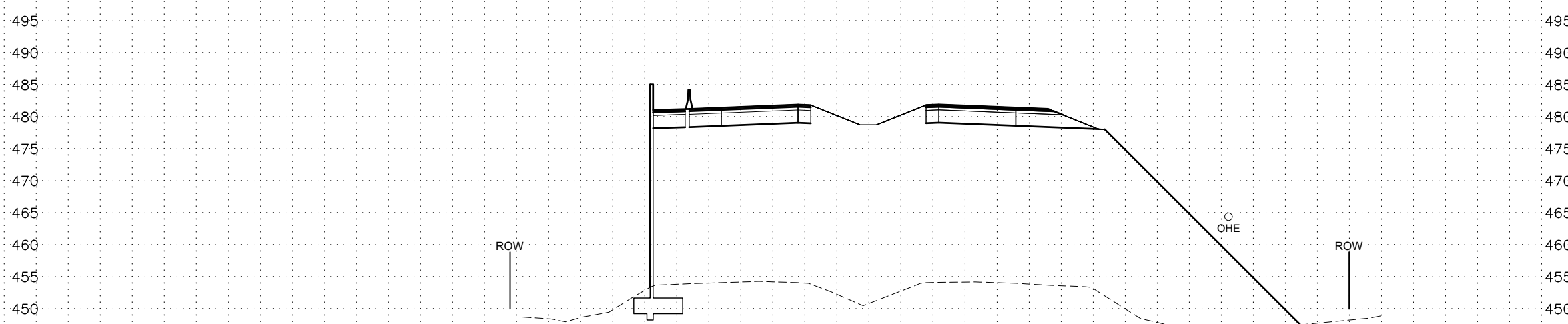
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-26_Thu, Nov/19/20 02:21pm



2075+00



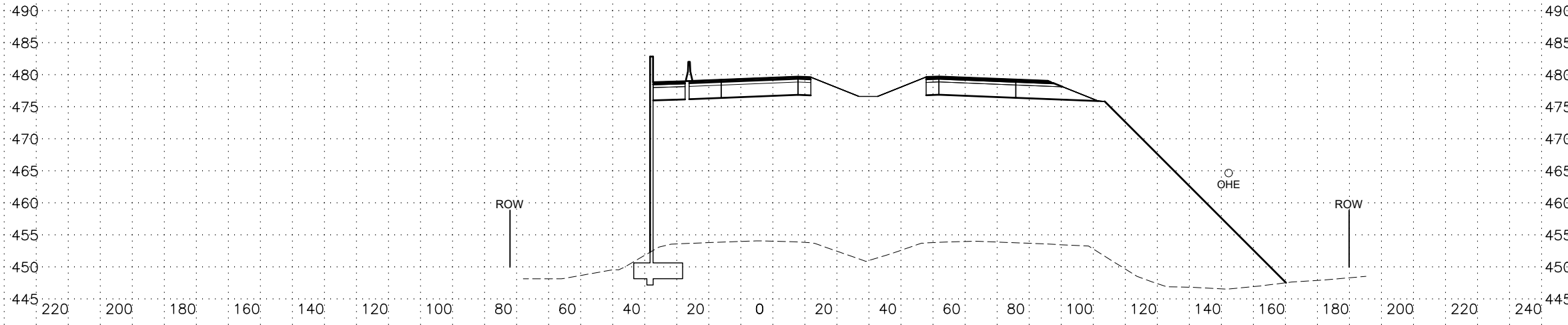
2074+75



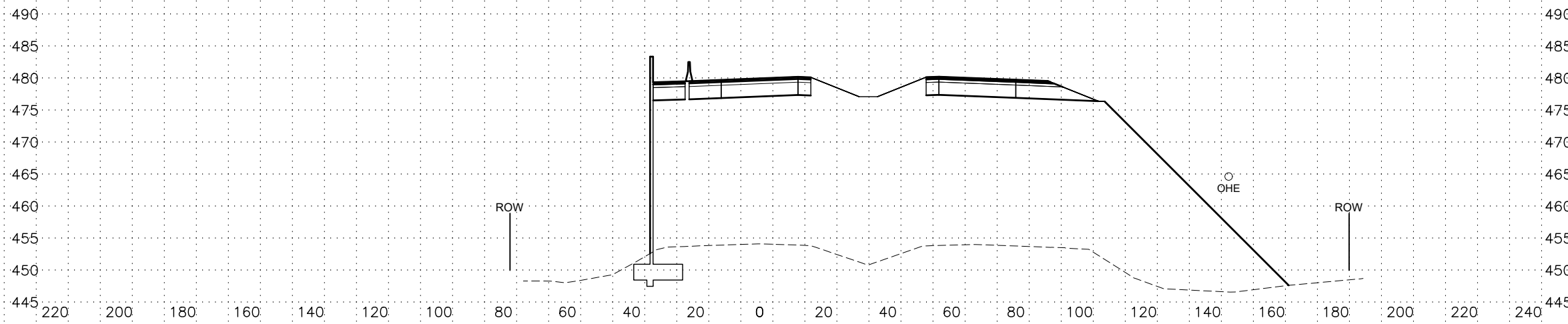
2074+50

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

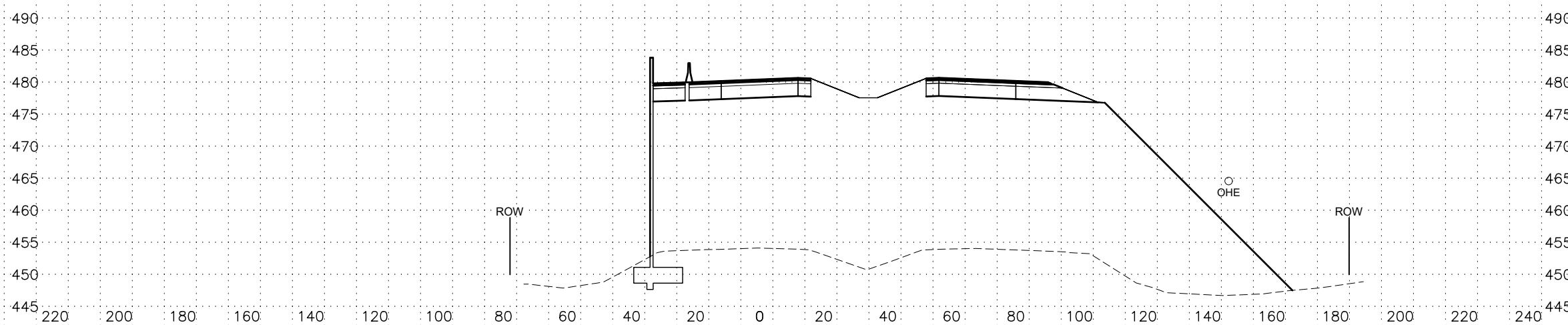
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-27_Thu, Nov/19/20 02:21pm



2075+75



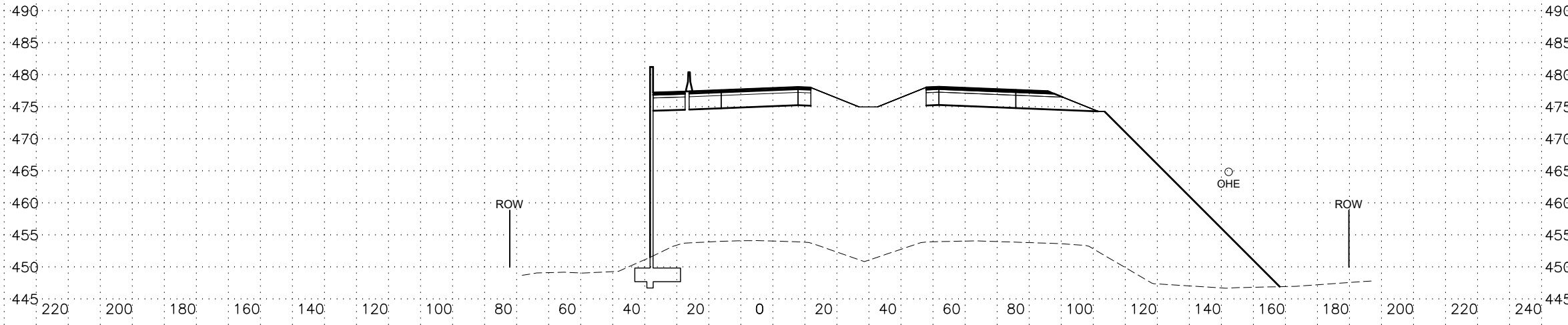
2075+50



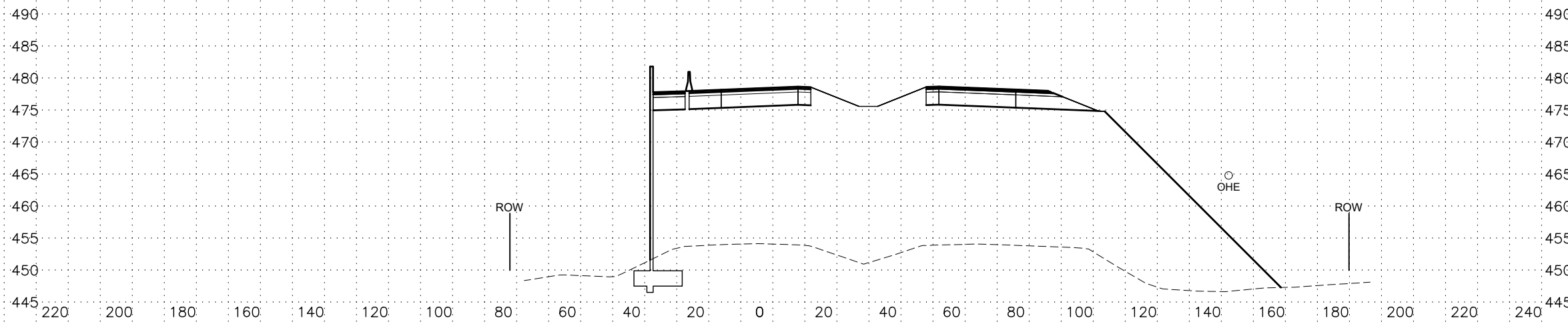
2075+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

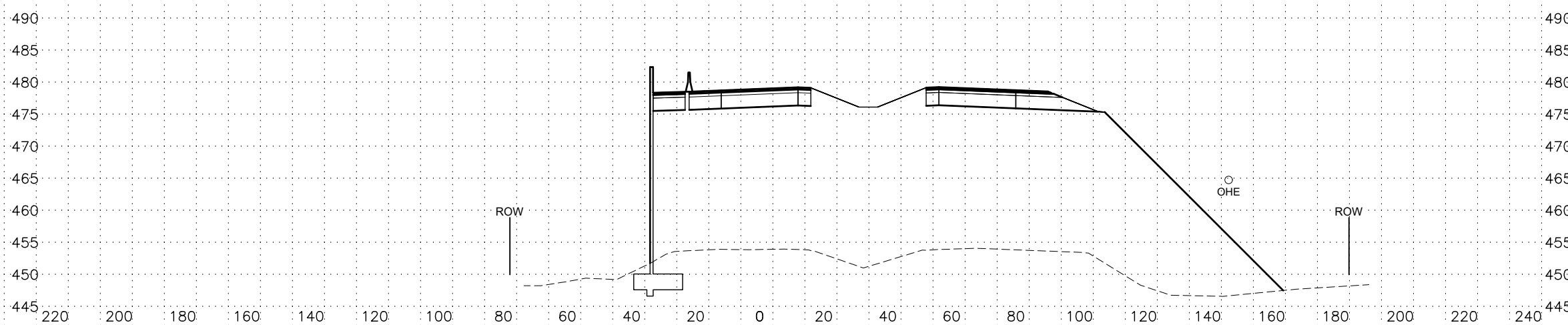
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-28_Thu, Nov/19/20 02:21pm



2076+50



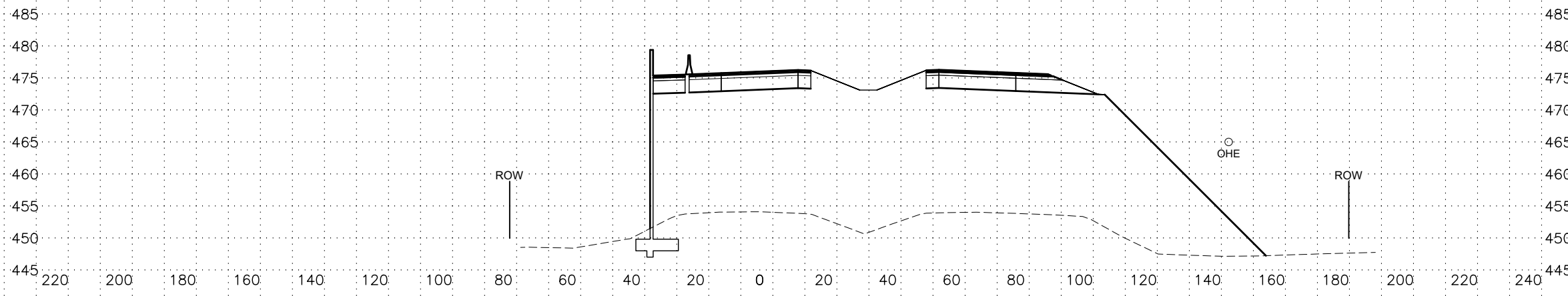
2076+25



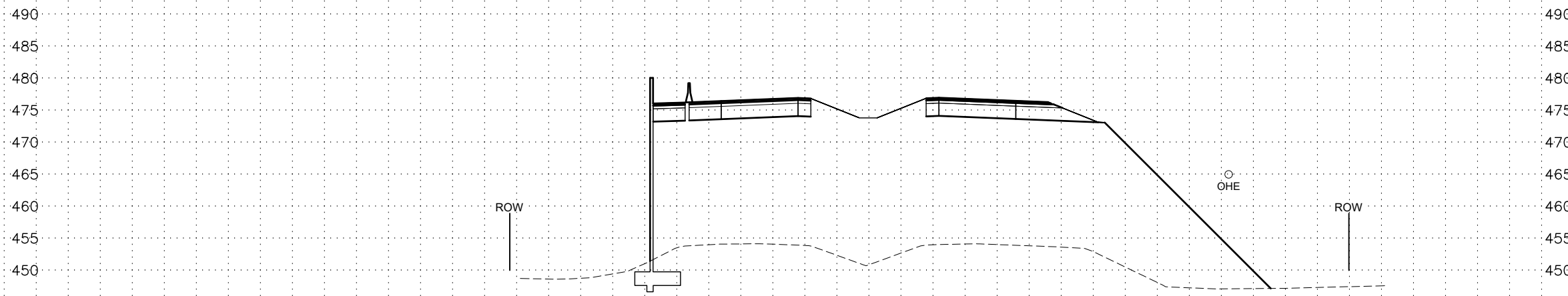
2076+00

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

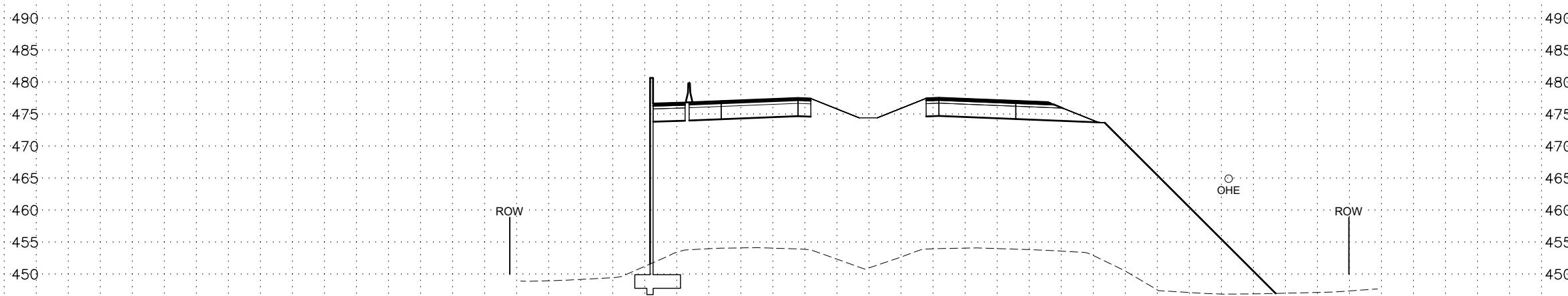
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-29_Thu, Nov/19/20 02:22pm



2077+25



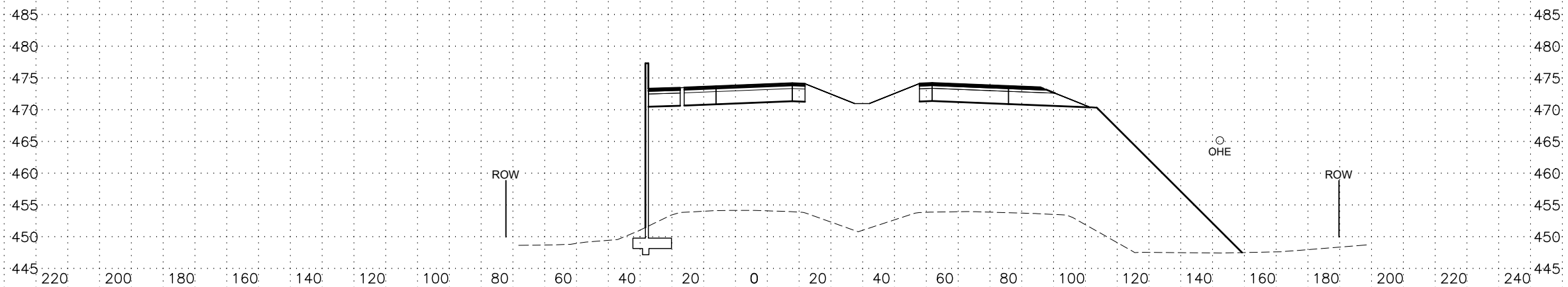
2077+00



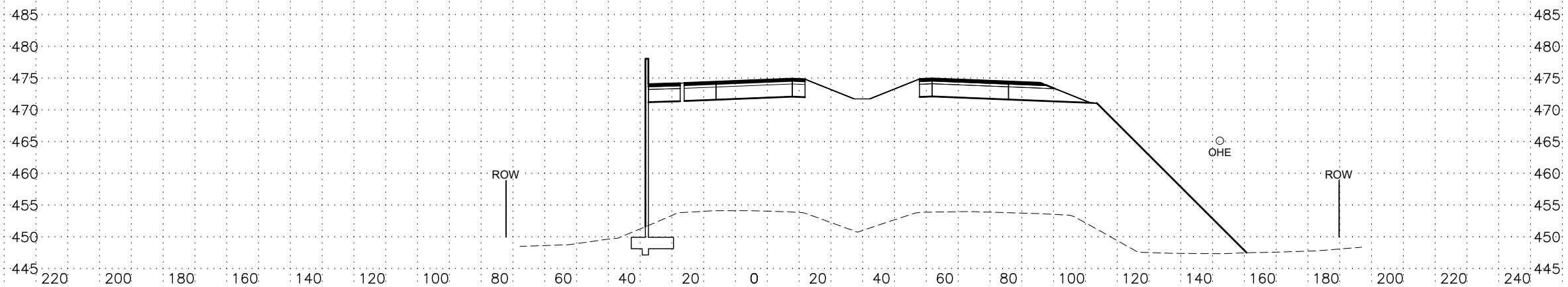
2076+75

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

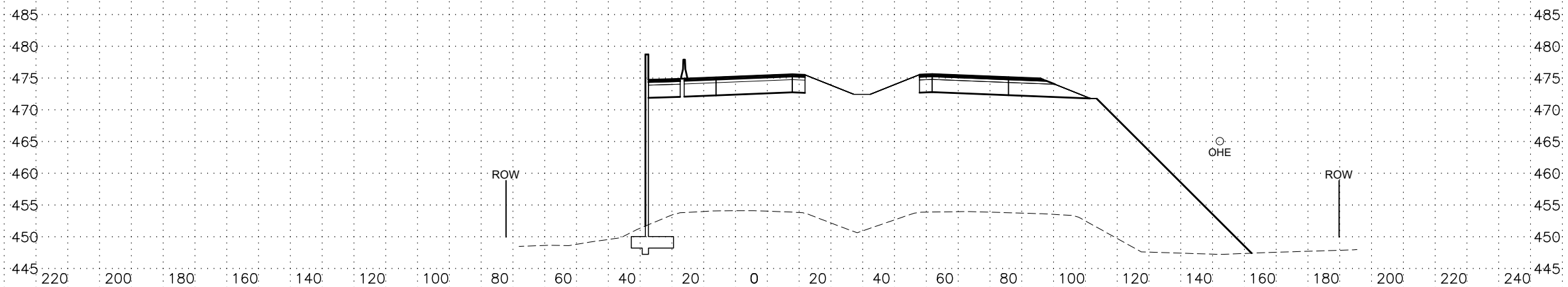
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-30_Thu, Nov/19/20 02:22pm



2078+00



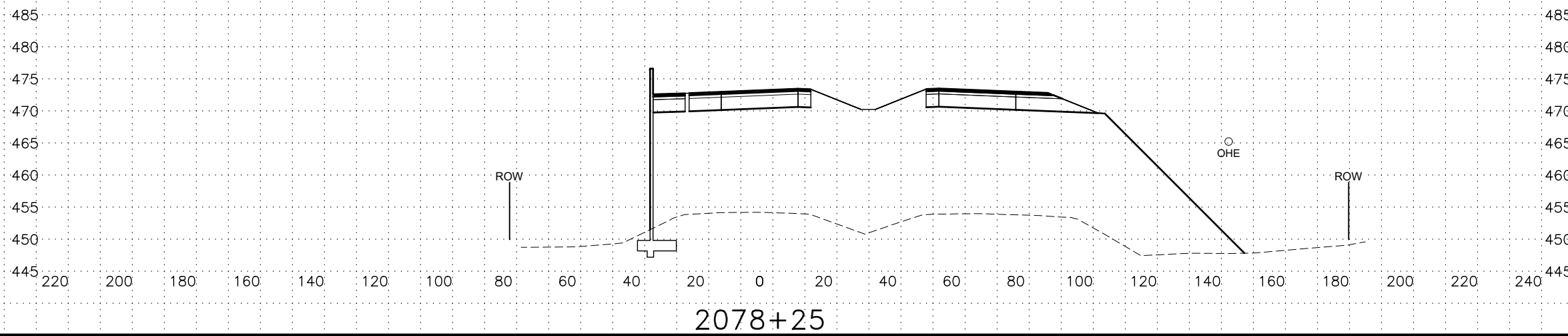
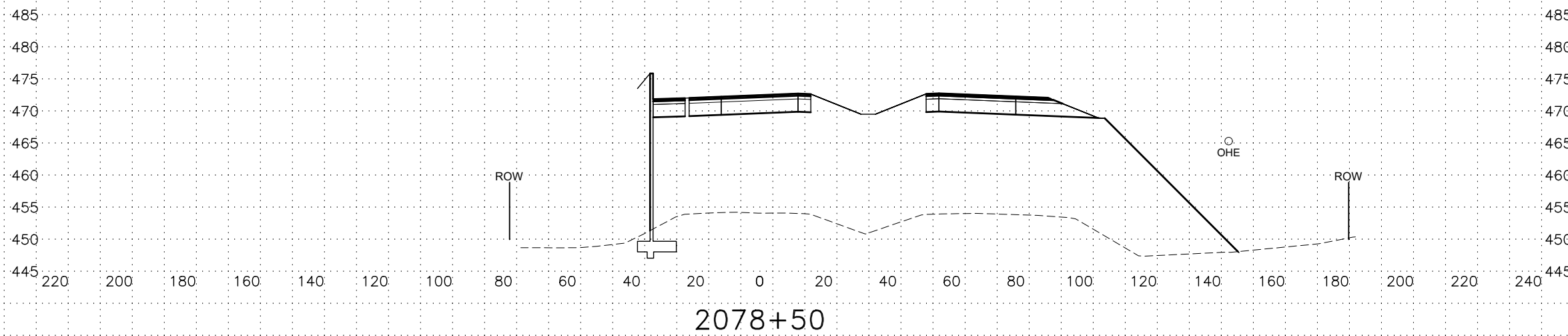
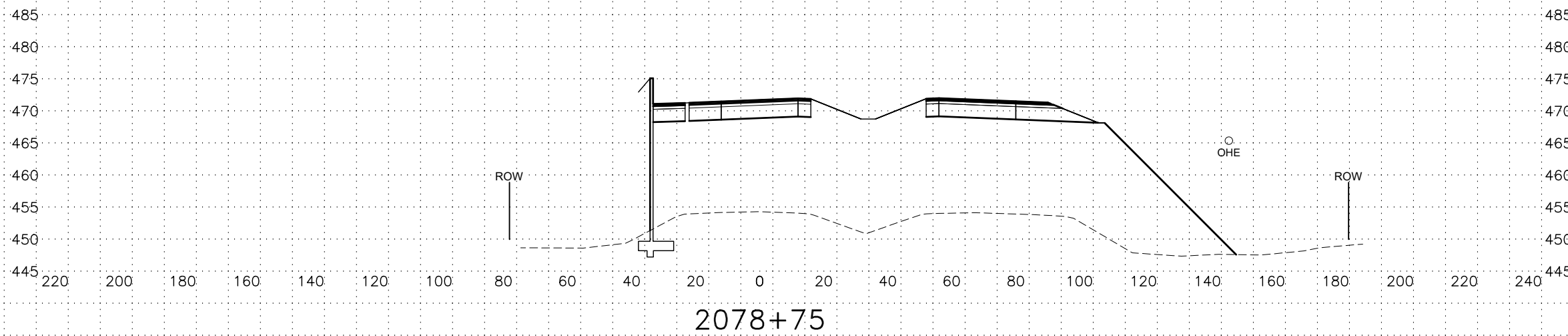
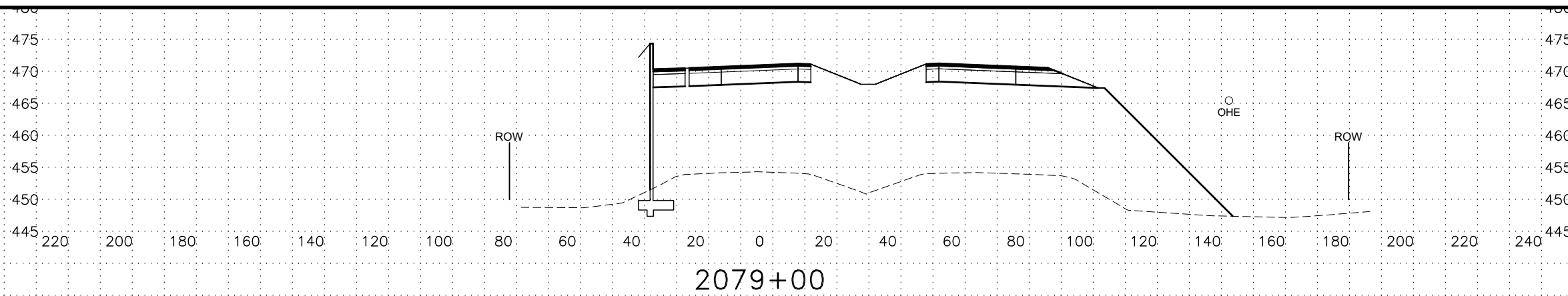
2077+75



2077+50

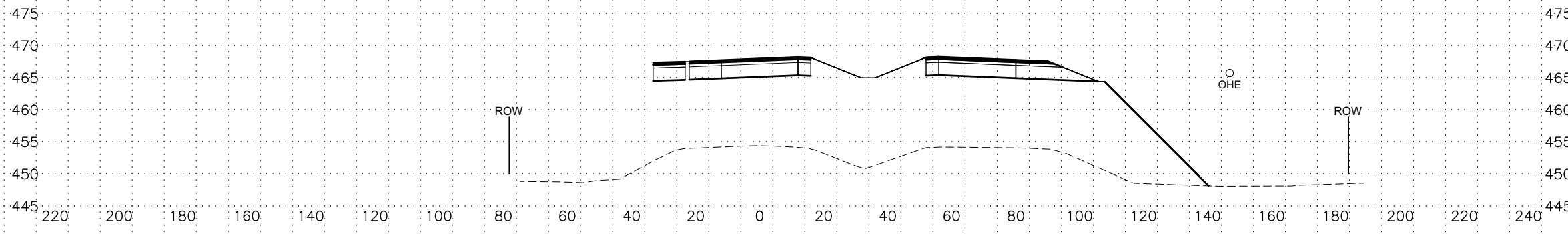
LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-31_Thu, Nov/19/20 02:22pm

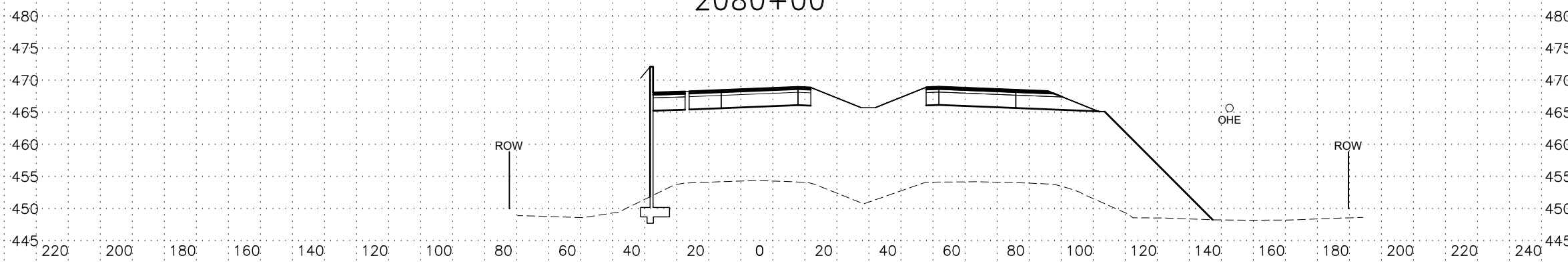


LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

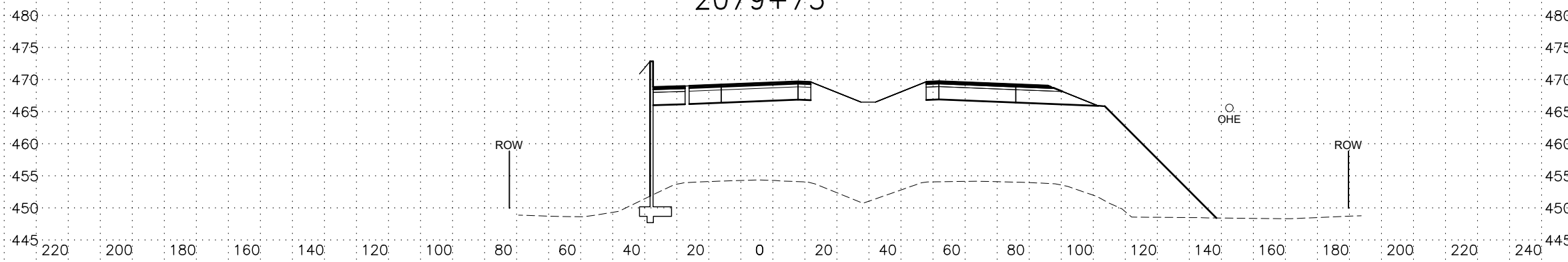
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-32_Thu, Nov/19/20 02:22pm



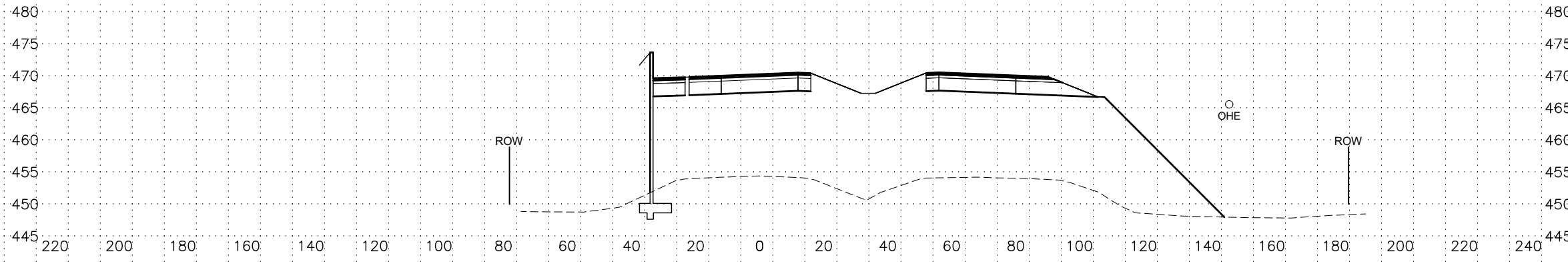
2080+00



2079+75



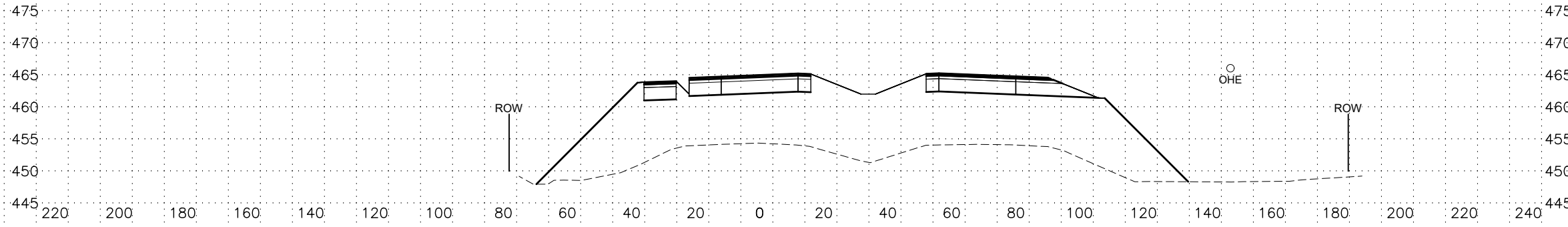
2079+50



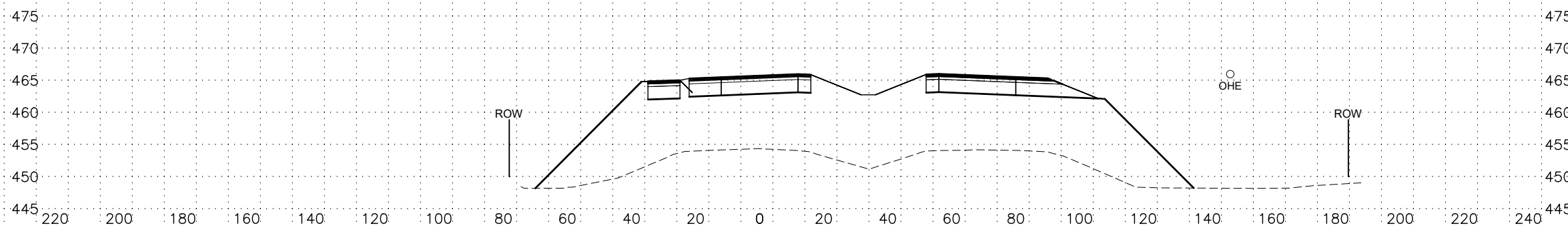
2079+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

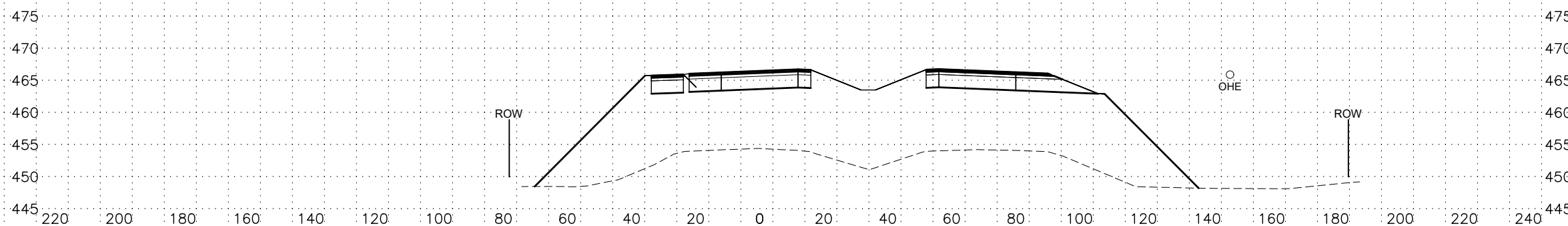
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-33_Thu_Nov/19/20_02:22pm



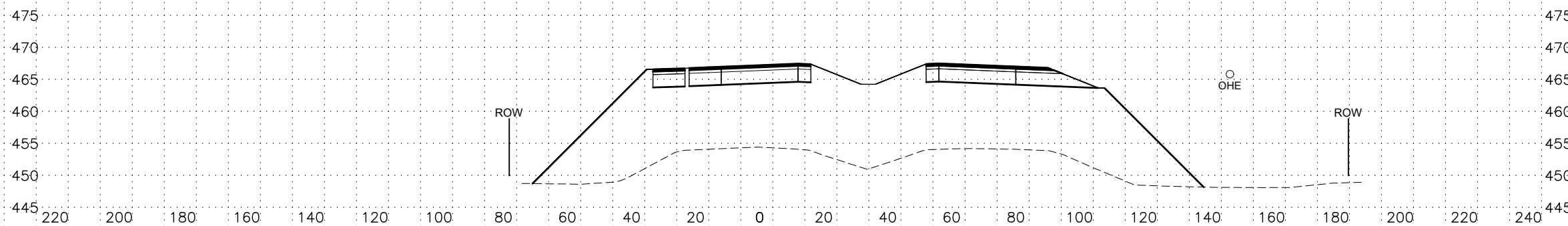
2081+00



2080+75



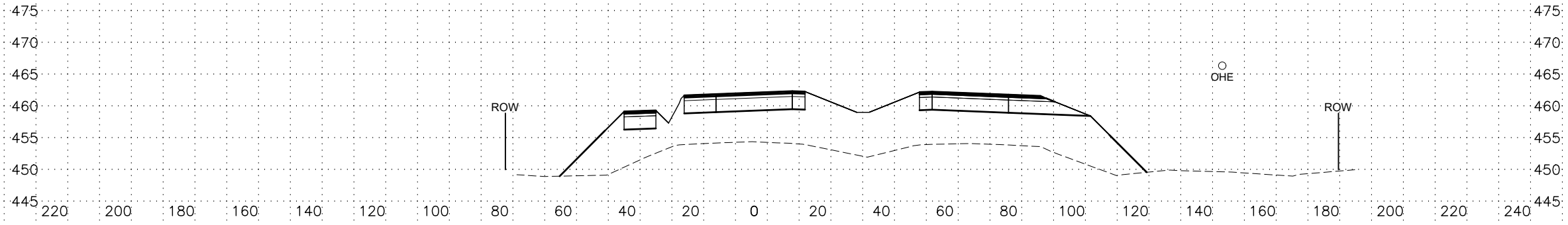
2080+50



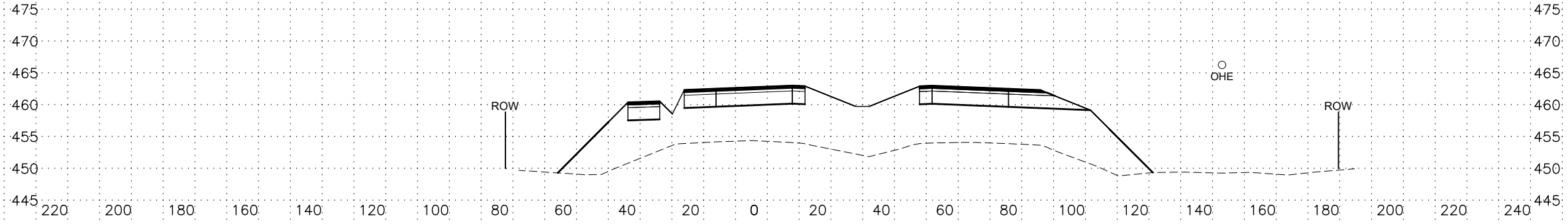
2080+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

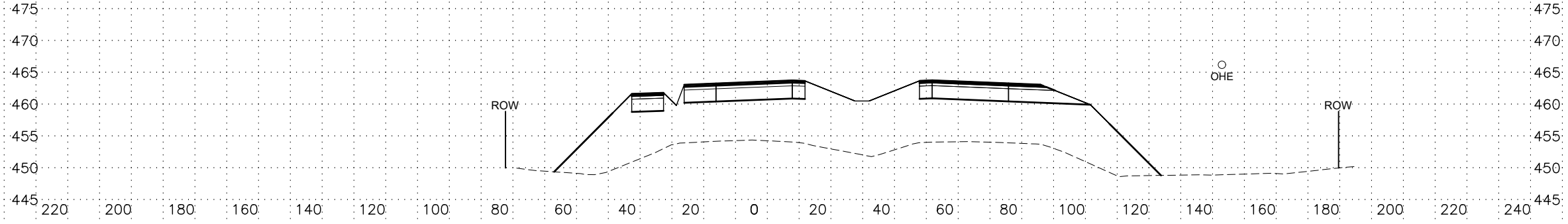
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-34_Thu_Nov/19/20_02:22pm



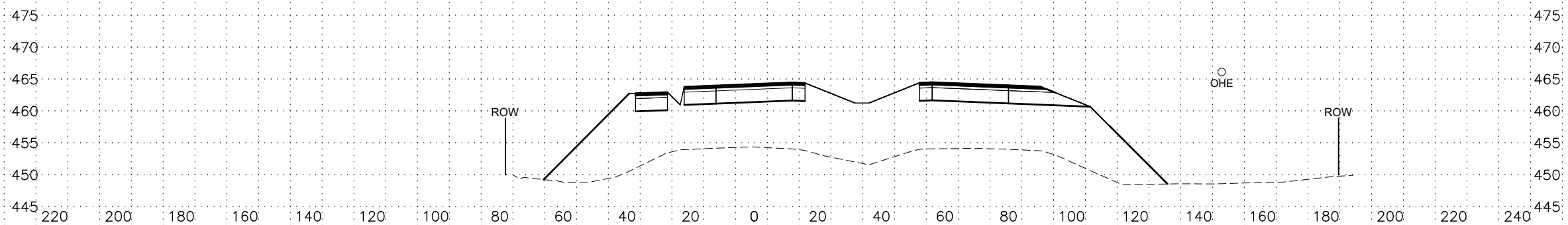
2082+00



2081+75



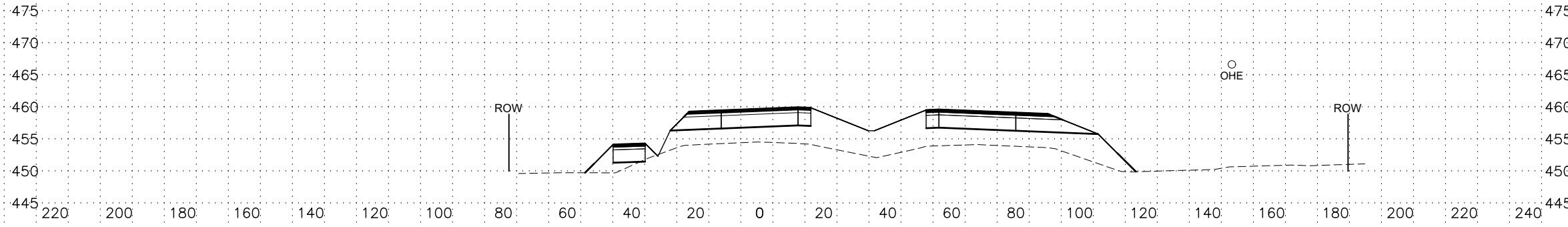
2081+50



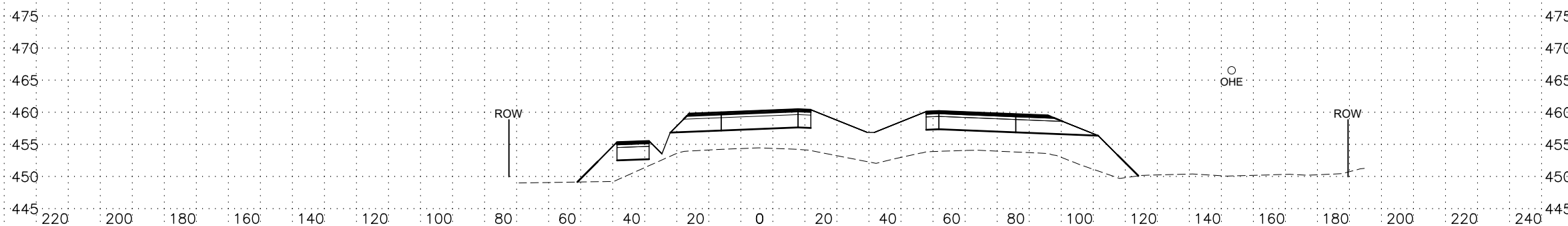
2081+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

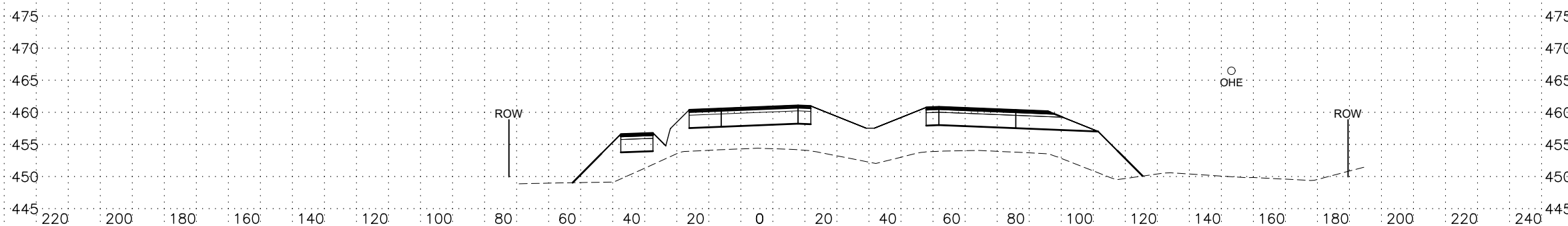
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-35_Thu_Nov/19/20_02:22pm



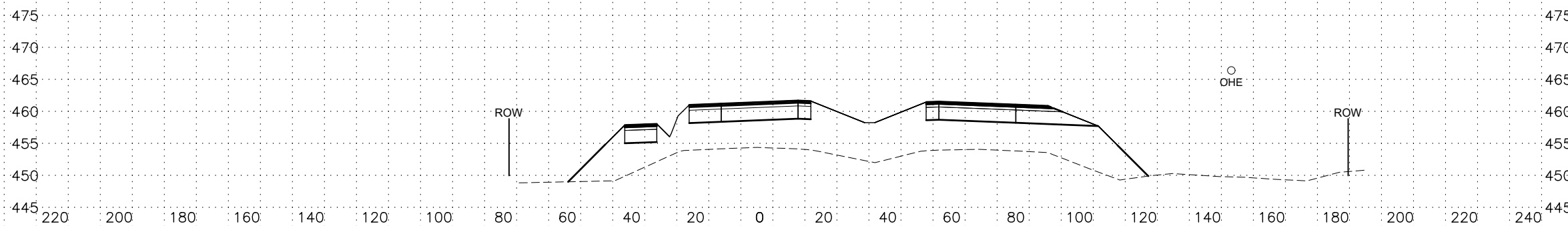
2083+00



2082+75



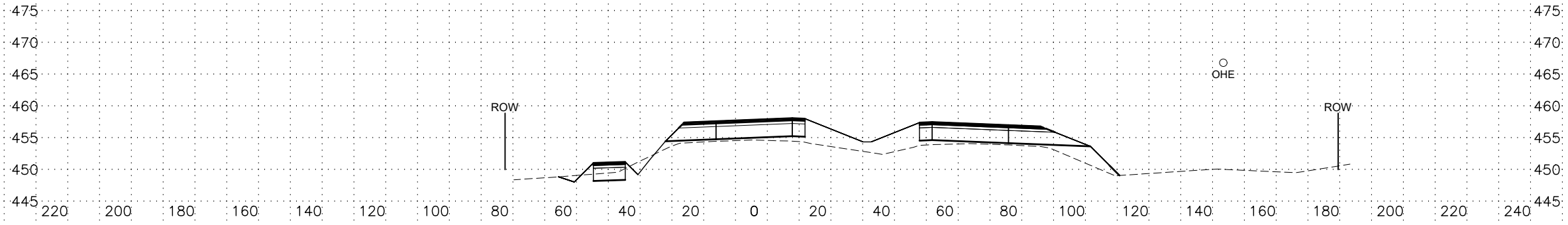
2082+50



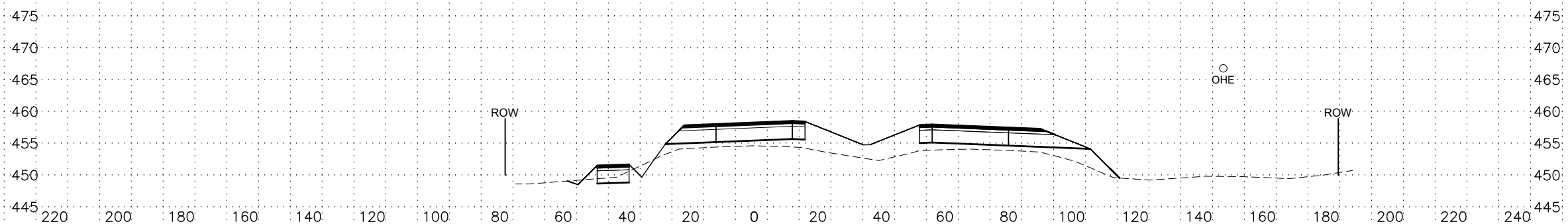
2082+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

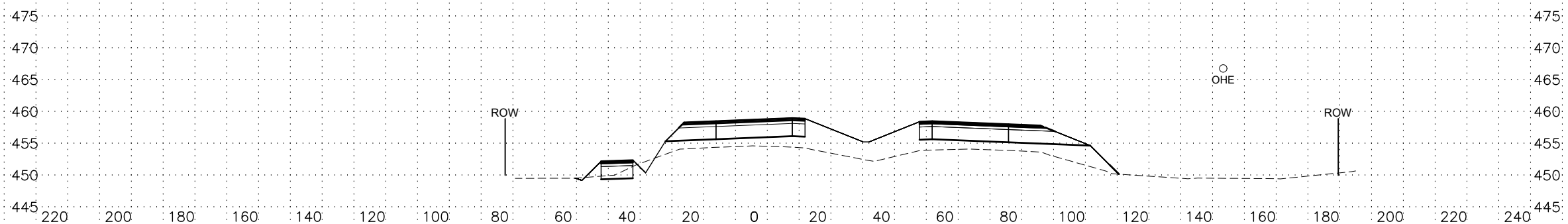
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-36 Thu, Nov/19/20 02:22pm



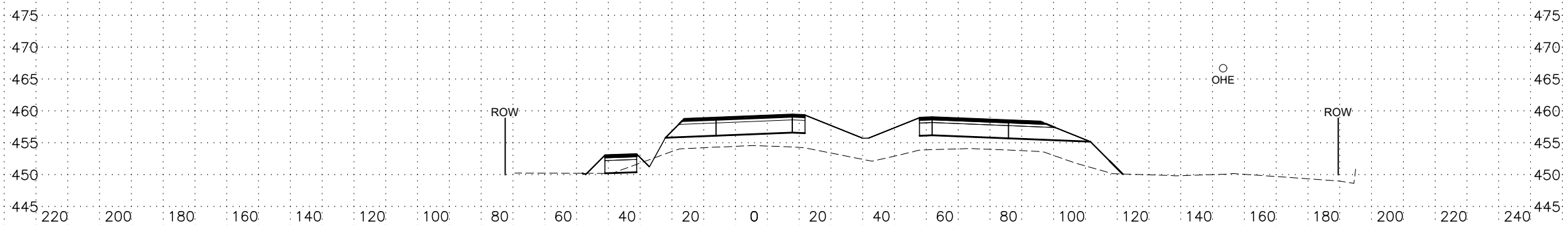
2084+00



2083+75



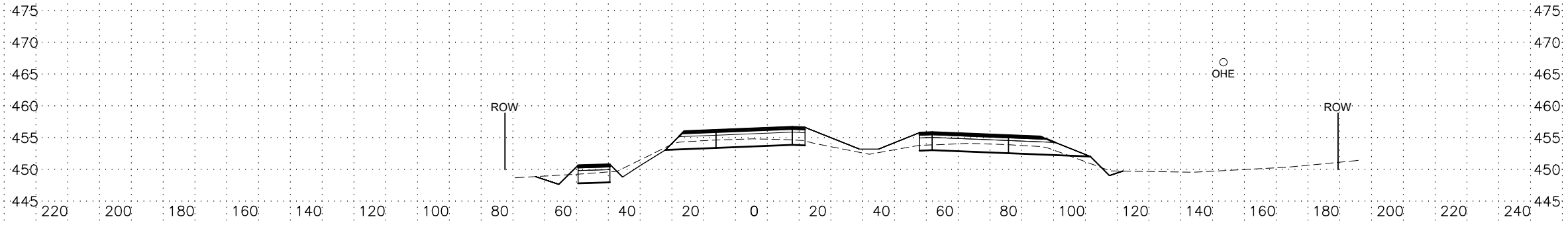
2083+50



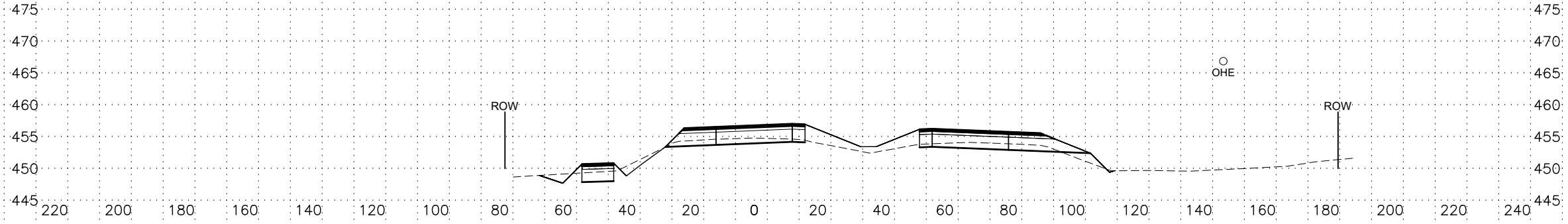
2083+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

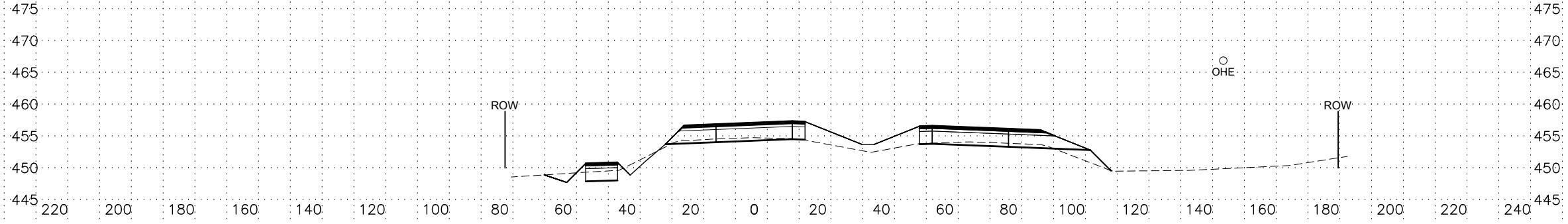
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-37 Thu, Nov/19/20 02:22pm



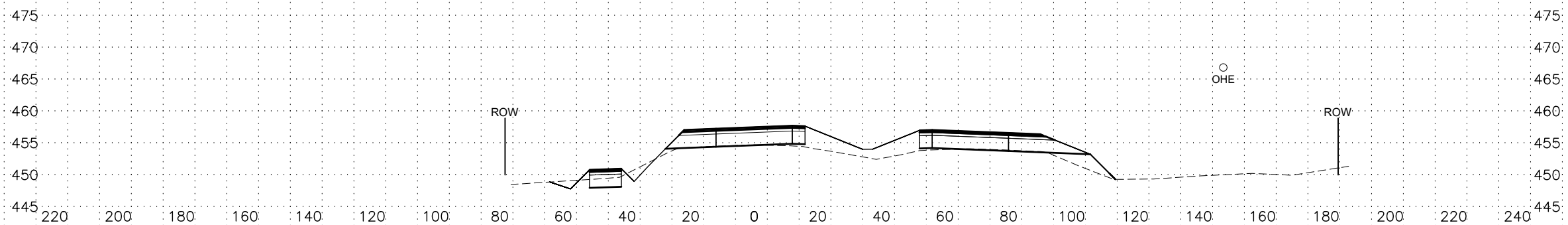
2085+00



2084+75



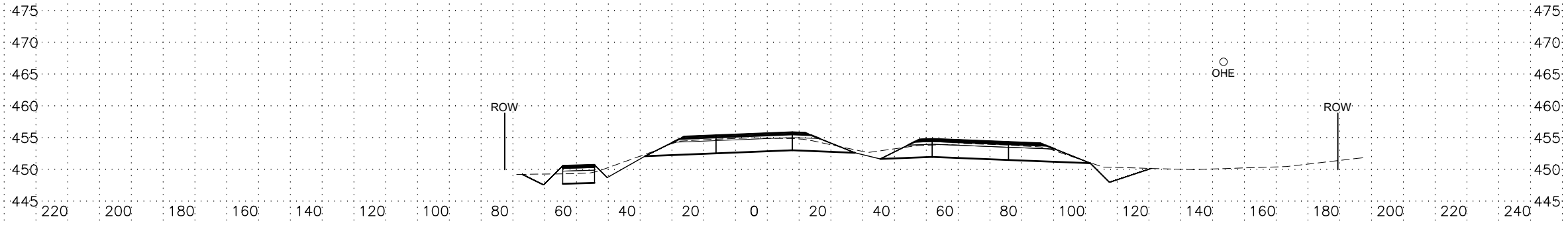
2084+50



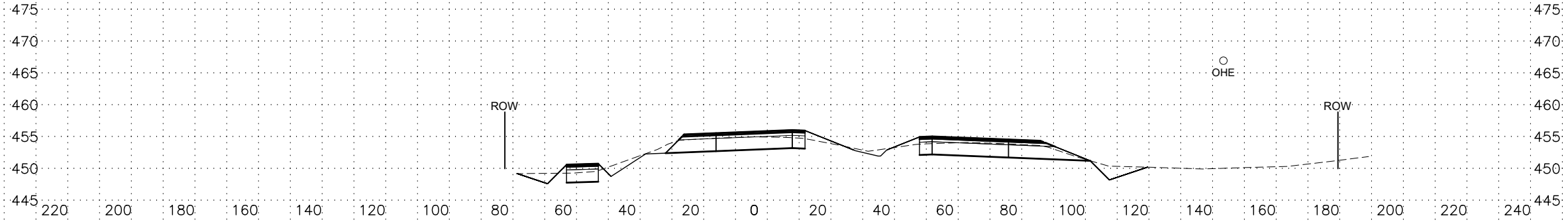
2084+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

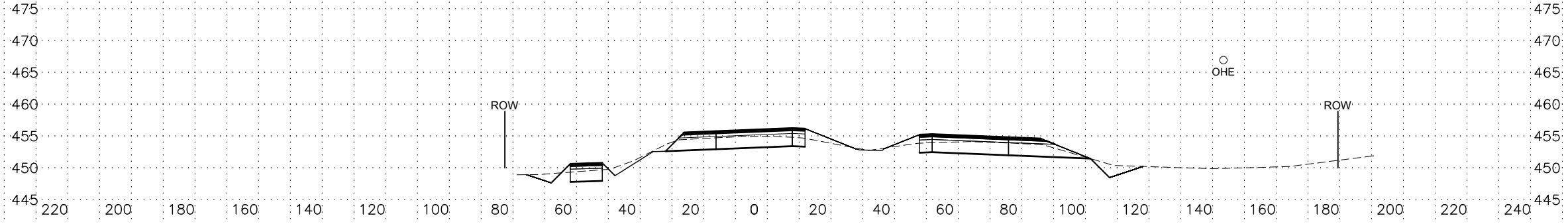
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-38_Thu_Nov/19/20_02:22pm



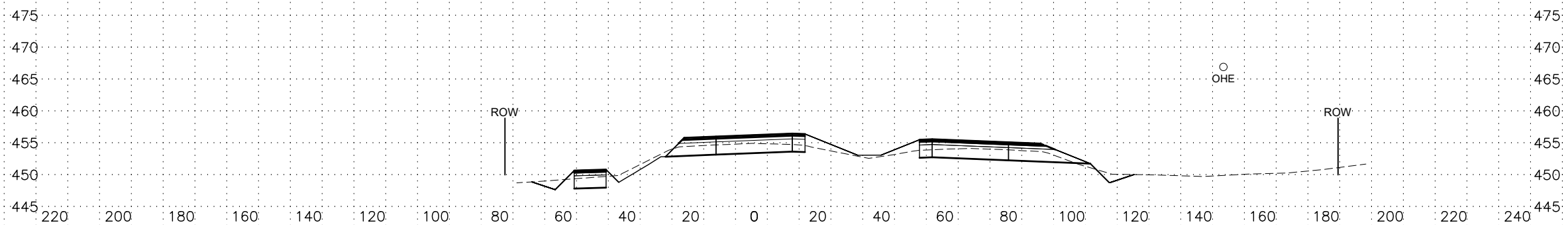
2086+00



2085+75



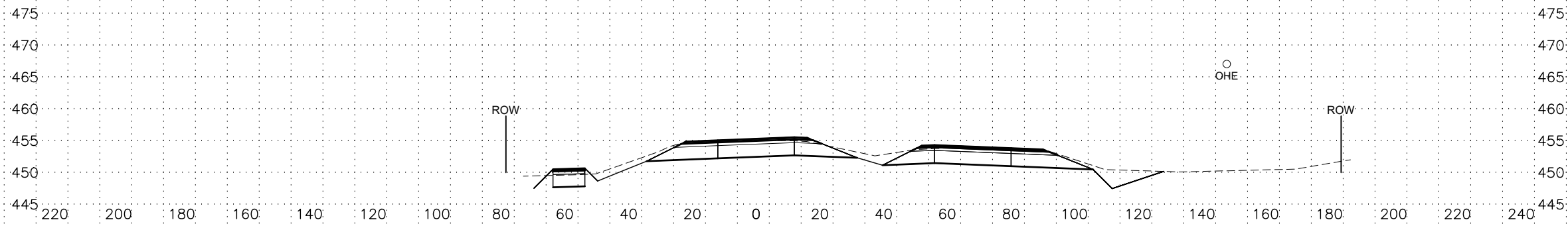
2085+50



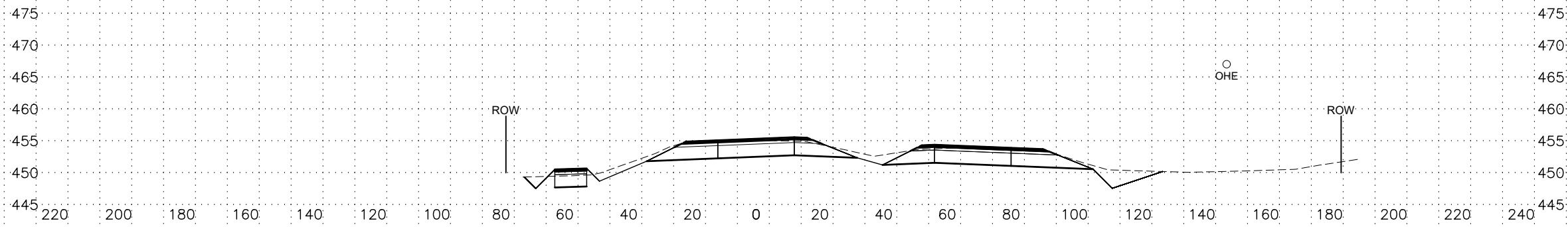
2085+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	---	41

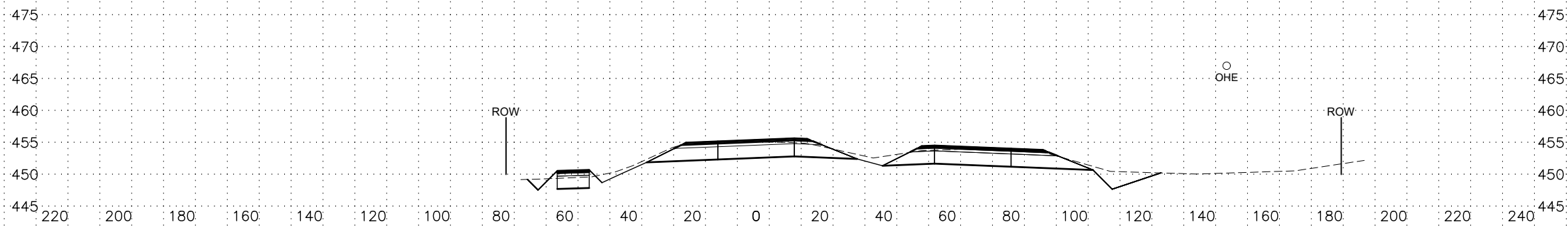
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-39_Thu_Nov/19/20_02:22pm



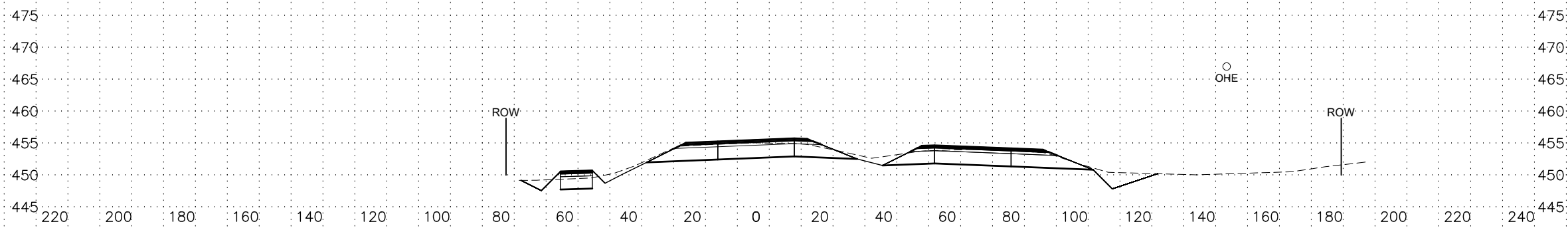
2087+00



2086+75



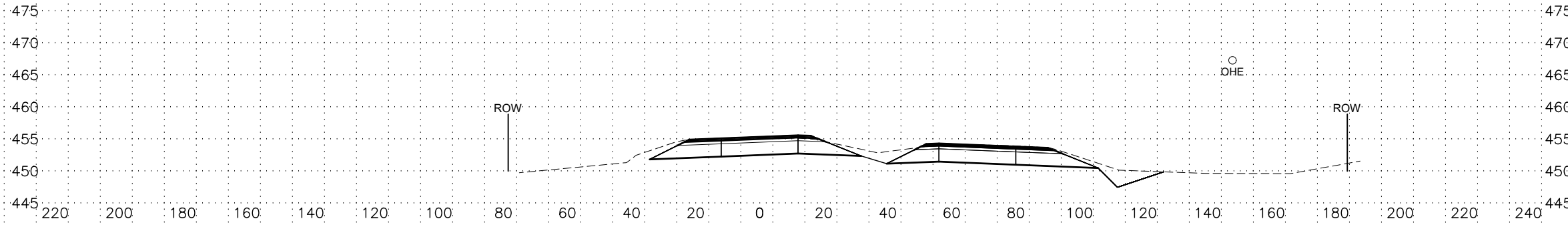
2086+50



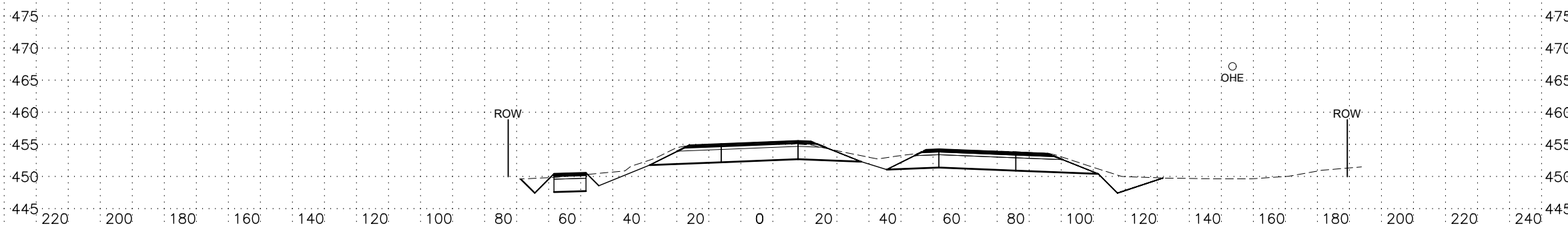
2086+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

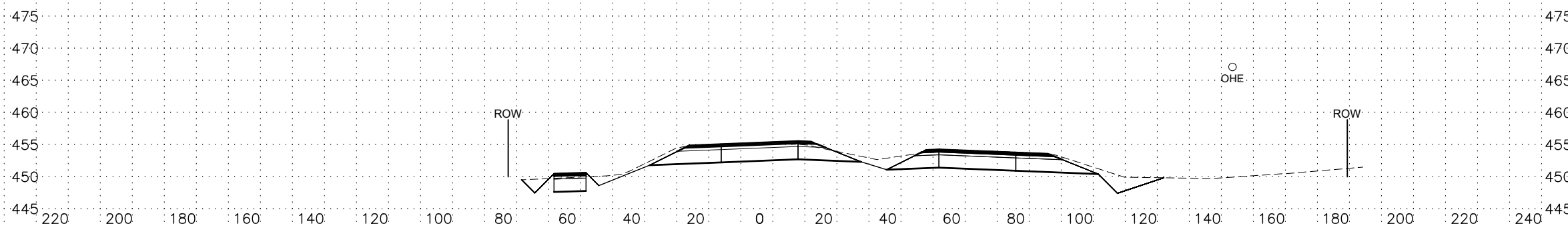
C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-40 Thu, Nov/19/20 02:22pm



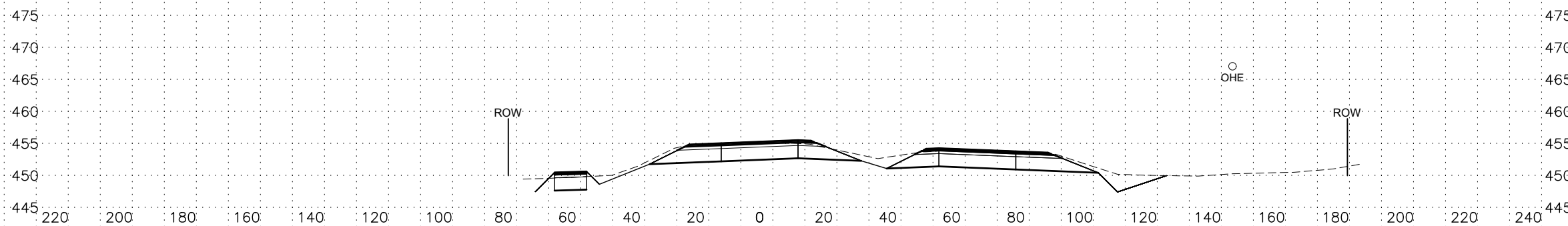
2088+00



2087+75



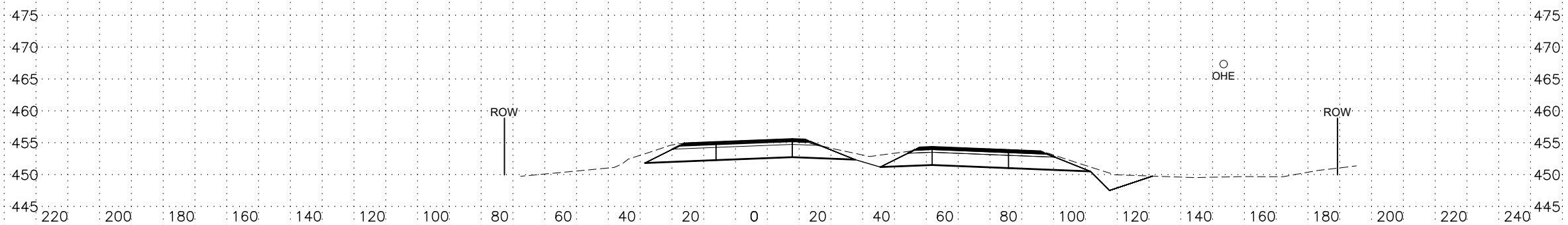
2087+50



2087+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41

C:\pwworkdir\den001\ch2mnhil_jc065526\0863105\XR-60734-XS-41_Thu, Nov/19/20 02:23pm



2088+25

LINE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
"NB"	0A24033/Z607340000	----	41