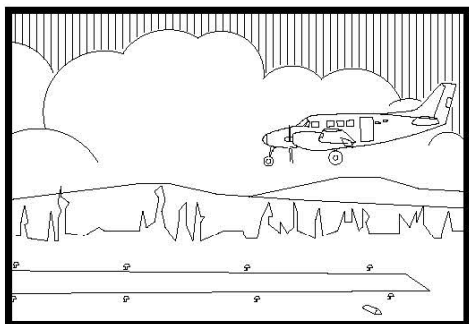


# DESIGN STUDY REPORT

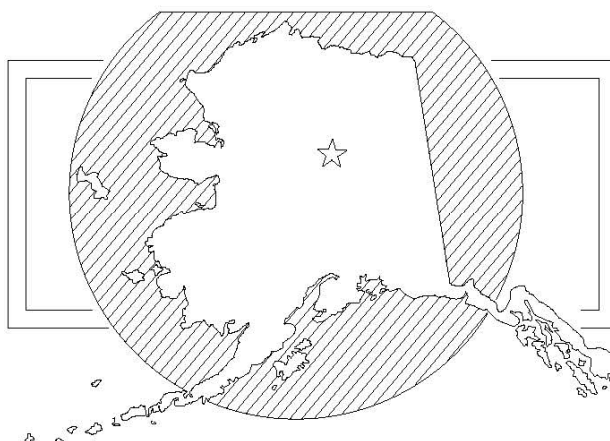
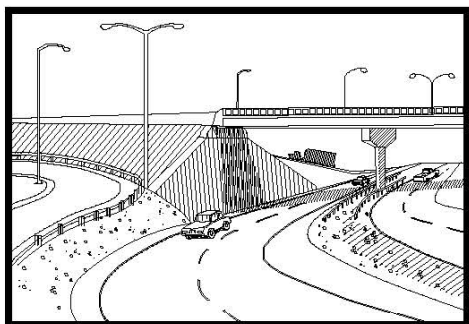
## Port Road Reconstruction

Z621230000 / 0002278



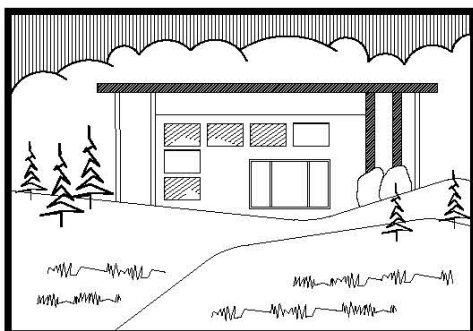
# STATE OF ALASKA

Department of Transportation  
and Public Facilities



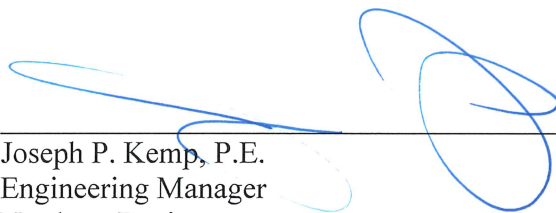
*NORTHERN REGION*

*June 2020*




DESIGN APPROVAL  
PORT ROAD RECONSTRUCTION  
PROJECT NO. Z621230000/0002278


Requested by:

  
\_\_\_\_\_  
Joseph P. Kemp, P.E.  
Engineering Manager  
Northern Region

  
\_\_\_\_\_  
Date

Design Approval  
Granted:

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

  
\_\_\_\_\_  
Date

20-01 

Distribution: NR Design Directive ~~16-02~~ Distribution

DESIGN STUDY REPORT  
FOR

PORT ROAD RECONSTRUCTION

PROJECT NO. Z621230000/0002278

PREPARED BY: Anne Nelson, P.E.



ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES  
NORTHERN REGION DESIGN AND ENGINEERING SERVICES  
MARCH 2020

PORT ROAD RECONSTRUCTION  
PROJECT NO. Z621230000/0002278

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## INTRODUCTION/HISTORY

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the City of Nome and the Federal Highway Administration (FHWA), proposes to reconstruct Port Road, including its intersections with Jetty Road and Jafet Road.

Port Road, a two-lane paved road in Nome, Alaska, serves a primarily industrial area that includes the City of Nome's barge landing and large vessel jetty as well as the community's power plant and water treatment plant, the post office, other commercial buildings, and a single residence. It also provides access to the beach west of the port. Jetty Road is a gravel road that provides access from the causeway up the hill to the freight storage yard and fuel tank farm. Jafet Road is a paved two-lane road that connects Seppala Drive to Port Road over the Snake River bridge.

The main traffic movements, which include heavy trucks carrying freight and fuel, are from Jafet Road south onto Port Road. Considerable traffic also travels from the barge landing up Jetty Road up the hill to the storage area. Jetty Road provides access for hauling gravel/rock and for cruise ship passengers traveling from the ships to the town and back.

## PROJECT DESCRIPTION

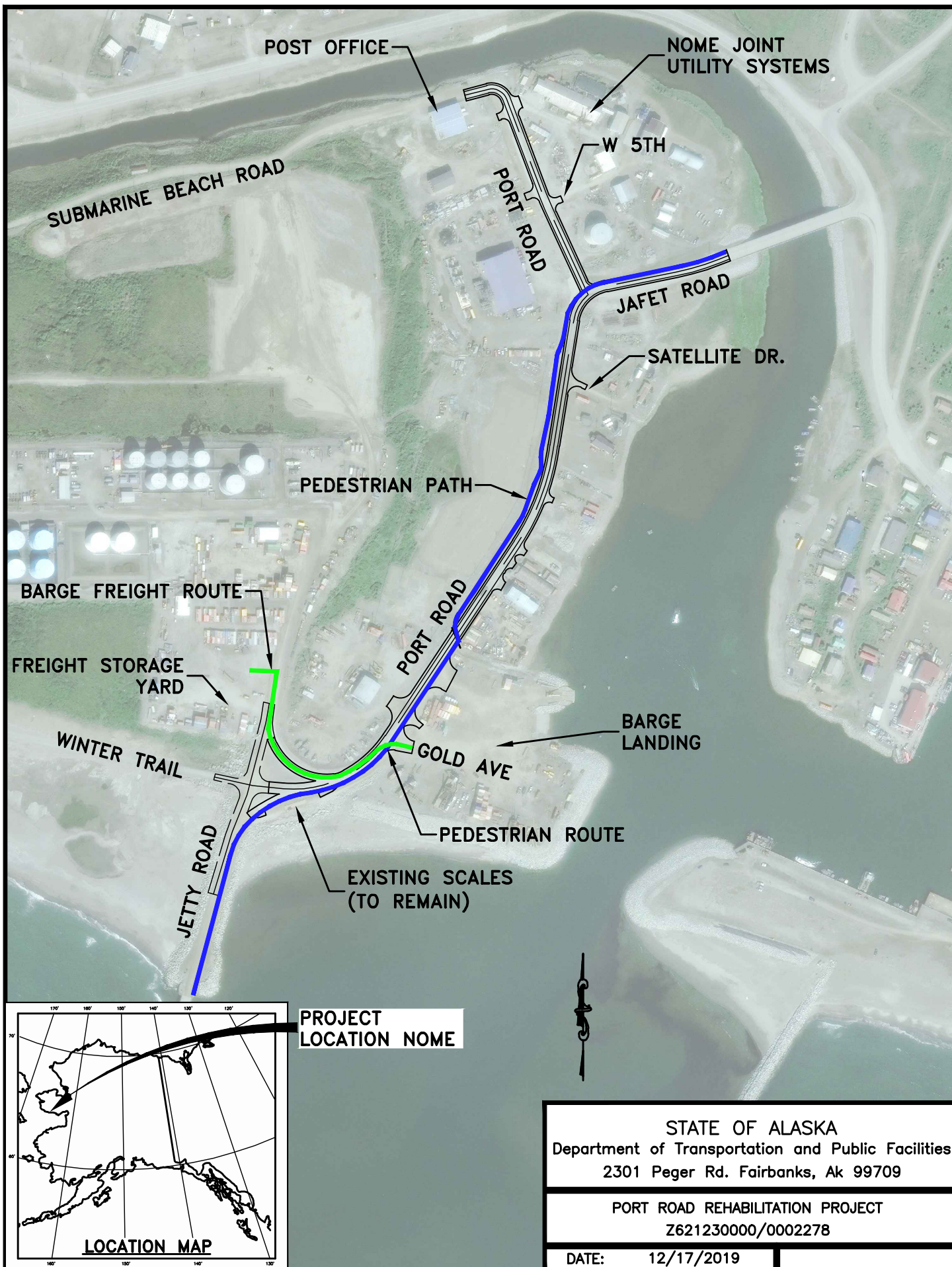
This project will rehabilitate Port Road in Nome (approximately 0.6 miles), including reconfiguring the intersection with Jetty Road at the southern end, the intersection with Jafet Road, and the intersection with Submarine Beach Road at the northern end. Proposed improvements include:

- Repave all of Port Road
- Modify the intersection with Jafet Road to provide a larger turning radius between Port Road and Jafet Road and make Jafet-to-southbound-Port-Road a through movement
- Modify the intersection with Jetty Road to the south to provide better sight distances and reduce confusion between conflicting users and movements.
- Add a separated path along the west side of Port Road from Jetty Road to Jafet Road
- Grade and pave approaches for side streets and driveways
- Replace existing 12-inch culverts with larger-diameter culverts

## DESIGN STANDARDS

The design of this project is based on:

- State of Alaska, DOT&PF's *Highway Preconstruction Manual*
- State of Alaska, DOT&PF's *Alaska Flexible Pavement Design Manual*, 2004 (AFPD)
- State of Alaska, DOT&PF's *Alaska Traffic Manual*, 2016 with latest Interim Revisions
- AASHTO's *A Policy on Geometric Design of Highways and Streets*, 2011
- AASHTO's *Roadside Design Guide*, 2011
- AASHTO's *Guide for the Development of Bicycle Facilities*, 2012
- US Department of Transportation, *ADA Standards for Transportation Facilities*, 2006



Refer to Appendix A for the project Design Criteria.

## **DESIGN EXCEPTIONS AND DESIGN WAIVERS**

A design exception will be needed for the 20-mph curve between Jafet and Port Road. The ROW constrains this curve and reduces the radius below the minimum required for the design speed. This will be completed through an amendment to this Design Study Report.

## **DESIGN ALTERNATIVES**

### **Port / Jetty Road Intersection**

The existing Port/Jetty intersection is a Y-layout with an unpaved gravel triangle between the north and south lanes of Port and the Jetty road. Commercial and freight traffic utilize the sweeping curved lanes of Port Road and yield onto Jetty. The public frequently drives straight through the triangular gravel area to access the beach road to the west in conflict with the heavy commercial truck movements. Multiple alternative configurations were considered for this intersection.

- **Alternative 1:** Four-way stop; scale remains in existing location
  - Brings the four legs together into one intersection with stop signs on all legs while maintaining the existing location of and access to the truck scale
  - Would require right-of-way acquisition (the center triangle of City of Nome land)
  - Will accommodate a WB-67
  - Maintains unpaved route from freight storage yard to causeway
  - Provides clear path to/from beach access road
  - Would slow any turning trucks even if they do not heed the stop signs
- **Alternative 2:** Four-way stop with north and south freight lanes; scale remains in existing location
  - Keeps the existing unpaved causeway-to-upper-pad movement and the yield-controlled barge-landing-to-upper-pad movement
  - Formalizes the way the existing intersection has been functioning
  - Provides clear path to/from the beach access road
  - Would slow trucks making left-turn movements from Jetty Road to Port Road
- **Alternative 3:** Roundabout
  - A roundabout large enough to accommodate trucks would be tight in the available space
  - A roundabout would require additional delineation, such as raised curbs and paved roadway surface, and would not allow the surface to/from the causeway and upper pad to remain unpaved
  - The beach access approach would need to be widened to accommodate that roundabout leg

## **Jafet/Port Intersection**

Two intersection options were considered for the Jafet/Port intersection.

- **Existing Layout:** T-intersection with Port Road as the through road and Jafet Road stop-controlled
  - Maintains the existing traffic flow
  - Forces traffic coming from Seppala to stop and yield to through traffic on Port.
- **Stop Control North Leg of Port Road:** T-intersection with the stop control moved to the north leg of Port Road and the through movement occurring from Jafet Road to the south leg of Port Road
  - Reconfigures intersection to function closer to how it is currently used in practice
  - Gives priority to the higher-volume movement

## **PREFERRED DESIGN ALTERNATIVE**

At the Port/Jetty intersection, Alternative 2 (four-way intersection with freight lanes) was selected as the preferred alternative after coordination with the port director and users. The City of Nome requested that the three main traffic movements be maintained (north- and southbound freight movements and through movement to access the beach). The selected alternative better defines these existing traffic movements in this intersection. Adding a stop control to the “through” movement to access the beach will better control the traffic crossing Jetty Road. The freight lanes will provide unrestricted movement for traffic and freight moving from the barge landing to the freight laydown yard. The southern freight lane will provide unrestricted movement from the causeway to Port Road for trucks hauling freight and gravel/rock to and from ships moored on the causeway. The freight lanes will be signed with “For City of Nome Freight Traffic Only” and “No Public Access” to keep public traffic confined to the stop-controlled Port/Jetty intersection.

Realignment of the Jafet/Port intersection to move the stop control to the northern portion of Port Road would give priority movement to traffic coming from Jafet Road and heading to the jetty/freight yard/barge landings and beach. This is the heaviest traffic movement, and in the intersection’s current configuration, most traffic does not completely stop at the T-intersection with Port Road.

## **3R ANALYSIS**

Not applicable. This is a reconstruction project.

## **TRAFFIC ANALYSIS**

Port Road has a large proportion of freight and truck traffic. Heavy traffic includes trucks hauling gravel and rock to and from the scales located near the Jetty intersection. Freight is delivered to the barge mooring at the south end of Port Road. Freight shipped in conexes is unloaded at the barge landing and moved to the storage yard on the upland portion of Jetty Road.

During barge unloading, a loader makes frequent trips between the barge landing and the storage yard. Residents access their stored contents at the laydown yard.

The frequency of cruise ship landings at Nome during the summer has increased. Smaller cruise ships land at the jetty, and passengers walk or are picked up from the jetty and make their way into town. Currently pedestrians walk along the road shoulder and in the traveled way.

Traffic is also generated by the beach access at the Jetty Road intersection, the freight storage yard on Jetty Road, and the Nome Joint Utilities System (NJUS) water treatment plant and power plant.

North Port Road serves the post office and the power plant along with other commercial buildings. Submarine Beach Road, which accesses the fuel tank farm and the beach to the west, intersects the northern end of Port Road.

## **HORIZONTAL/VERTICAL ALIGNMENT**

The horizontal alignments generally follow the existing roadways. The Port/Jafet intersection will be realigned to make North Port Road a T-intersection into Jafet/Port. A horizontal curve will connect Jafet Road into the southern leg of Port Road. The horizontal curve at this intersection will need a reduced speed of 20 miles per hour due to ROW constraints tightening the radius. A design waiver will be obtained for this location and warning signs installed on the curve.

The vertical profile of Port, Jafet, and Jetty Roads will generally follow the existing ground, with a slight grade raise where possible. The profile is designed to avoid excavation into the contaminated underlying soils along Port Road. Except for 21+00 to 24+60 where adjacent buildings preclude grade raise due to access concerns. The unpaved portion of Port Road from Station 27+16 to Station 29+90 will be further raised to improve the embankment in this area and to transition to the raised portion of Jafet Road.

## **TYPICAL SECTION(S)**

A reduced typical section was selected to avoid excavation into potential contaminated soils along the Port Road corridor. The existing Port Road section has generally performed well. The damaged portion of the road will have a grade raise to allow for additional embankment material to distribute the load over the settled area.

The proposed typical section for Port Road is a paved two-lane, two-way roadway:

- 12-foot drive lanes
- 6- to 8-foot shoulders (8-foot shoulders where pedestrian route on shoulder, 6 feet everywhere else)
- 4:1 side slope
- 2% crown

Gravel section for Jetty Road and beach access:

- 12-foot drive lanes
- 6-foot shoulders
- 4:1 side slope
- 3% crown

Jetty Road is used by tracked heavy equipment and therefore will remain unpaved.

## **PAVEMENT DESIGN**

Pavement design calculations were performed for a 23-year design life using AFPD program and manual. The excess fines method was utilized in the design of the pavement section. The AFPD Manual design methodology is based on two primary traffic load indicators, the average annual daily traffic (AADT) and the equivalent single axle load (ESAL). The AADT and ESAL used were 250,479 and 1,400 respectively. Heavy vehicles consisted of 6.5% of the total traffic load.

For constructability, a 3-inch minimum asphalt surfacing will be used for the traveled way with a minimum of 4 inches of D-1 below. The recovered existing asphalt could be ground with D-1 to meet the asphalt stabilized base requirement. For the excess fines calculation, it was assumed that at least 8 inches for the existing embankment meets less than 10% fines limit based on the performance of the existing embankment.

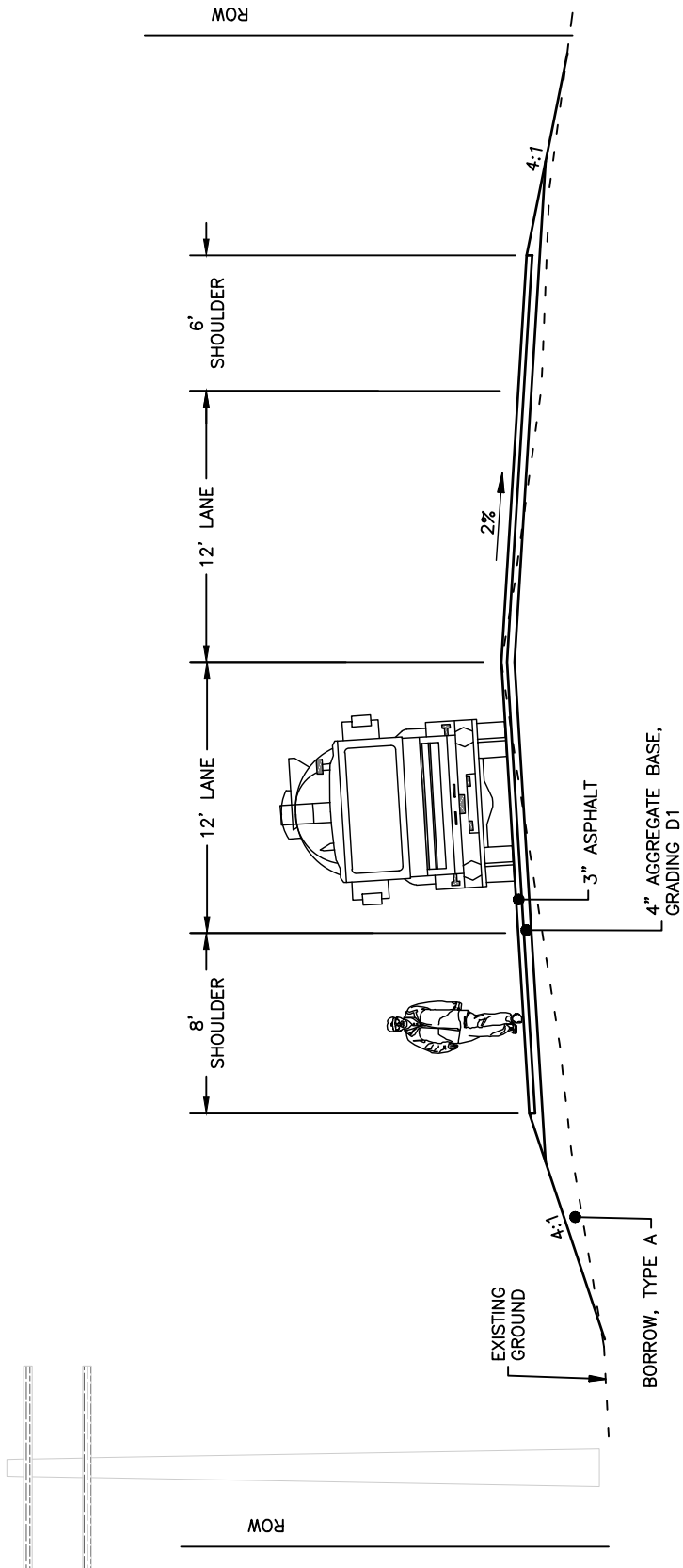
## **PRELIMINARY BRIDGE LAYOUT**

Not applicable. Snake River Bridge is at the end of the project limits. The profile will match into the existing bridge built in 2012.

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

Most of this project will be confined to the existing ROW. The following acquisitions will be necessary. (See corresponding numbers on plan and profile sheets):

1. The largest ROW acquisition required occurs at the intersection with Jetty Road. A small triangular area was not included in the original ROW for Port Road. The City of Nome intends to replat this area to include the triangle as part of the ROW.
2. The existing embankment on the North Freight lane falls outside the existing ROW. The proposed construction can be completed on the existing embankment within the existing ROW but the project will acquire the property occupied by the embankment.
3. The existing drainage swales that drains run off from Port road to the Snake River/ Harbor are not in platted drainage easements or in the ROW. Easements will be acquired for the swales.
4. A small area to facilitate the intersection modifications at Jafet Road.
5. The northern portion of Port Road in front of the Post office by the Submarine Beach Road intersection does not fall within an existing platted ROW. The ROW will be



# PORT ROAD WITHOUT PEDESTRIAN PATH

15+03.57 - 20+81.44 AND  
31+06.91 - 37+06.46

STATE OF ALASKA  
Department of Transportation and Public Facilities  
2301 Peger Rd. Fairbanks, Ak 99709

PORT ROAD REHABILITATION PROJECT  
Z621230000/0002278

DATE: 12/17/2019

FIGURE 1

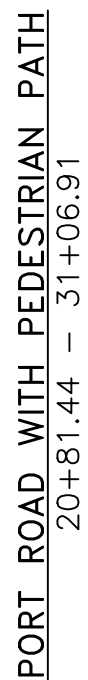
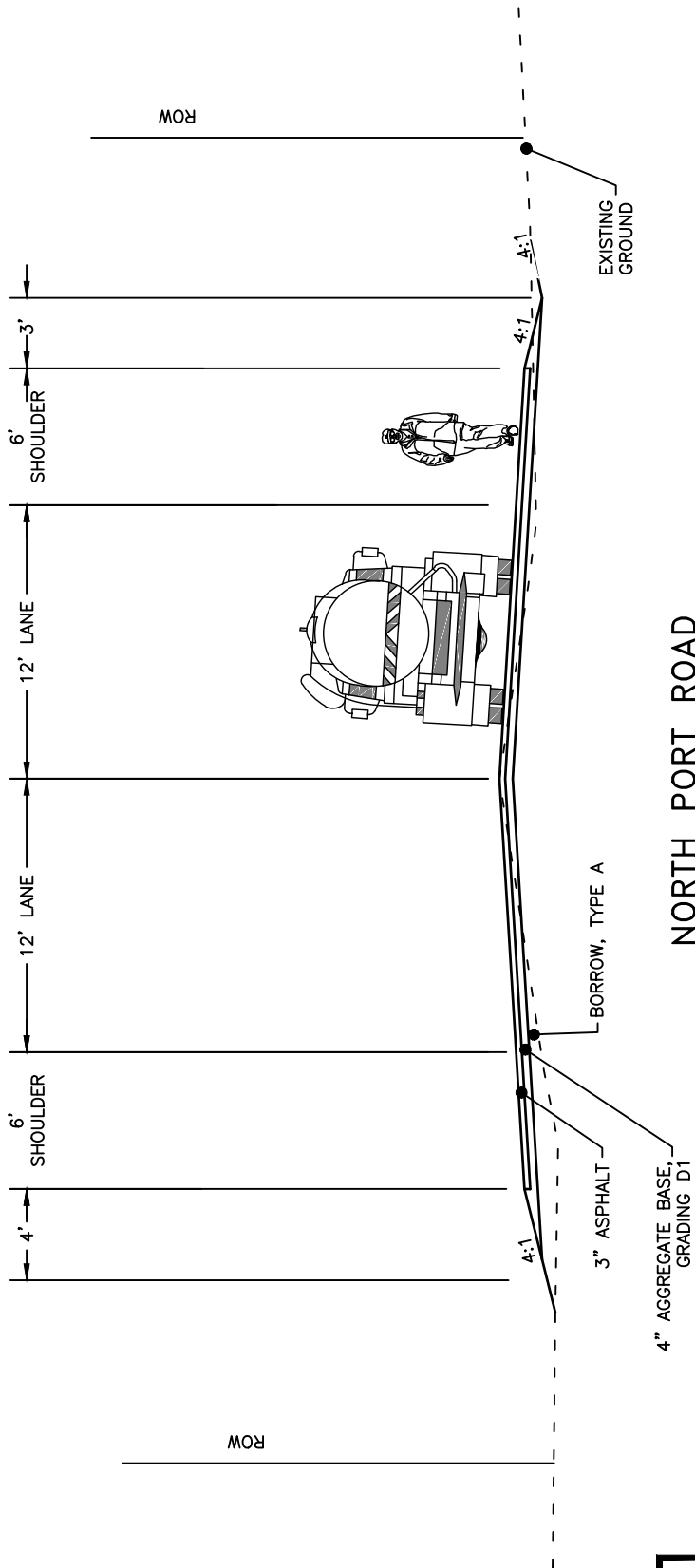
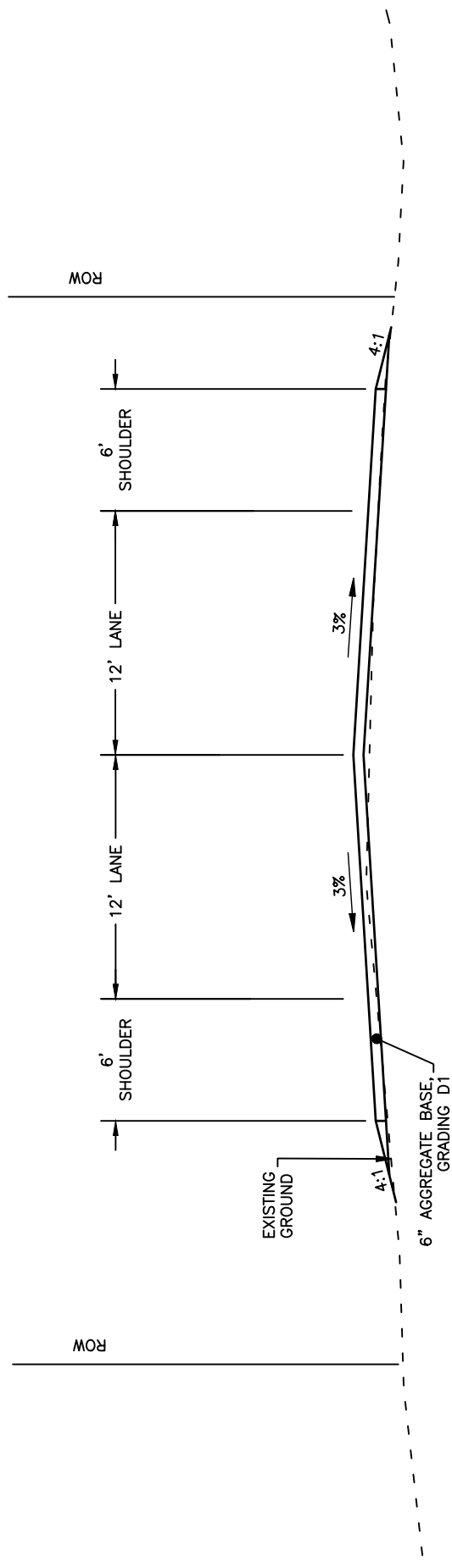


FIGURE 2





**NORTH PORT ROAD**  
 10+82.01 - 18+63.71



JETTY ROAD  
10+84.70 - 17+12.06

STATE OF ALASKA  
Department of Transportation and Public Facilities  
2301 Peger Rd. Fairbanks, Ak 99709

PORT ROAD REHABILITATION PROJECT  
Z621230000/0002278

DATE: 12/17/2019

FIGURE 4

acquired for the roadway embankment through this area to allow access for future maintenance.

6. The project will acquire the triangle of property that is under the existing Port Road embankment.

## **MAINTENANCE CONSIDERATIONS**

The existing roadway maintenance concerns are related to re-grading the unpaved portion of Port Road. It is unclear the exact cause of the pavement removal on this stretch of road, but it is a lower portion of road and is thought the pavement failed due to subbase settlement and was removed instead of maintenance patching of the existing asphalt. This project will raise the embankment in this area and repave Port Road from the intersection with Jetty Road to the north end of Port Road.

The project will reconstruct 2 lane miles of road and construct 0.12 new lane miles of separate pedestrian path. Maintenance after project conclusion will include snow removal, culvert cleaning and regrading of the gravel Jetty Road. Repaving and embankment raise on Port Road will reduce the maintenance requirements of that portion of road.

## **MATERIAL SOURCES**

All materials will be contractor-furnished. There are enough local commercial or private sources to provide the quantity and quality of material required for the project.

## **UTILITY RELOCATION & COORDINATION**

Existing utilities along the Port Road corridor include buried water and sewer and overhead electric and communications lines. The NJUS water treatment plant is located at the intersection of Jafet and Port Roads. Multiple water lines leave the treatment plant. Water lines run from the treatment plant to the north end of Port Road and from the treatment plant south to the causeway. Sewer lines run from the north end of Port Road to the south end by the barge landing. Above ground features include hydrants, manholes, monitoring wells and utility poles. Hydrants are located on the west side of Port Road. Power poles are located on both sides of the road with overhead crossings at five locations between Jafet Road and the barge landing.

No impacts are expected to underground utilities. The roadway prism will not include excavation. A light pole at the intersection of Jafet and Port Roads will have to be relocated outside the new roadway. A sewer manhole in the Port/Submarine Beach Road intersection will need to be adjusted to match the new road finish grade. The proposed separated path is routed so that no above ground utilities are impacted. Three of the overhead electric crossings at stations 23+80, 28+63 and 31+52 violate the minimum overhead clearance requirements, the proposed grade raise will further reduce the clearance so these crossings will need to be raised.

## **ACCESS CONTROL FEATURES**

There are no controlled access facilities within the project limits. All access control is common access control with driveways onto the roadway. The project will not change the access control.

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

Pedestrians will be accommodated on the road shoulder and on a separated pedestrian path. The road shoulder width varies from 6 to 8 feet wide, an 8-foot separated pedestrian path will be constructed on the west side of the road from Station 20+81 to 31+07. A reduced path width of 8-feet is allowed in situations such as where low bike traffic is expected, pedestrian use of the facility is expected to be occasional (when ship in port) and will not be regularly subjected to maintenance vehicle loading. The pedestrian and bicycle route will be on an 8-foot road shoulder on Port where separate path is not constructed and on the 6 foot shoulder on Jetty Road, Jafet road and on Port Road North of the Jafet intersection. Pedestrians from the jetty will follow the roadway shoulder to the separated path to reach the wide shoulder (8 feet) at the North Port intersection and then continue across the Snake River Bridge to Seppala Drive on a 6 foot shoulder. The widened shoulder and separated path will move pedestrians out of the travelled way.

## **SAFETY IMPROVEMENTS**

Safety will be improved with the construction of widened shoulders and separated pedestrian path. This will allow pedestrians to move out of the traveled way and reduce risk of a pedestrian collision.

The modifications to the Jetty/Port/Beach access intersection will improve safety by better delineating the traveled way and clarifying right of way at the intersection. The priority freight movements will be separated from the general traffic accessing the beach and passenger vehicles accessing the freight storage yard.

The North Port/Jafet intersection realignment will improve safety by prioritizing the higher-volume movement of westbound Jafet Road traffic turning south onto Port Road.

## **INTELLIGENT TRANSPORTATION SYSTEM FEATURES**

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

## **DRAINAGE**

Existing drainage is by surface flow off the road and into swales along the roadway. The Jetty/Port road intersection currently sheet flow to the south into Norton Sound. The southern portion of Port Road drains to swales along each side of the road. The west side of the road

drains to two cross-culverts, one at Station 20+43 and the other at Station 29+35. North Port Road drains northward into the Snake River near the old bridge site.

The proposed drainage will maintain the existing pattern. Culverts will be replaced and upsized if necessary, based on flow. Existing drainage at the northwest corner of the Port and Jafet intersection ponds with no outlet and the proposed condition will add a culvert across North Port to outlet and eventually drain to Norton Sound at the end of Port Road. Through the section of Port Road with a separated path, the drainage will flow between the path and the road until the path ends. It will then drain through culverts to an existing ditch to Norton Sound. The Jetty / Port intersection area will be modified to drain into the depressed island areas and will drain by culvert south to Norton Sound.

## SOIL CONDITIONS

The Port Road project is in an area of previously mined dredge tailings of the Snake River flood plain. The tailings generally consist of unfrozen replaced sands, gravels and silts. Port Road was last rehabilitated in the late 1990s or early 2000s. The groundwater depth is generally noted at between 5 to 11 feet below ground surface (bgs).

Historical drilling reports were reviewed to determine the existing soil conditions. Existing data was not located within the existing Port Road pavement area, but several boreholes were located adjacent to the Port Road alignment.

Port Road Soil Profile (inferred):

- 0-Unknown Depth: Pavement prism—unknown thickness and soil profile
- Bottom of Pavement Prism to ~10 Feet bgs: sandy gravel; gravelly sand with silt; silty sand
- ~10-30 Feet bgs; silty sand; silt; and gravelly zones
- ~300 Feet bgs: bedrock

A search of the ADEC Contaminated Sites Database identified three active contaminated sites and one sited listed as “Cleaned Up with Industrial Controls.”

Site Name	Address	File #	Hazard ID	Status	Distance from Project Area	Description
<b>Sites near Port Road Project Area</b>						
Nome New Power Plant	Port Rd., 200 ft SW of Old NJUS Power Plant	400.38.031	3971	Cleanup Complete – Institutional Controls	197 ft west of Port Rd.	DRO contaminated soil and GW still exist on site. Institutional controls are in place to limit exposure.
Port Road Industrial Subdivision Lot 7	Port Rd. Industrial Subdivision Lot 7	400.38.050	26104	Active	30 ft east of Port Rd.	Petroleum GW contamination from unknown source
Former West Nome Tank Farm	Near Snake River & Norton Sound	400.38.002	575	Active	131 ft southwest of Port Rd.	Petroleum contaminated soil and GW. Contaminated sediments found to extend to the Snake River. Recent sampling found DRO, TAqH, 1,12-trichloroethane, benzene, naphthalene

						and vinyl chloride in exceedance of DEC cleanup levels.
Alaska Gold Snake River Property	Port Rd., Water St., E of West Nome Tank Farm	400.38.033	3970	Active	140 ft southeast of Port Rd.	Diesel contaminated soil and GW

After consultation with ADEC and the City of Nome to determine the extent of contamination and cleanup at these sites, the Department of Transportation and Public Facilities (DOT&PF) and the project team opted to minimize excavation to the fullest extent possible along Port Road, to avoid contamination. DOT&PF may require that the contractor develop a Quality Assurance Project Plan, which outlines the means and methods for identifying and handling contaminated soil if encountered.

## **EROSION AND SEDIMENT CONTROL**

The project will include an Erosion and Sediment Control Plan (ESCP). This plan will include recommended permanent and temporary Best Management Practices (BMPs) that may be used during construction. A Storm Water Pollution and Prevention Plan (SWPPP) will be developed by the contractor in order to obtain coverage under the Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP). This SWPPP will detail the BMPs to be used to prevent sediment-laden stormwater runoff from leaving the project area and entering Norton Sound.

## **ENVIRONMENTAL COMMITMENTS**

The following permits will be required for this project:

- City of Nome Fill Permit
- Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES)

## **WORK ZONE TRAFFIC CONTROL**

This project is not “significant” for Traffic Control purposes, as defined in Section 1400.2 of the Alaska Highway Preconstruction Manual.

The Contractor will develop a traffic control plan for the construction that maintains functions at the port for freight and passenger operations.

## **VALUE ENGINEERING**

Value engineering is not required for this project.

## **COST ESTIMATE**

The estimated costs for this project are as follows:

Design	\$684,792
Utilities	\$100,000
Right of Way	\$150,000
Construction (Includes 15% Engineering)	\$2,925,814
	<hr/>
Total Cost of Project	\$3,860,606



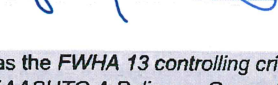
## **APPENDIX A**

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



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

<b>Project Name:</b> Nome Port Road Reconstruction					
<input checked="" type="checkbox"/> New Construction/Reconstruction <input type="checkbox"/> 3R <input type="checkbox"/> PM <input type="checkbox"/> Other:					
<b>Project Number:</b>	Z621230000/0002278 <input type="checkbox"/> NHS <input checked="" type="checkbox"/> Non NHS				
<b>Functional Classification:</b>	Rural Major Collector				
<b>Design Year:</b>	2045				
<b>Design Year ADT:</b>	1,400				
<b>DHV:</b>	170				
<b>Percent Trucks:</b>	6.5				
<b>Pavement Design Year:</b>	2045				
<b>Terrain:</b>	Rolling				
<b>Design Speed:</b>	35 mph				
<b>Width of Traveled Way:</b>	12' lane width				
<b>Width of Shoulders:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Outside:</b></td> <td style="border: none;">6'-8'</td> <td style="border: none;"><b>Inside:</b></td> <td style="border: none;">N/A</td> </tr> </table>	<b>Outside:</b>	6'-8'	<b>Inside:</b>	N/A
<b>Outside:</b>	6'-8'	<b>Inside:</b>	N/A		
<b>Cross Slope:</b>	2% asphalt 3% gravel				
<b>Superelevation Rate:</b>	6%				
<b>Minimum Radius of Curvature:</b>	380				
<b>Min. K-Value for Vert. Curves:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Sag:</b></td> <td style="border: none;">49</td> <td style="border: none;"><b>Crest:</b></td> <td style="border: none;">29</td> </tr> </table>	<b>Sag:</b>	49	<b>Crest:</b>	29
<b>Sag:</b>	49	<b>Crest:</b>	29		
<b>Maximum Allowable Grade:</b>	9%				
<b>Minimum Allowable Grade:</b>	0.3%				
<b>Stopping Sight Distance:</b>	250'				
<b>Lateral Offset to Obstruction:</b>	12'				
<b>Vertical Clearance:</b>	16'-6" Port Road, 8'-6" pedestrian facility				
<b>Bridge Width:</b>	N/A				
<b>Bridge Structural Capacity:</b>	N/A				
<b>Passing Sight Distance:</b>	1280				
<b>Surface Treatment:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>T/W:</b></td> <td style="border: none;">HMA</td> <td style="border: none;"><b>Shoulders:</b></td> <td style="border: none;">HMA</td> </tr> </table>	<b>T/W:</b>	HMA	<b>Shoulders:</b>	HMA
<b>T/W:</b>	HMA	<b>Shoulders:</b>	HMA		
<b>Side Slope Ratios:</b>	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"><b>Foreslopes:</b></td> <td style="border: none;">2:1 max</td> <td style="border: none;"><b>Backslopes:</b></td> <td style="border: none;">2:1 max</td> </tr> </table>	<b>Foreslopes:</b>	2:1 max	<b>Backslopes:</b>	2:1 max
<b>Foreslopes:</b>	2:1 max	<b>Backslopes:</b>	2:1 max		
<b>Degree of Access Control:</b>	Stop control at side streets.				
<b>Median Treatment:</b>	N/A				
<b>Illumination:</b>	N/A				
<b>Curb Usage and Type:</b>	N/A				
<b>Bicycle Provisions:</b>	Shoulder: 6-8'; Multiuse Path 8'				
<b>Pedestrian Provisions:</b>	Shoulder: 6-8'; Multiuse Path 8'				
<b>Misc. Criteria:</b>					

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

Date: 6-18-2020  
 Date: 7/10/20  
 Date: 7/7/2020

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

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

# MEMORANDUM

## State of Alaska

### Department of Transportation & Public Facilities

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

**DATE:** December 16, 2019

**FILE NO:** I:\Traffic Data\Design\2019\NomePort\_Z62123

**TELEPHONE  
NO:** 451-5150

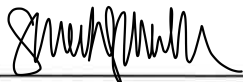
**FROM:** Scott Vockeroth  
Traffic Data Manager  
Fairbanks Field Office

**SUBJECT:** Nome Port Rd Reconstruction  
Z621230000/0002278  
Design Designation Request

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

Due to the functionality of Port Rd Traffic Data is not able to conduct an accurate count on the road. The AADT for this Design Designation is the value from our count located on Jafet Rd at the Snake River Bridge. That count represents a similar AADT as it is the sole connector between Nome and the port area. Without a classification count truck percentages were analyzed based on a classification count on Seppala Dr west of Center Creek Rd and a turning movement count at the intersection of Jafet Rd and Seppala Dr.

Contact our office if you have any questions.



12/17/2019

---

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

Date

cc: Joe Kemp, P.E., Engineering Manager, Northern Region

Attachment

---

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

---

**ROUTE NAME:** Port Road- Nome  
**STATE ROUTE NO:** 168115  
**CDS MILEAGE:** 0.000-0.8818  
**FUNCTIONAL CLASS:** Major Collector  
**URBAN/RURAL:** Rural

	YEAR	AADT	%	
<b>AADT</b>	2018	1100		
	2035	1280		
	2045	1400		
<b>DHV</b>	2035		12.50	160
	2045			170
<b>D</b>				40-60
<b>T</b>			<b>6.50</b>	<b>Total</b>
			5.00	Class 5
			1.25	Class 6
			0.25	Class 9
<b>ESAL'S (Design Lane)</b>	To Be Provided by Design			

<b>Traffic Data Request Form</b>			TDR Form-1-10/20/03																
Alaska Department of Transportation & Public Facilities																			
<b>Requested By:</b> Joe Kemp	<b>Design Project Number:</b> Z621230000		<b>Date Requested:</b> 12/4/19																
<b>Base Year:</b> 2018 <b>Base Year Total AADT:</b> 1100 <b>AADT Growth Rate</b> Forward (%/yr): 0.89   End Year: 2045 Back Cast (%/yr):    Begin Year:	<b>Common Route Name:</b> Port Rd <b>Functional Class:</b> Urban/Rural   Major Collec <input checked="" type="checkbox"/> <b>Historic M.P. Interval:</b> 0.000-0.8818		<b>CDS Route Name:</b> 168115 9141028X000 <b>CDS M.P. Interval:</b> 0-0.8818																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Truck Category</th> <th style="width: 25%;">Load Factor (ESALs per Truck)</th> <th style="width: 50%;">% of Total AADT in Truck Category</th> </tr> </thead> <tbody> <tr><td>2-axle</td><td></td><td></td></tr> <tr><td>3-axle</td><td rowspan="3" style="text-align: center; vertical-align: middle;">See attached</td><td></td></tr> <tr><td>4-axle</td><td></td></tr> <tr><td>5-axle</td><td></td></tr> <tr><td>≥ 6-axle</td><td></td><td></td></tr> </tbody> </table>		Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category	2-axle			3-axle	See attached		4-axle		5-axle		≥ 6-axle			<b>Lane Configuration Sketch:</b> (Designer: Provide sketch of lane layout. Number each lane and show directions.) <div style="text-align: right; margin-top: 10px;">             Indicate North  </div> <div style="text-align: center; margin-top: 20px;"> </div>	
Truck Category	Load Factor (ESALs per Truck)	% of Total AADT in Truck Category																	
2-axle																			
3-axle	See attached																		
4-axle																			
5-axle																			
≥ 6-axle																			
<b>Percent of Base Year Total AADT for Each Numbered Lane in Configuration Sketch:</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>Lane # 1</td><td>% 40</td></tr> <tr><td>Lane # 2</td><td>% 60</td></tr> <tr><td>Lane #</td><td>%</td></tr> <tr><td>Lane #</td><td>%</td></tr> <tr><td>Lane #</td><td>%</td></tr> <tr><td>Lane #</td><td>%</td></tr> </tbody> </table>		Lane # 1	% 40	Lane # 2	% 60	Lane #	%	Lane #	%	Lane #	%	Lane #	%	<b>Comments:</b>					
Lane # 1	% 40																		
Lane # 2	% 60																		
Lane #	%																		
Lane #	%																		
Lane #	%																		
Lane #	%																		
<b>Data Provided By:</b> 	<b>Provider's Signature:</b> 		<b>Date Provided:</b> 12/16/19																

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

Submitted Data Request Type: Design Designations Request (Northern)	
<b>Latest Status Update:</b>	Data Request Record has been assigned to an email address.
<b>Assigned to the following e-mail address:</b>	jill.sullivan@alaska.gov; scott.vockeroth@alaska.gov
<b>Record Creation:</b>	December 04, 2019 10:17:01 AM
<b>Routed to assigned e-mail address:</b>	December 04, 2019 11:25:42 AM
<b>Request Resolution:</b>	Resolution Pending

Requestor	
First Name: *	Joe
Last Name: *	Kemp
Email: *	joseph.kemp@alaska.gov
Additional Email Contacts:	<input type="button" value="+"/>
Date Needed: (AKST)	12 / 20 / 2019 <b>12 / 17 / 19</b>

Project Information	
Project Name: *	Nome Port Road Reconstruction
Project Engineer(s): *	Joe Kemp <input type="button" value="+"/>
State Project Number: *	Z621230000
Federal Project Number: *	0002278
Route ID: *	168115
Milepoint (To/From): *	Entire Length
Construction Year: *	2022

Please select the type of project. \*

☒ Reconstruction  
☐ Rehabilitation  
☐ New Construction  
☐ Other (please describe): Reconstruction

Project Notes:

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

☐ Central  
☒ Northern  
☐ Southcoast

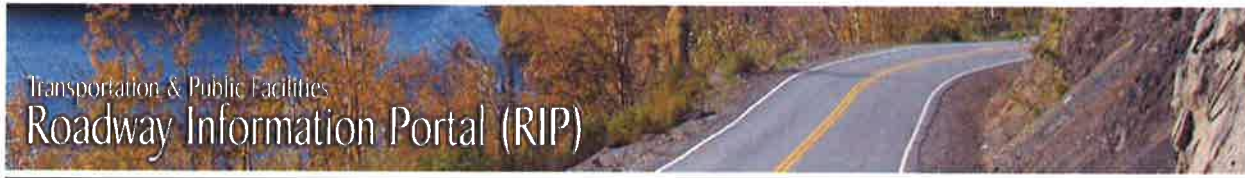
  

Data Fields Requested: (please pick at least one) \*























☐ 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:





**Report** Route Log  
**CDS Route** PORT ROAD (168115)  
**From Milepoint** 0  
**To Milepoint** 0.8818  
**Filter** FacilityType INTERCHANGE RAMP;NON-INVENTORY;WYE;SECONDARY FERRY ACCESS;ROUNDAABOUT;PRIMARY FERRY ACCESS;NON-INTERCHANGE RAMP;MAINLINE;CONNECTOR

Milepoint	Attribute	Side	Feature CDS	Description	Viewer
0	Traffic Link	-	-	Start AL002675	 
0	Functional Class	-	-	Start MAJOR COLLECTOR	 
0	FHWA Urban Area	-	-	Start RURAL AREA (RURAL)	 
0.0068	Traffic Station	-	-	30959000	 
0.1406	 Intersection	L	168116	JAFET ROAD	 
0.5325	Traffic Link	-	-	End AL002675	 
0.5325	 Intersection	L	-	JETTY ROAD	 
0.5325	Functional Class	-	-	MAJOR COLLECTOR -> LOCAL	 
0.8818	Functional Class	-	-	End LOCAL	 
0.8818	FHWA Urban Area	-	-	End RURAL AREA (RURAL)	 

**Project:** Nome Port Rd Reconstruction

Link	Start CDS	Start Feature	End CDS	End Feature	Year					
					1980	1981	1982	1983	1984	1985
1	0.000	Bering St	0.666	Center Creek Rd						

[illegible]

Link	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1								1896			1626			1413	1469

Link	Year		
	2016	2017	2018
1	1509	1137	1140

Growth Factors	Year	Factor
	2035	1.162
	2045	1.269

**D Factor (30)**      40-60

<b>Design Hourly Volume (DHV)</b>	2035	160
	2045	170

Station ID	Station Description	MP	Year	Percent by Class							Total Truck %
				4	5	6	8	9	10	13	
37032021	Seppala Dr West Of Center Creek	0.696	2017	0.00	5.00	1.25	0.00	0.25	0.00	0.00	6.50
	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+	

\*\* Truck percent was produced after analysis of above class count with turning movement count on Jafet and Seppala \*\*

## **APPENDIX B**

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



1. Public/agency involvement for project. *Required if protected resources are involved.* ☒ ☐
2. Public Meetings. Date(s): 11/14/17 ☒ ☐
3. Newspaper ads. *Attach certified affidavit of publication as an appendix.* ☐ ☒ ☐  
Name of newspaper and date: 10/26/17, 11/2/17, 11/9/17
4. Alaska Online Public Notice date: 10/27/17
5. Agency scoping letters. Date sent: 10/26/17 ☒ ☐
6. Agency scoping meeting. Date of meeting: \_\_\_\_\_ ☐ ☒
7. Field review. Date: 7/27/17 ☒ ☐
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.*  
The attached Public Involvement Report (Appendix A) details the actions taken during the public and agency review process as well as all comments received.

#### V. Environmental Commitments and Mitigation Measures

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

#### 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:

Melissa L. Jensen  
[Signature] Environmental Impact Analyst

Date: 7/10/2018

Melissa L. Jensen

**VII. Environmental Documentation Approval Signatures**

\_\_\_\_\_  
[Print Name] Environmental Impact Analyst

Reviewed by:

  
\_\_\_\_\_  
[Signature] Engineering Manager

Date:

7/9/18

Christopher F. Johnston, P.E.  
\_\_\_\_\_  
[Print Name] Engineering Manager

**Programmatic CE**

Approved by:

Brett Nelson  
\_\_\_\_\_  
[Signature] Regional Environmental Manager

Date:

7-10-18

Brett Nelson  
\_\_\_\_\_  
[Print Name] Regional Environmental Manager

**Non-Programmatic CE**

Approval

Recommended by:

\_\_\_\_\_  
[Signature] Regional Environmental Manager

Date:

\_\_\_\_\_  
[Print Name] Regional Environmental Manager

Approved by:

\_\_\_\_\_  
[Signature] NEPA Program Manager

Date:

\_\_\_\_\_  
[Print Name] NEPA Program Manager

## **APPENDIX C**

### **PAVEMENT DESIGN**

Project Name: Nome Port Road Reconstruction

Designer: Anne Nelson

Project Number: 1230000/0002278

Date: 12/17/2019

**Traffic Data for Design and Historic ESALs****Design Data Input**

Design Construction Year: 2022

Design Length in Years: 23

Base Year: 2018

Base Year Total AADT: 1100

Growth Rate % per Year: 0.89

**% of Base Year AADT for Each Lane**

Lane	%
1	40
2	60
3	0
4	0
5	0
6	0

**Historic Data Input**

Historic Construction Year:

Backcast % per Year:

**% of Base Year AADT for Each Lane**

Lane	%
1	
2	
3	
4	
5	
6	

Truck Category	Load Factor (ESALs per Truck)	% AADT in Truck Category
2-Axle	0.5	5
3-Axle	0.85	1.25
4-Axle	1.2	0
5-Axle	1.55	0.25
>=6-Axle	2.24	0

Truck Category	Load Factor (ESALs per Truck)	% AADT in Truck Category
2-Axle	0.5	
3-Axle	0.85	
4-Axle	1.2	
5-Axle	1.55	
>=6-Axle	2.24	

**TOTAL DESIGN ESALS:****250,479****TOTAL HISTORIC ESALS:****-****Construction Year ESAL Calculations**

Truck Category	Design Lane AADT	% AADT in Truck Category	Load Factor for Truck Category	Construction Year ESALs
2-Axle	684	5	0.5	6,242
3-Axle	684	1.25	0.85	2,653
4-Axle	684	0	1.2	0
5-Axle	684	0.25	1.55	967
>=6-Axle	684	0	2.24	0
Total Construction Year ESALs:				9,862

**Historic Construction Year ESAL Calculations**

Truck Category	Design Lane AADT	% AADT in Truck Category	Load Factor for Truck Category	Historic Construction Year ESALs
2-Axle		0	0.5	0
3-Axle		0	0.85	0
4-Axle		0	1.2	0
5-Axle		0	1.55	0
>=6-Axle		0	2.24	0
Total Historic Construction Year ESALs:				0

[CLICK HERE FOR MORE INFORMATION ON ESAL CALCULATIONS](#)

PROJECT INFORMATION

Project Name:

Nome Port Road Reconstruction

Project Number:

621230000/0002278

Designer:

Anne Nelson

Date:

12/17/2019 9:50:25 AM

TRAFFIC

ESALS

250479

AADT

1400

UNITS

☐ Metric

☒ English

SOLUTION

Predicted Deflection

.059 in.

Pavement Thickness

3 in

SOILS DATA

LAYER No.	Depth Interval	Thickness in.	P200(%)
1	0- 4	4	6
2	4- 12	8	10
3			
4			
5			
6			
7			

Stabilized Base

Marshall Stability (lbs)

1764

Pavement Thickness	Base Thick
1.5	2
2	1
2.5	.5
3	0

Compute

## **APPENDIX D**

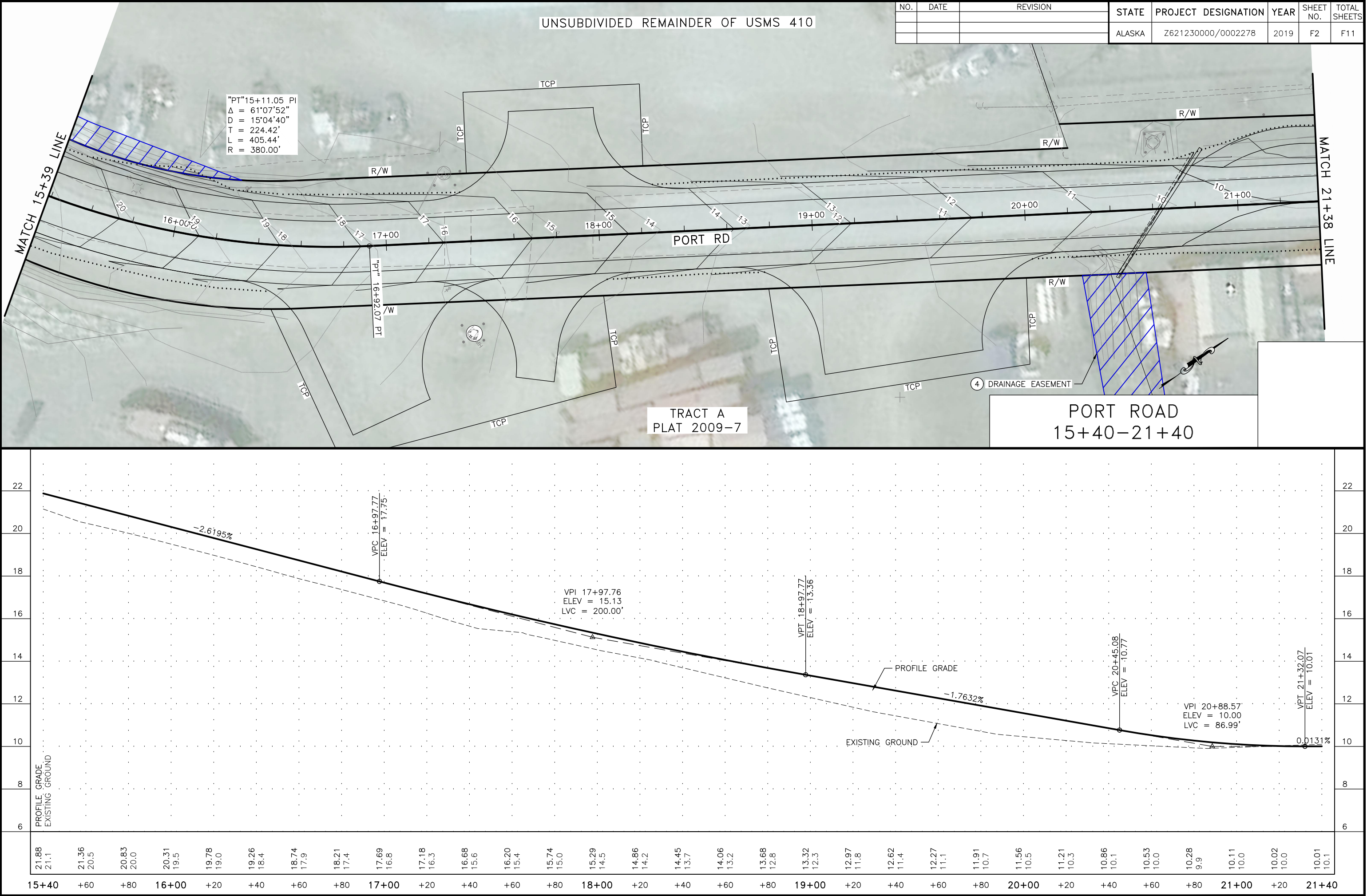
### **PRELIMINARY PLAN AND PROFILE SHEETS**







PLANS DEVELOPED BY: PDC INC ENGINEERS, LLC. CERT. OF AUTHORIZATION NO.: AEC0605, 2700 GAMBELL STREET, SUITE 500, ANCHORAGE, AK 99503, (907)743-3200  
P:\2017\17280FB-Port Rd\_Rev04\VC2001\cst17280FB-F2 15+40-21+40 Mon, May/11/20 04:15pm











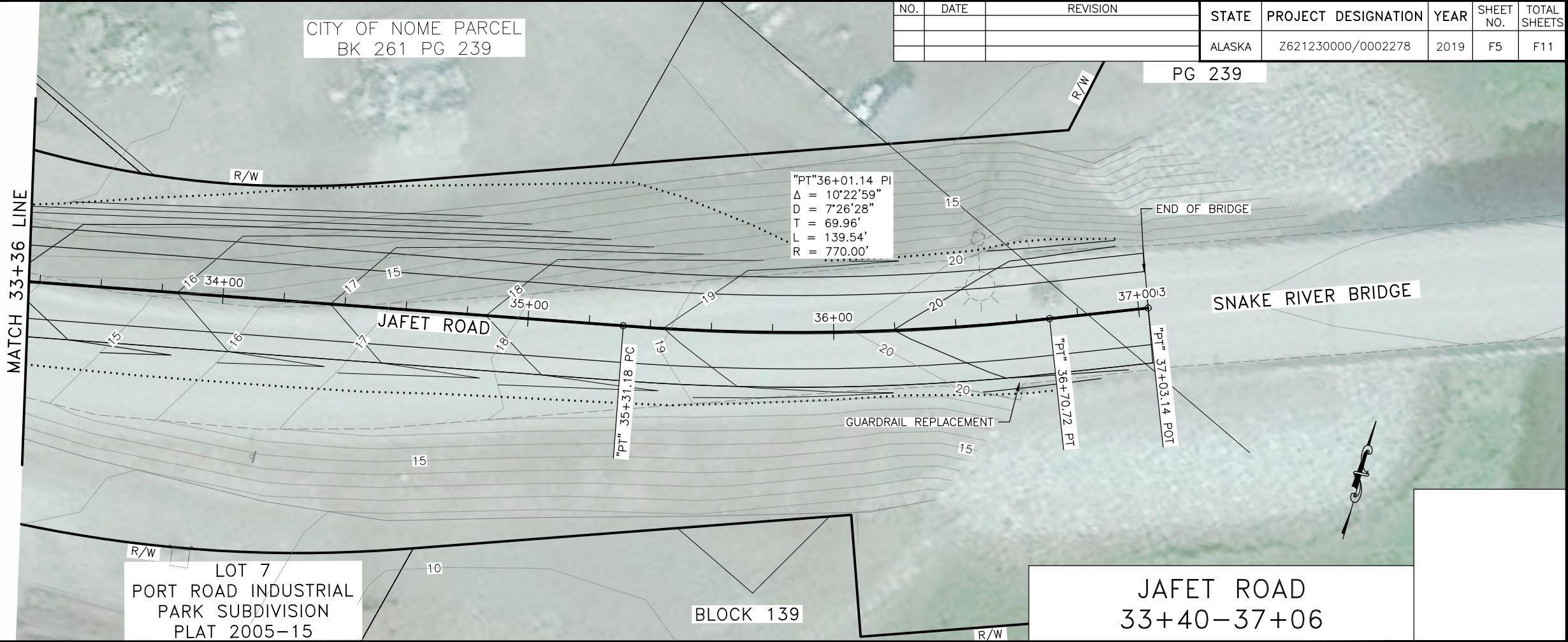
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P:\2017\17260FB-Port\_Rd\_Rehab\C200\Inst\17260FB-F5 33+40-37+06 Mon, May/11/20 04:16pm

CITY OF NOME PARCEL  
BK 261 PG 239

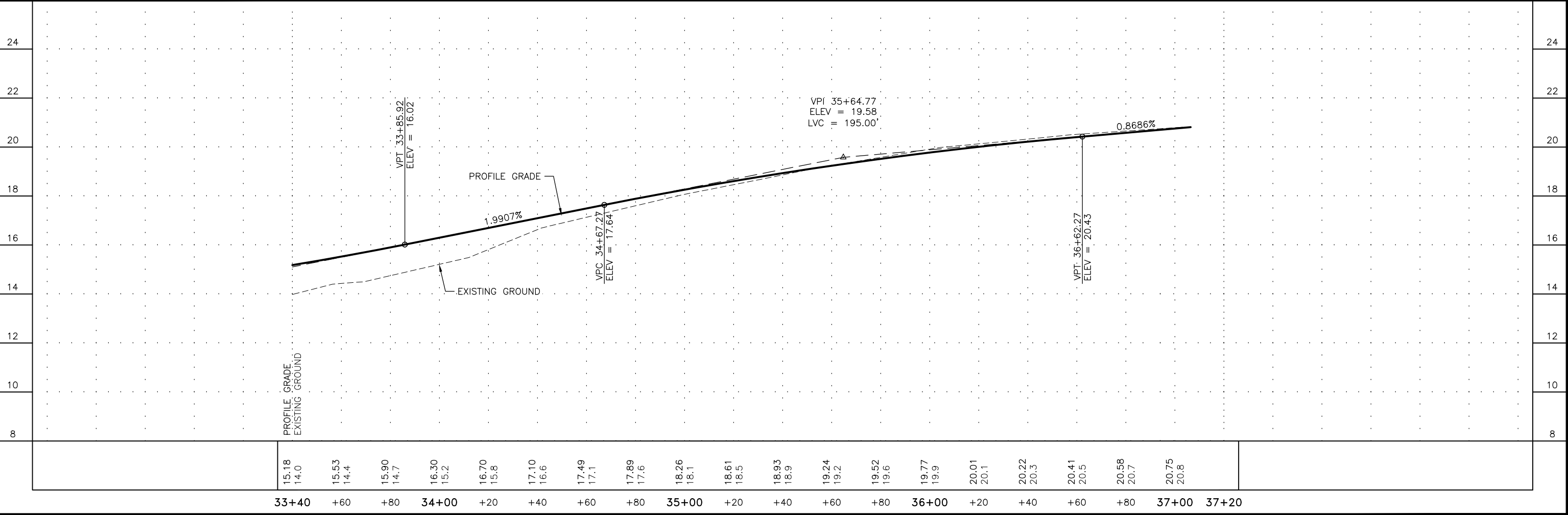
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z621230000/0002278	2019	F5	F11

PG 239

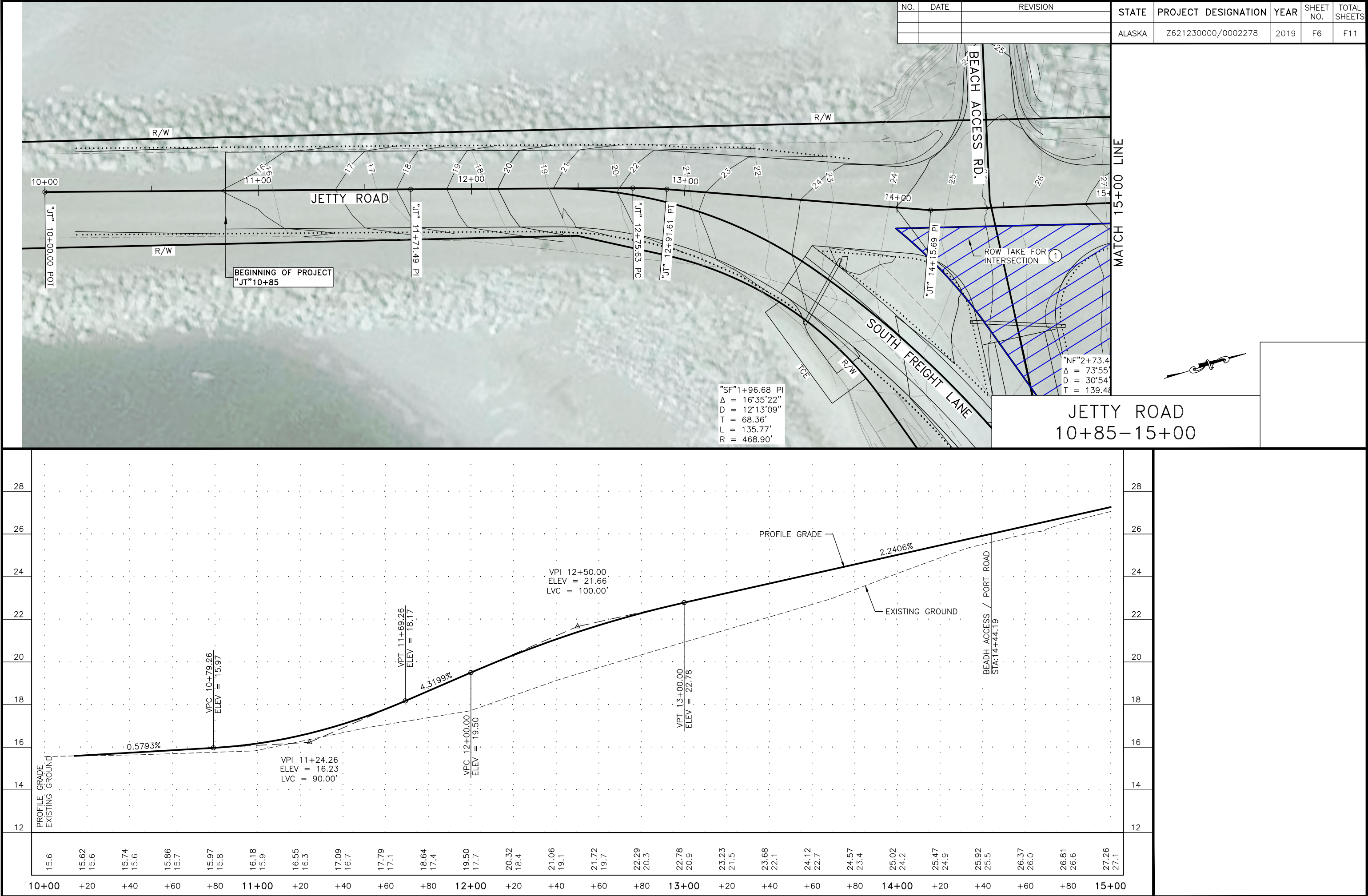
MATCH 33+36 LINE



JAFET ROAD  
33+40-37+06



PLANS DEVELOPED BY: PDC INC ENGINEERS, LLC. CERT. OF AUTHORIZATION NO.: AECC605, 2700 GAMBELL STREET, SUITE 500, ANCHORAGE, AK 99503, (907)743-3200  
P:\2017\17280FB-Port\_Rd\_Rehab\17280FB-F6 Mon, May/11/20 04:16pm

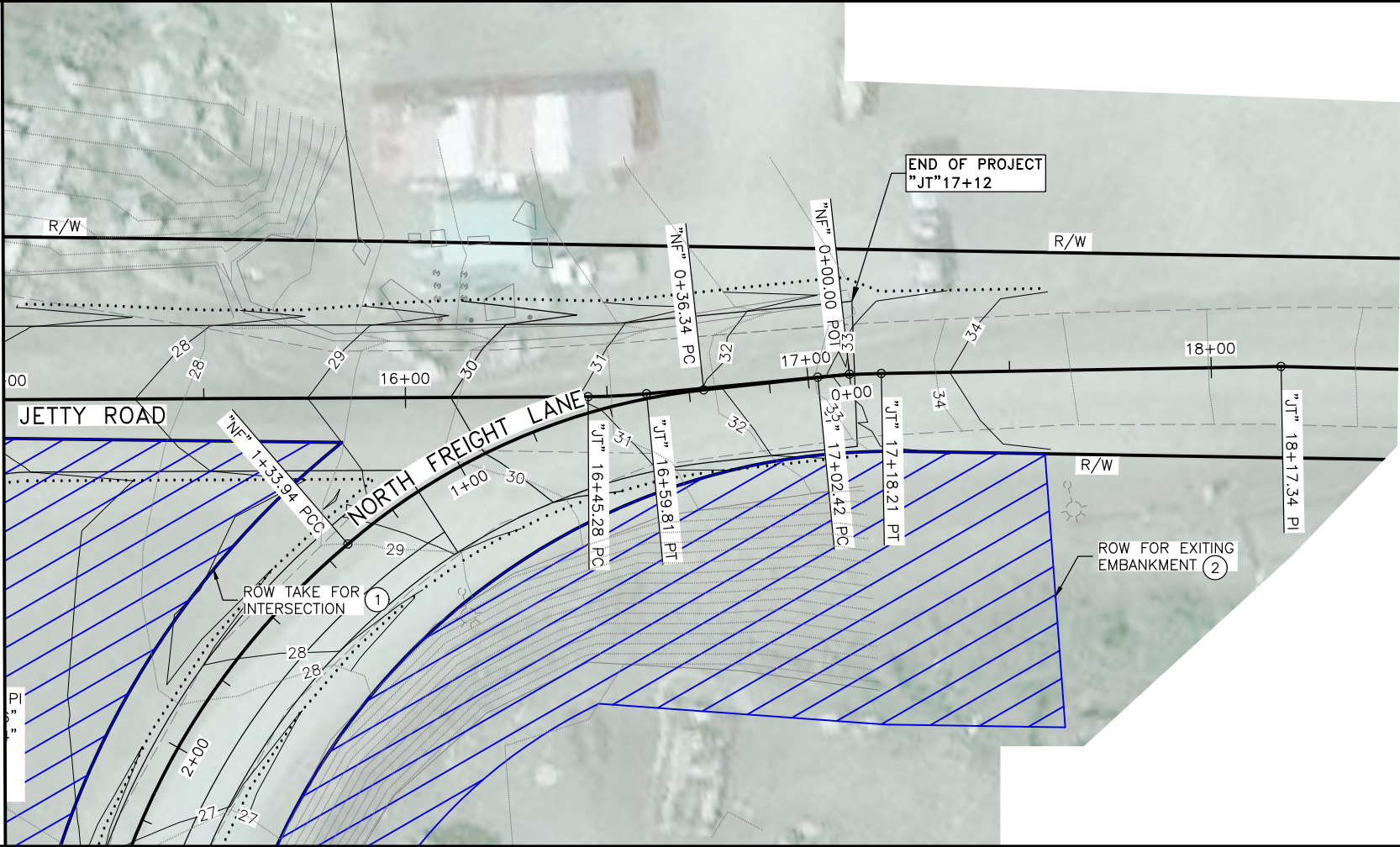




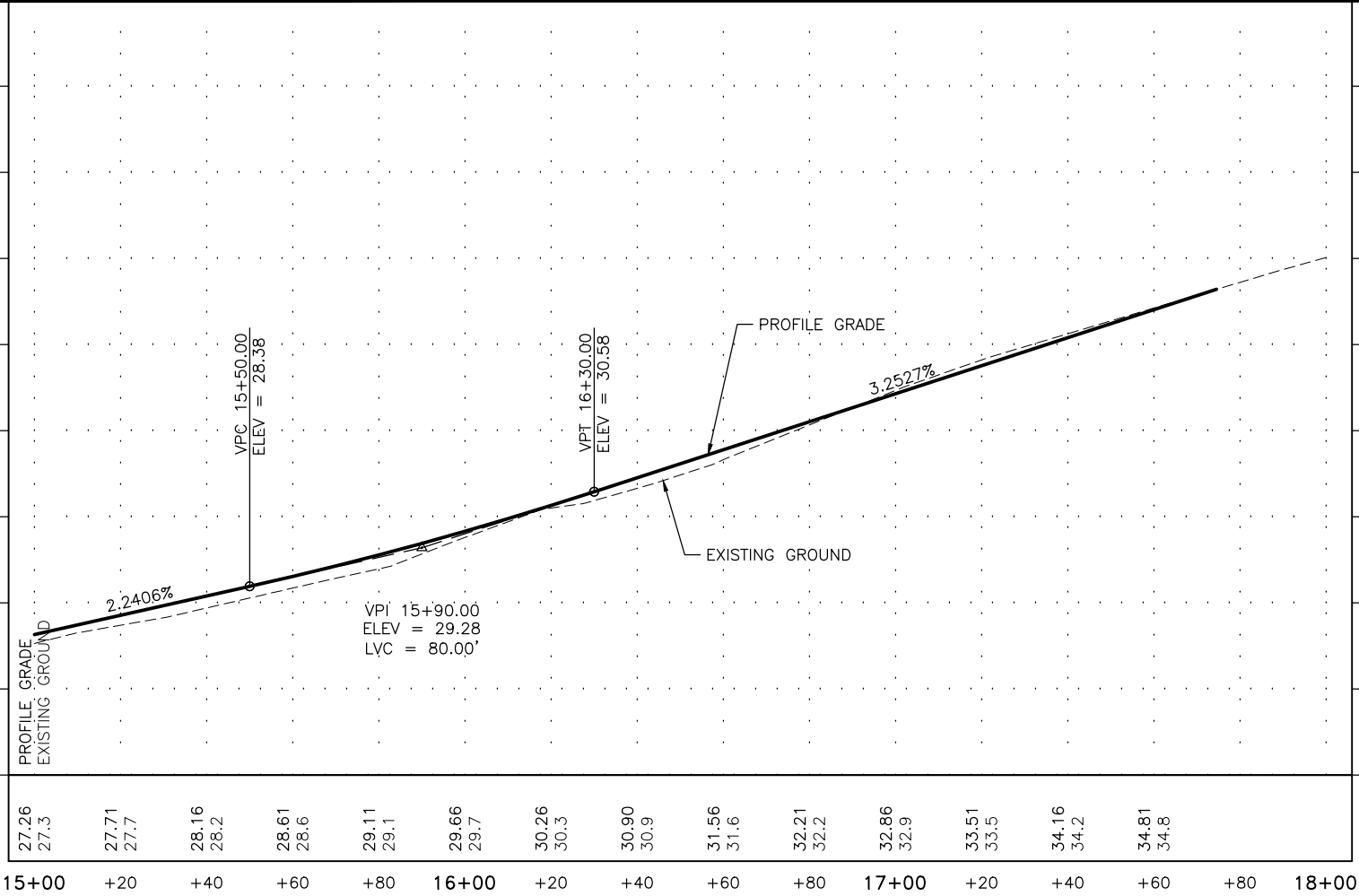
PLANS DEVELOPED BY: PDC INC ENGINEERS, LLC, CERT. OF AUTHORIZATION NO.: AECC605, 2700 GAMBELL STREET, SUITE 500, ANCHORAGE, AK 99503, (907)743-3200  
P:\2017\17280FB-PortL\_Rd\_Rehab\17280FB-F7 Mon, May/11/20 04:17pm

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z621230000/0002278	2019	F7	F11

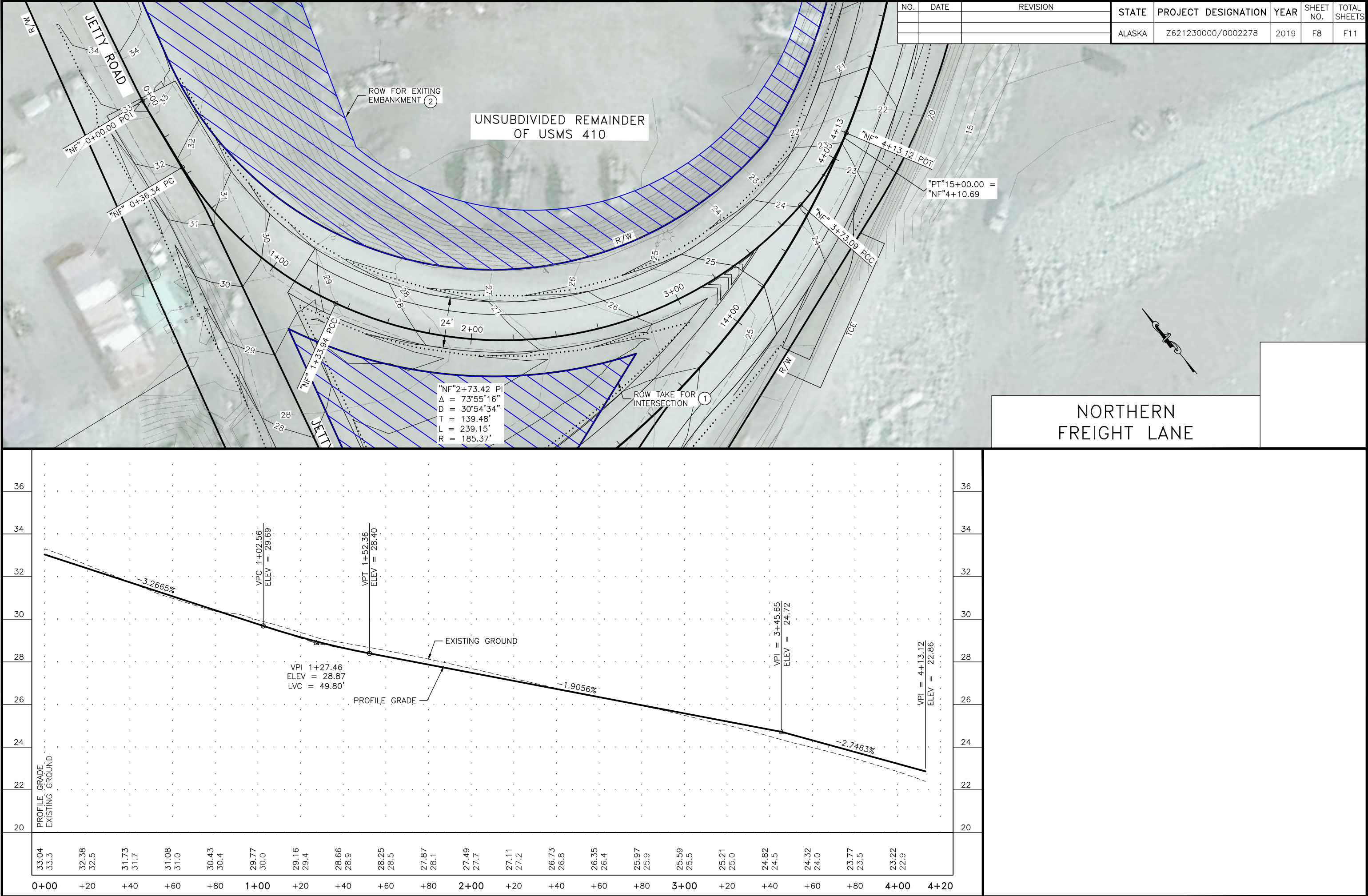
MATCH 15+00 LINE



JETTY ROAD  
15+00-17+11



PLANS DEVELOPED BY: PDC INC ENGINEERS, LLC. CERT. OF AUTHORIZATION NO.: AEC0605, 2700 GAMBELL STREET, SUITE 500, ANCHORAGE, AK 99503, (907)743-3200  
P:\2017\17280FB-PortL\_Rd\_Rehab\VC2001\cns17280FB-FB Mon, May/11/20 04:17pm



NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z621230000/0002278	2019	F8	F11

NORTHERN  
FREIGHT LANE

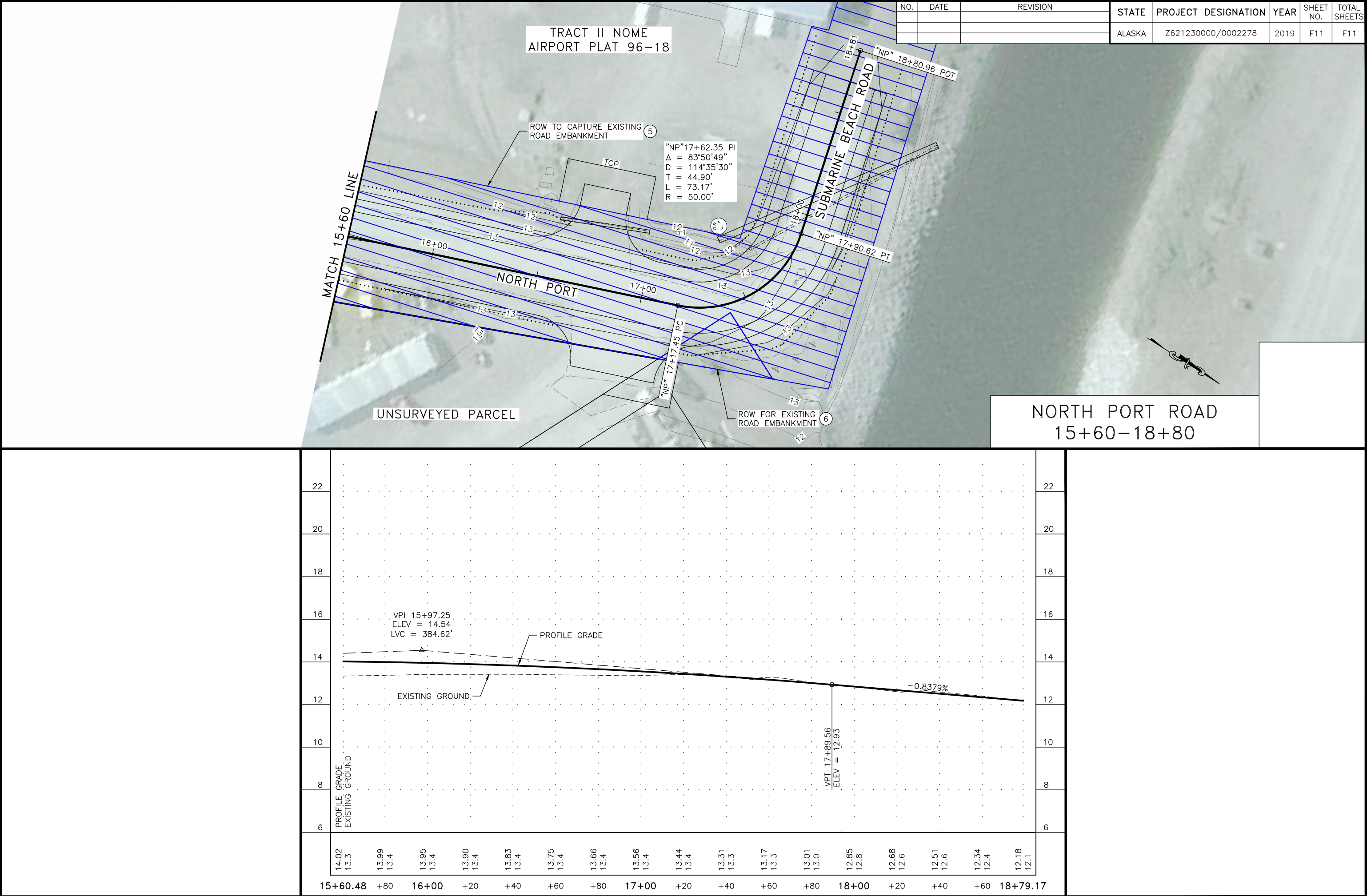








PLANS DEVELOPED BY: PDC INC ENGINEERS, LLC. CERT. OF AUTHORIZATION NO.: AEC0605, 2700 GAMBELL STREET, SUITE 500, ANCHORAGE, AK 99503, (907)743-3200  
P:\2017\17280FB-Port\_Rd\_Rehab\C2001\cns17280FB-F11\_15+60-18+80 Mon, May/11/20 04:18pm



## **APPENDIX E**

### **DESIGN EXCEPTIONS AND DESIGN WAIVERS**

(Pending)

## **APPENDIX F**

### **INTERSECTION ALTERNATIVES**

## Anne Nelson

---

**From:** Andrew Ooms <aooms@kittelson.com>  
**Sent:** Tuesday, January 9, 2018 6:19 PM  
**To:** Keith Hanneman  
**Cc:** Anne Nelson; Brandon Irvine  
**Subject:** Re: Port Road - Triangle Intersection Alternatives

From the sketch, it isn't clear to me how this concept addresses that issue.

I can join on Thursday, but I will be a bit late to join.

Andrew Ooms, PE  
Senior Engineer

Kittelson & Associates, Inc.  
Transportation Engineering / Planning  
880 H Street, Suite 202  
Anchorage, Alaska 99501  
907.646.7995  
907.433.8102 (direct)  
907.231.7646 (cell)  
[Streetwise](#) [Twitter](#) [Facebook](#)

PDC, Kittleson, DOT and the Port Director met on 1/11/2018 to discuss and approve the intersection layout presented in the DSR.

On Jan 9, 2018, at 6:09 PM, Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)> wrote:

One of their main concerns to our 4 way was the loaded downhill left turn from staging to small barge laydown area as they were afraid of tipping.

Can you join us for the meeting on Thursday or brief someone to give the traffic perspective?

Keith

On Jan 9, 2018, at 4:56 PM, Andrew Ooms <[aooms@kittelson.com](mailto:aooms@kittelson.com)> wrote:

An interesting concept. It seems to meet unique vehicle needs better than our initial four-leg intersection concept, but doesn't have the path clarity we were seeking in our "T" intersection concepts. I don't see any fatal flaws, but have a few thoughts:

- Are the tank farm -> Port Road and Port Road -> causeway truck turning paths accommodated?
- Does the tank farm -> Port Road left turn maneuver and yield meet the operational needs of the Conex forklifts? As I recall, this was the main concern with the initial four-leg concept.
- I think the one-way paths could be reasonably communicated/reinforced. However, I do have some mild concerns about the ability to define and delineate the various paths.
- The right turning yield maneuvers should have sufficient visibility and are an improvement over existing.
- How is the scales accommodated?

I think it is worth further discussion.

**From:** Anne Nelson [<mailto:annenelson@pdceng.com>]  
**Sent:** Tuesday, January 09, 2018 3:37 PM  
**To:** Andrew Ooms <[aooms@kittelson.com](mailto:aooms@kittelson.com)>  
**Cc:** Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>; Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>  
**Subject:** FW: Port Road - Triangle Intersection Alternatives

Andrew

See below and attached from the Nome City Engineer. If you have a chance, could you review and provide comment by Thursday morning?

Thank you,

**Anne Nelson, PE**  
*Civil Engineer*

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**From:** Joy Baker [<mailto:JBaker@nomealaska.org>]  
**Sent:** Tuesday, January 09, 2018 3:03 PM  
**To:** Anne Nelson <[annenelson@pdceng.com](mailto:annenelson@pdceng.com)>; Johnston, Christopher F (DOT) <[chris.johnston@alaska.gov](mailto:chris.johnston@alaska.gov)>; Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>  
**Cc:** Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>; Erica Betts <[EricaBetts@pdceng.com](mailto:EricaBetts@pdceng.com)>; Jensen, Melissa L (DOT) <[melissa.jensen@alaska.gov](mailto:melissa.jensen@alaska.gov)>; John Blees <[jblees@bristol-companies.com](mailto:jblees@bristol-companies.com)>  
**Subject:** RE: Port Road - Triangle Intersection Alternatives

Chris/Anne,

After additional internal discussion, our City Engineer, John Blees, has provided the attached sketch as an additional alternative, along with the following comments:

*I think observation of the intersection during its peak use would be beneficial to the ADOT's designers. Though I know it is not ideal, I think this really works best as a 4-way intersection with stop signs for east and westbound traffic. There could be a single lane leaving the causeway to the east toward Port Road that is "free-flow" with a yield sign. The curve from Port Road to the tank farm could also be a single lane "free-flow" with a yield sign. Please see the attached sketch for what I'm talking about.*

I recall the original proposal contained a 4-way intersection, but this idea with designated free-flow one-ways could serve the greater purpose – providing the 4-way intersection was had sufficient width to enable the 53' target vehicle tractor/trailer to make safe left turns coming from any direction.

I wanted to get this idea distributed so there's time to digest before our meeting on Thursday regarding the T-intersections.

Thanks,

Joy L. Baker  
Port Director  
City of Nome  
(907) 304-1905  
[www.nomealaska.org](http://www.nomealaska.org)

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**From:** Anne Nelson [<mailto:annenelson@pdceng.com>]  
**Sent:** Friday, January 5, 2018 11:28 AM  
**To:** Johnston, Christopher F (DOT); Joy Baker; Keith Hanneman  
**Cc:** Brandon Irvine; Erica Betts; Jensen, Melissa L (DOT)  
**Subject:** RE: Port Road - Triangle Intersection Alternatives

Chris

January 11<sup>th</sup> at 9 am should work for us.

Keith is out of the office right now but it looks that his schedule is clear from 9-10 am the 11th. Brandon and I are also free at that time. Eric will be out of the office and unable to attend.

Thank you,

**Anne Nelson, PE**  
*Civil Engineer*

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---

**From:** Johnston, Christopher F (DOT) [<mailto:chris.johnston@alaska.gov>]  
**Sent:** Thursday, January 04, 2018 11:37 AM  
**To:** Joy Baker <[JBaker@nomealaska.org](mailto:JBaker@nomealaska.org)>; Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>  
**Cc:** Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>; Erica Betts <[EricaBetts@pdceng.com](mailto:EricaBetts@pdceng.com)>; Jensen, Melissa L (DOT) <[melissa.jensen@alaska.gov](mailto:melissa.jensen@alaska.gov)>; Anne Nelson <[annenelson@pdceng.com](mailto:annenelson@pdceng.com)>  
**Subject:** RE: Port Road - Triangle Intersection Alternatives

The 11<sup>th</sup> works for me as long as it's before 10am. How about 9am? I can set up a web-ex meeting which allows screen sharing if that time works.

**Christopher Johnston, P.E.**

Engineering Manager | Northern Region Design | Alaska Department of Transportation  
2301 Peger Road, Fairbanks, AK 99709 | (907)451-2322 | [chris.johnston@alaska.gov](mailto:chris.johnston@alaska.gov)  
Physical office at 2720 Picket Place, Fairbanks, AK

---

**From:** Joy Baker [<mailto:JBaker@nomealaska.org>]

**Sent:** Tuesday, January 2, 2018 1:05 PM

**To:** Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>

**Cc:** Johnston, Christopher F (DOT) <[chris.johnston@alaska.gov](mailto:chris.johnston@alaska.gov)>; Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>; Erica Betts <[EricaBetts@pdceng.com](mailto:EricaBetts@pdceng.com)>; Jensen, Melissa L (DOT) <[melissa.jensen@alaska.gov](mailto:melissa.jensen@alaska.gov)>; Anne Nelson <[annenelson@pdceng.com](mailto:annenelson@pdceng.com)>

**Subject:** RE: Port Road - Triangle Intersection Alternatives

Keith,

If PDC has the ability setup something like a *Go To Meeting* session that we can call into, we will certainly participate. I have copied John Blees, our City Engineer, as he will be joining on the call. At this point, January 11<sup>th</sup> works for both of us (with the exception of 10-11 am).

We will wait to hear more from your end on a confirmed date/time.

Thanks,

Joy L. Baker  
Port Director  
City of Nome  
(907) 304-1905  
[www.nomealaska.org](http://www.nomealaska.org)

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---

**From:** Keith Hanneman [<mailto:KeithHanneman@pdceng.com>]

**Sent:** Friday, December 29, 2017 4:05 PM

**To:** Joy Baker

**Cc:** Christopher F Johnston (DOT); Brandon Irvine; Erica Betts; Jensen, Melissa L (DOT); Anne Nelson

**Subject:** RE: Port Road - Triangle Intersection Alternatives

Joy,

Would you have the ability to do a video conference or a screen share session as I think that way we could show simulations of the truck movements, etc.? We are definitely trying to provide the functionality you need for your freight movements while improving the safety and I am afraid that there was too much info to convey clearly in the figures and memo's.

I am out of the office until the 10<sup>th</sup> so we could have a session after that if that would work for you.

Thanks,

**Keith Hanneman, PE**

*Principal | Civil & Environmental Engineer*

**PDC ENGINEERS**

1028 Aurora Drive, Fairbanks, Alaska 99709 | 907.452.1414

---

**From:** Joy Baker [<mailto:JBaker@nomealaska.org>]

**Sent:** Tuesday, December 26, 2017 3:51 PM

**To:** Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>

**Cc:** Christopher F Johnston (DOT) <[chris.johnston@alaska.gov](mailto:chris.johnston@alaska.gov)>; Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>; Erica Betts <[EricaBetts@pdceng.com](mailto:EricaBetts@pdceng.com)>; Jensen, Melissa L (DOT) <[melissa.jensen@alaska.gov](mailto:melissa.jensen@alaska.gov)>; Anne Nelson <[annenelson@pdceng.com](mailto:annenelson@pdceng.com)>

**Subject:** RE: Port Road - Triangle Intersection Alternatives

Keith,

Thank you for sending the alternatives last week, and my apologies for the delay in responding but the holidays trigger such things.

I have concerns with each of the proposals using the "T" intersection methodology, but will have distributed internally for additional comments in order to provide them in a collective response next week. As I'm sure you gathered from the significant input during the open house in Nome last month, there is extreme local interest in maintaining a similar functionality to the existing pattern at this triangle intersection, which has served an effective purpose since the late 80's.

I will get back to you toward the end of next week, once I have gathered internal comments, as some of our key people are on leave through 1 Jan.

Thanks,

Joy L. Baker  
Port Director  
City of Nome  
(907) 304-1905  
[www.nomealaska.org](http://www.nomealaska.org)

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---

**From:** Keith Hanneman [<mailto:KeithHanneman@pdceng.com>]

**Sent:** Wednesday, December 20, 2017 5:19 PM

**To:** Joy Baker

**Cc:** Christopher F Johnston (DOT); Brandon Irvine; Erica Betts; Jensen, Melissa L (DOT); Anne Nelson

**Subject:** FW: Port Road - Triangle Intersection Alternatives

Joy,

To follow up on our discussion during our trip to Nome, we have developed an alternative layout that we believe preserves the functionality and priority needed by your freight handling movements while improving the safety by reconfiguring it into a couple "T" intersections that are more understandable to the users.



Please see the summary below from Anne and let us know if you have any questions.

We are available to discuss if you would like.

Thanks,

**Keith Hanneman, PE**

*Principal | Civil & Environmental Engineer*

**PDC ENGINEERS**

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---

**From:** Anne Nelson

**Sent:** Wednesday, December 20, 2017 3:53 PM

**To:** Keith Hanneman <[KeithHanneman@pdceng.com](mailto:KeithHanneman@pdceng.com)>

**Cc:** Brandon Irvine <[BrandonIrvine@pdceng.com](mailto:BrandonIrvine@pdceng.com)>

**Subject:** Port Road - Triangle Intersection Alternatives

Joy

Please find attached the proposed alternatives for modifying the “Triangle” intersection on Port Road. Included is a technical memo from Andrew Ooms, the Traffic Engineer with Kittleson, explaining the design philosophy and benefits of the proposed layouts.

The proposed intersection alternatives are an improvement over the existing intersection configuration.

- The proposed simplifies the conflicts to two intersections with good sight lines
- The beach access is defined at an intersection, users will no longer be cutting willy-nilly through the triangle
- The proposed maintains free flowing access between the barge landing and laydown yard around the curve.
- Intersections are signed and designed for a ‘yield’ condition for northbound traffic from Jetty Road so drivers will be able to clearly see opposing traffic and won’t have to stop unless necessary.

Also included are figures we developed showing the following:

- Roadway grades in the direction of travel for both alternatives. The proposed layout will closely match the existing grades currently in the triangle. For reference, a typical road crown is 2% on paved roads. This is also the typical “landing” grade where vehicles stop at an intersection. Trucks turning from the Jetty Road onto Port would have a close to level landing on which to sit and start their maneuver from if they needed to yield to oncoming traffic.
- Computer modeled truck turning movements for both layouts showing the wheel path of a tractor pulling a 53 foot long trailer. This rig would be the largest vehicle expected to navigate the intersection and exceeds the size of a typical semi pulling trailer with a 40 foot conex by 13 feet. The intent of this modelling is to show the functionality of the intersection layout with the largest vehicle expected.

- The sight triangle lines shown illustrate the theoretical line of sight of a driver at the point which the driver must decide whether to continue on or avoid some potential conflict with another vehicle at an intersection. These lines are determined based on the design speed and the roadway grade. This area should be kept clear of any tall boats or other obstructions that could block a driver's view of oncoming traffic.
- Sight distance offset on the inside of the curve is the area which must stay free of any sight obstructions to provide sight distance around the curve for a driver continuing around the curve to have time to see a hazard in the road and stop.

In the slope and turning movement figures, the dashed line denotes the edge of "traveled way" and the solid line is the edge of the road shoulder. Trucks will be able to maneuver on the full shoulder-shoulder width. This intersection will be gravel with 6:1 minimum fore slope for a depth of 2 to 3 feet. The intersections are laid out and sight distances / triangles determined for a design speed of 35 mph. Port Rd is currently signed for 25 mph but traffic appears to travel faster, hence the 35 mph design speed which also just happens to be the "desirable speed" based on the geometry of the "curve".

The proposed layout will require the acquisition of approximately 30 feet of ROW in the inside of the curve to capture the catch slope of the embankment. Currently the embankment slope generally starts at the ROW and the toe falls outside the ROW.

We recommend alternative 4 since it moves the beach access south to provide more separation between the two intersection which increases safety. However, this alternative has potentially more environmental impacts due to the work nearer to the tidal zone. Since it is a "worst" case scenario from an environmental standpoint, we are planning on proceeding through the environmental document with this alternative and refine it during the "Design Study Report" – which is our next step after the environmental document is approved.

Thank you,

**Anne Nelson, PE**  
*Civil Engineer*

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# PORT ROAD ALTERNATIVE 5



NOTE:  
ALL SHOULDERS ARE 6' WIDE



## TECHNICAL MEMORANDUM

### Nome Port Road Reconstruction

Preliminary Triangle Intersection Concepts

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Date: November 29, 2017  
To: Keith Hanneman, PE, PDC Engineers  
From: Andrew Ooms, PE

---

Project #: 21556

The Nome Port Road Reconstruction project aims to address the safety and truck conflict issues at the existing "Triangle" intersection of the Port Road, the jetty road, and the beach access. The current configuration includes yield locations with poor sight lines, vehicles accessing the beach cutting through the center of the intersection, and undesirable driver behavior. Several preliminary concepts were developed to reduce and simplify conflicts and clarify vehicle right of way. These concepts serve the unique users of the intersection, including Conex forklifts, tracked vehicles, gravel trucks, ATVs, the truck scale, and passenger vehicles. Based on conversations with the Port Director regarding the importance and operating criteria of the Conex forklifts, concepts which brought all users into a single intersection were dismissed. The discussion during the November 14th site visit clarified that the priority traffic movements for the intersection were 1) Conex forklifts between the barge lot and storage yard 2) truck traffic with Conex's between the Jetty Road and the barge lot and the storage yard, and 3) occasional large trailers pulled by tracked vehicles from Jetty Road to the barge lot. To address these movements and continue to provide access to the west beach, Two "T" intersection concepts were developed and are attached to this memorandum.

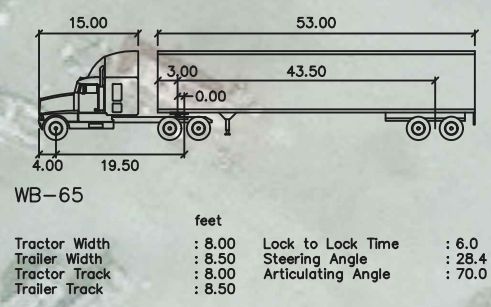
Alternative 3 has the following advantages and disadvantages:

- Conflicts are simplified to two, three-leg intersections with good sight lines and compatibility with the existing grade.
- Conex forklifts have a free-flowing route between the barge lot and the storage yard.
- Beach access is defined at the intersection.
- The needs of tracked vehicles to/from the jetty dictate that the intersections should be unpaved, so route delineation must be made primarily by road shoulders at 6:1.
- There is room for one truck to queue at Port Road without blocking the beach access.
- The scale access and egress continues to be undefined.

Alternative 4 modifies Alternative 3 by moving the exiting beach access south to provide more intersection separation and consolidate the scale egress with the beach road. While this clarifies

driver expectation for these minor movements, the environmental and operational impacts of shifting the beach road, such as the impact of high tide, have not yet been evaluated.

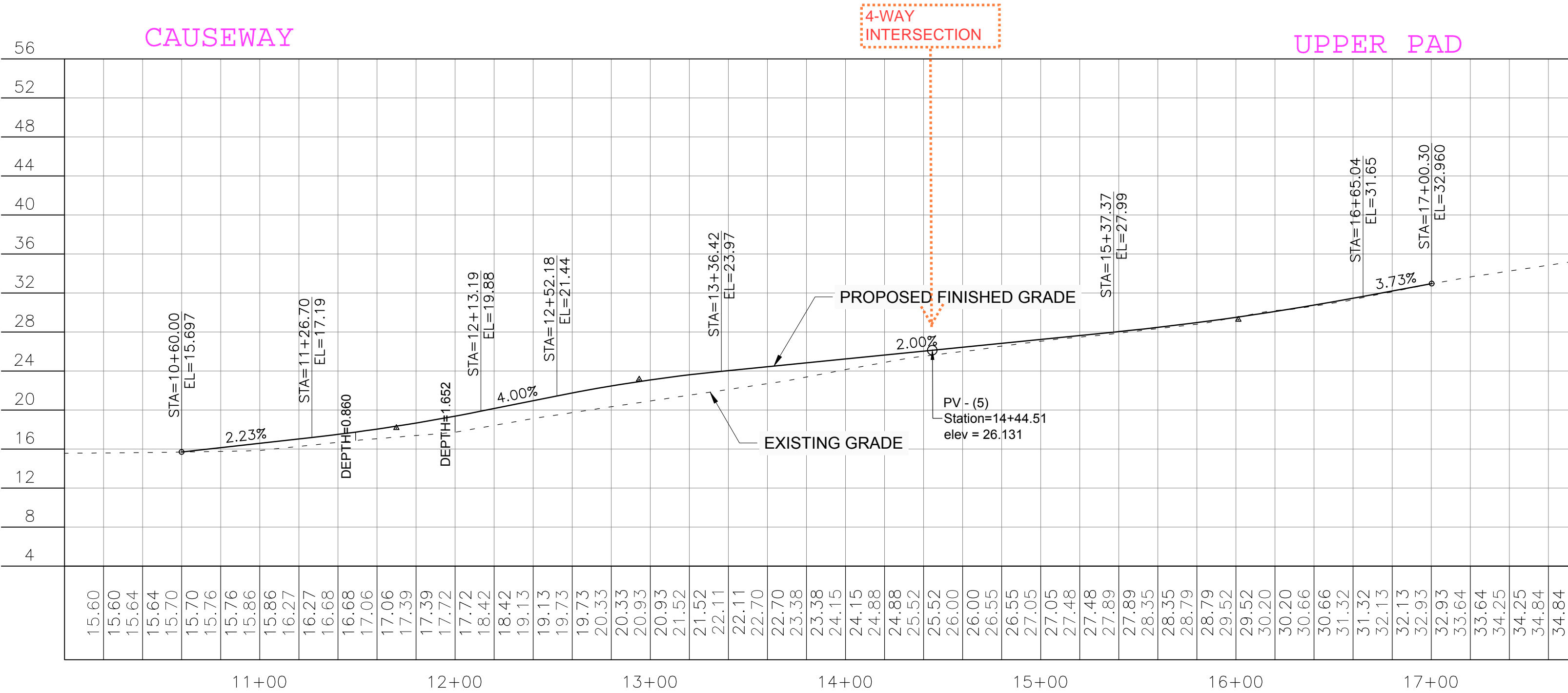
PORT ROAD - TRIANGLE INTERSECTION - ALT 5  
WB-65 SWEPT PATHS



SOUTHBOUND  
TO EASTBOUND

WESTBOUND TO  
SOUTHBOUND





WEST BEACH

PORT ROAD

4-WAY  
INTERSECTION

PROPOSED FINISHED GRADE

EXISTING GRADE

STA=10+00.00  
EL=16.873

STA=10+08.33  
EL=17.77

STA=11+57.82  
EL=26.03

STA=13+05.65  
EL=26.44

STA=14+30.63  
EL=25.01

PV - (4)  
Station=11+91.05  
elev = 26.131

0.28%

-2.57%

9+00

10+00

11+00

12+00

13+00

14+00

15+00

16+00

16.87

16.87

20.88

21.66

23.53

24.70

25.16

25.99

25.71

26.15

25.89

26.29

26.21

26.42

25.88

26.34

25.15

25.69

24.12

24.51

22.56

23.23

20.91

21.95

19.61

20.66

18.27

19.38



## Alternative 3: "T" Intersection Concept

need to delineate this area to reinforce new alignment

free-flowing Conex route

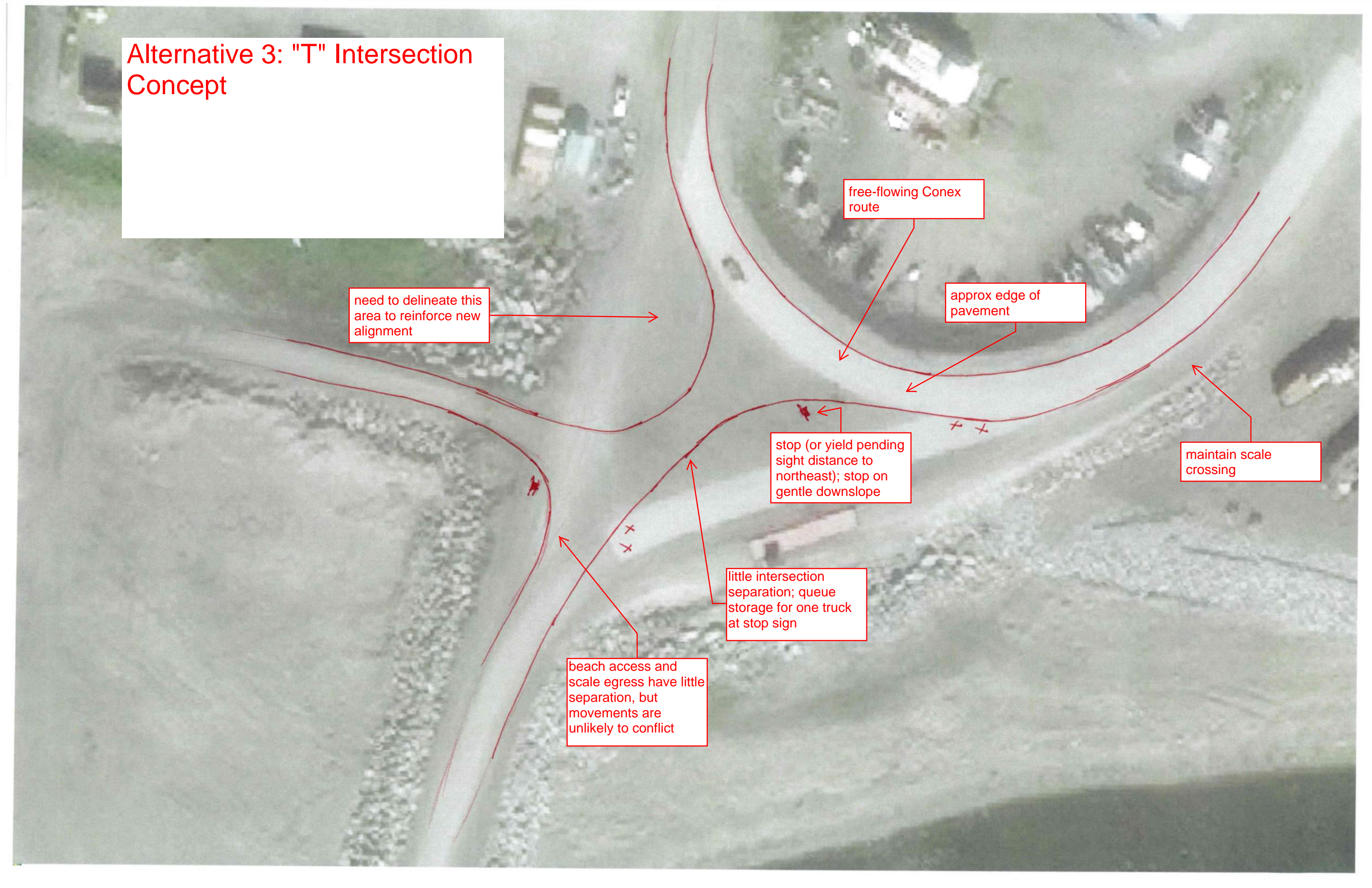
approx edge of pavement

stop (or yield pending sight distance to northeast); stop on gentle downslope

maintain scale crossing

little intersection separation; queue storage for one truck at stop sign

beach access and scale egress have little separation, but movements are unlikely to conflict





Alternative 4: "T" Intersection  
with Beach Road Shifted South



free-flowing Conex  
route

approx edge of  
pavement

need to delineate this  
area to reinforce new  
alignment

stop (or yield pending  
sight distance to  
northeast); stop on  
gentle downslope

maintain scale  
crossing

additional queuing  
space between  
intersections

4-leg intersection  
with scale exit