

# MEMORANDUM

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

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

**DATE:** May 25, 2022

**FILE NO:** H:\Projects\Fbks\_NP\NFHWY00570 Chena Ridge and  
Pump Resurfacing\6 Design\4 DSR

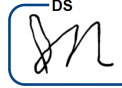
**THRU:** James Allen, P.E.  
Project Delivery Team Lead  
Northern Region

A blue ink signature of James Allen, P.E., enclosed in a blue rectangular box with the initials "DS" in the top right corner.

**TELEPHONE NO:** 907-451-5448

**SUBJECT:** Chena Ridge Road and Chena Pump  
Road Resurfacing  
0002(512)/NFHWY00570  
**Abbreviated Design Study Report**

**FROM:** John Netardus, P.E.  
Engineering Manager  
Northern Region

A blue ink signature of John Netardus, P.E., enclosed in a blue rectangular box with the initials "DS" in the top right corner.

## Introduction/History

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Federal Highway Administration, is proposing to add a protective surface treatment to the length of Chena Ridge Road and Chena Pump Road, including bridge #1008 over Cripple Creek. Guardrail and bridgerail will also be replaced.

The length of the road to be treated is 12.81 miles. The total road surface affected will be approximately 240,500 square yards or 34.2 lane miles.

Right-of-way was established for Chena Ridge Road and Chena Pump Road in 1965. Both roads were given a chip-seal surface in 2006. The road condition is currently weathered and small areas are degraded enough to require replacement of the asphalt. Most of the road surface retains adequate integrity for surface treatment to be effective for preservation.

## Project Description

This project will add a scrub-sealed pavement-preserving surface to Chena Ridge Road and Chena Pump Road in Fairbanks. The road surface will be swept to remove dust and debris. Hot asphalt emulsion is then sprayed on the road surface. A brush installed on the back of the truck improves penetration of the emulsion into cracks and gaps in the road surface. (This is the change to standard chip sealing practice that is indicated with the term "scrub seal.") Aggregate is immediately spread on the surface. Pneumatic rollers set the aggregate firmly into the surface. The emulsion will be allowed to cool and moisture to evaporate, then the surface swept to remove loose aggregate before the road is reopened to allow vehicle access.

Cracks in the existing pavement will be repaired and potholes will be patched at least two weeks prior to application of the new surface. Additionally, areas of severely distressed pavement will be replaced prior to the surface work. Some superelevations may be corrected and repaved, as well.

Guardrails will be replaced to bring them up to current standards. The bridge over Cripple Creek will also receive replacement bridgerail and a new decking surface. Brush and vegetation in the area of the guardrails will be cleared in the course of installation.

Where applicable, manhole and utility lids and storm drains will be adjusted to match the new surfaces.

All pavement work will take place on existing road surfaces. Guardrails will require work on embankments; however, all work will remain within the right of way.

Road striping will be repainted.

The immediate area of the intersection of Chena Pump Road and Chena Small Tracts Road will be excluded from the work area because that area will be addressed by an HSIP Intersection project in 2025.



*Map of project area*

## **Design Standards**

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

- *A policy on Geometric Design of Highways and Streets, 2011*. American Association of State Highway and Transportation Officials (AASHTO)
- *Alaska Highway Preconstruction Manual (PCM)*
- *Roadside Design Guide, 2011*. (AASHTO)
- *DOJ 2010 Standards for Accessible Design*
- *Guide for the Development of Bicycle Facilities, 2012* (AASHTO)
- *Alaska Traffic Manual (ATM)*
- *U.S. Department for Transportation ADA Standards for Transportation Facilities, 2006*
- *U.S. Department of Justice ADA Standards for Accessible Design, 2010*

A Design Designation and Design Criteria Waiver is in Appendix A.

## **Design Exceptions and Design Waivers**

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

## **3R Analysis**

A 3R Analysis is not applicable.

## **Traffic Analysis**

A traffic analysis is not required.

## **Horizontal/Vertical Alignment**

No horizontal alignments will be changed. As a result of added material, a nominal 1/2" grade raise is expected.

## **Typical Section(s)**

See Appendix B for proposed typical sections.

## **Pavement Design**

Scrub seal surface consisting of:

- CRS-2P asphalt emulsion, sprayed and brushed into the road surface
- Seal Coat aggregate, Type 3, Grade C

Repaved portions of the roadway will consist of:

- 2" HMA, Type II, Class B
- Aggregate Base Course, grading D-1 as necessary to meet line and grade

Due to the relatively small area of the pavement portions to be replaced, the use of an asphalt reclaimer for a crushed asphalt base course is not expected to be cost effective. However, it would be an excellent alternative to the aggregate base course.

### **Preliminary Bridge Layout**

Cripple Creek Bridge, officially Bridge #1008, on Chena Pump Road and will have minor repairs, including:

- Install object markers at each bridge corner
- Replace approach railing
- Replace bridge railing
- Resurface the bridge deck
- Level roadway approaches to provide smooth transition onto the bridge
- Clear brush around bridge railings, approach railings, and bridge abutments

### **Right-of-Way Requirements**

All project work will remain within the existing right of way. No acquisitions will be required.

No temporary construction permits or easements are anticipated.

### **Maintenance Considerations**

The roads within the project are maintained by the DOT&PF Maintenance and Operations. There will not be any new lane miles or pedestrian facilities added by this project. The new surface will reduce road maintenance costs.

### **Material Sources**

All materials will be furnished by the contractor. Multiple commercial material sources are available within the Fairbanks area.

### **Utility Relocation & Coordination**

Numerous existing utilities, consisting of telephone, electric, sewer, water, and natural gas reside within the project areas. Relocations are not anticipated. Utility lids, manholes and risers will be adjusted.

### **Access Control Features**

Access control is maintained by the driveway permitting process. No access control features will be modified in this project.

### **Pedestrian/Bicycle (ADA) Provisions**

This project will not affect curb ramps or other ADA compliance-related surface features.

## **Safety Improvements**

Upgrades to the road surface will improve driving traction. New guardrail and bridgerail will meet current standards and will improve safety in places where the existing guardrail has been compromised. Any superelevation corrections will also provide additional safety.

## **Intelligent Transportation System Features**

This project does not include Intelligent Transportation System components.

## **Drainage**

No changes are planned or anticipated to the current drainage patterns.

## **Soil Conditions**

Both roads in the project are located on Chena Ridge, which is composed primarily of loess soil. Material analysis will not be performed for this project, as there are no planned alterations to subsurface conditions. The roadways have not received extensive repairs by M&O to warrant obtaining a Ground Penetrating Radar report for the existing asphalt thickness.

## **Erosion and Sediment Control**

Erosion and sediment control requirements for this project are minor. Best management practices (BMP) will be employed for dust control, inlet protection, and runoff control as appropriate to the circumstances. Post-construction BMPs may include, but are not limited to, establishing vegetation and new surface on the paved roadway. Because the project will not expose any permeable land surfaces, no SWPPP is anticipated.

## **Environmental Commitments**

The Environmental Document is provided in Appendix C.

Mechanized land vegetation clearing activities will be avoided during the migratory bird nesting season (May 1 –July 15) unless a mitigative work plan is submitted by the contractor and approved by DOT&PF.

If new environmental issues or impacts are identified during design, proper steps will be taken to address those issues.

A flood plain permit is anticipated for this project, due to proximity of Chena Pump Road to the Tanana River and Chena River.

## **Work Zone Traffic Control**

Contract specifications will require contractors to submit and obtain approval for a Traffic Control Plan (TCP). Traffic will be maintained in both directions. Single lane closures may be required. Pilot cars and/or flaggers may be required.

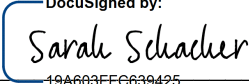
## Value Engineering

A value engineering study will not be prepared for this project. The roads in the project are not part of the National Highway System and the estimated project cost is significantly below \$40 million. This is in compliance with P&P 05.01.030, dated April 12, 2013.

## Cost Estimate

The estimated costs for this project are as follows:

|  |                       |
|--|-----------------------|
| Design                                     | \$716,000.00          |
| Utilities                                  | \$0.00                |
| Right of Way                               | \$0.00                |
| Construction<br>(Includes 23% Engineering) | \$8,762,000.00        |
| Total Cost of Project                      | <u>\$9,478,000.00</u> |

Approved:  5/25/2022  
Sarah E. Schacher, P.E. Preconstruction Engineer Date

pfw/lmr

Attachments:

Copy to: Preconstruction/Project file  
Dan Schacher, M&O District Superintendent  
Original to: Barbara L. Tanner, P.E. Chief of Contracts  
cc: NR Design Directive 20-01 Distribution

## Appendix A

### Design Designation and Design Criteria Waiver

# MEMORANDUM

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

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

**DATE:** February 1, 2022

**FILE NO:** H:\Projects\Fbks\_NP\NFHWY00570 Chena Ridge and Pump  
Resurfacing\6 Design\2 Design Criteria

**THRU:** James Allen, P.E.  
Project Delivery Lead  
Northern Region

**PHONE NO:** 907-451-5448

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

**FROM:** John Netardus, P.E.  
Engineering Manager  
Northern Region

**SUBJECT:** Chena Ridge and Chena Pump  
Resurfacing  
Pending/NFHWY00570  
**Design Designation and Design  
Criteria Waiver**

A waiver of the Highway Preconstruction Manual requirement for a Design Designation (HPM 1100.4.1) and Design Criteria (HPM 1100.4.2) is requested.

The purpose of this project is to use scrub sealing to resurface two roads in the Fairbanks area. Approximately 80,160 square yards of pavement will receive surface treatment. Guard rails will also be replaced the whole length of the project. All work will take place on existing roads or approaches. No useful information would be obtained through the development of a Project Design Designation because it is a preventative maintenance activity and will not alter any of the geometric conditions listed on the Project Design Criteria sheet.

Please acknowledge your approval of the waiver of Design Designation and Design Criteria by signing below:

Approved:  \_\_\_\_\_ 3/14/2022

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

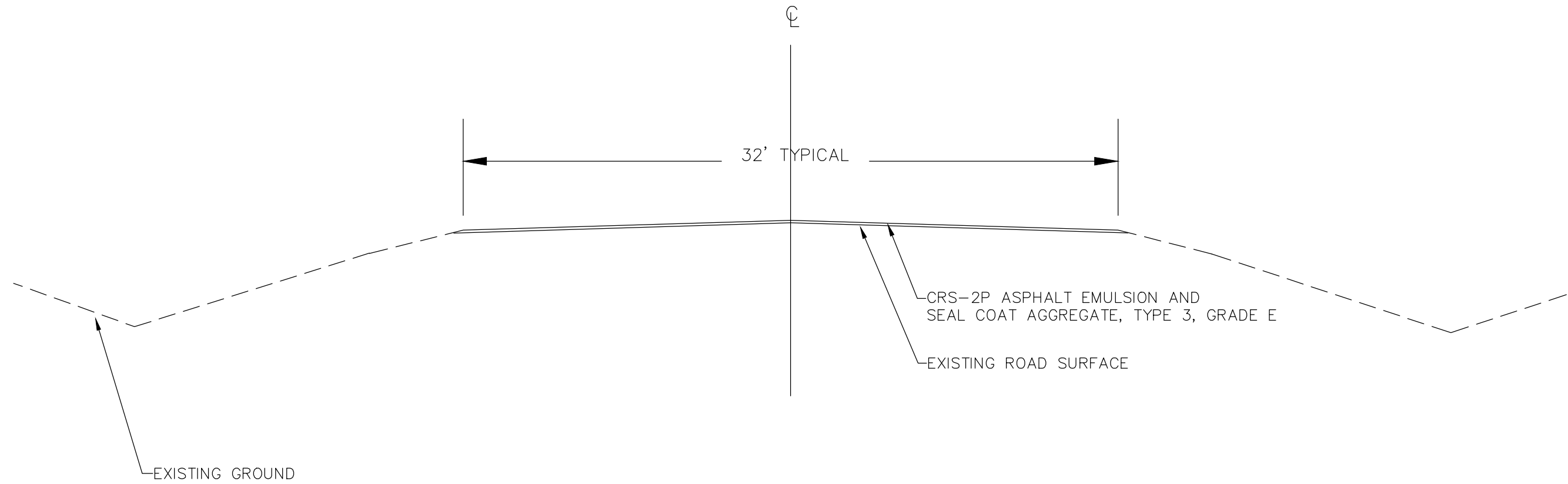
Date

pfw/ms  
cc: Judy Chapman, Chief of Planning



## Appendix B Typical Sections

| NO. | DATE | REVISION | STATE  | PROJECT DESIGNATION | YEAR | SHEET NO. | TOTAL SHEETS |
|-----|------|----------|--------|---------------------|------|-----------|--------------|
|     |      |          | ALASKA | PENDING/NFHwy00570  | 2023 | B1        | B1           |

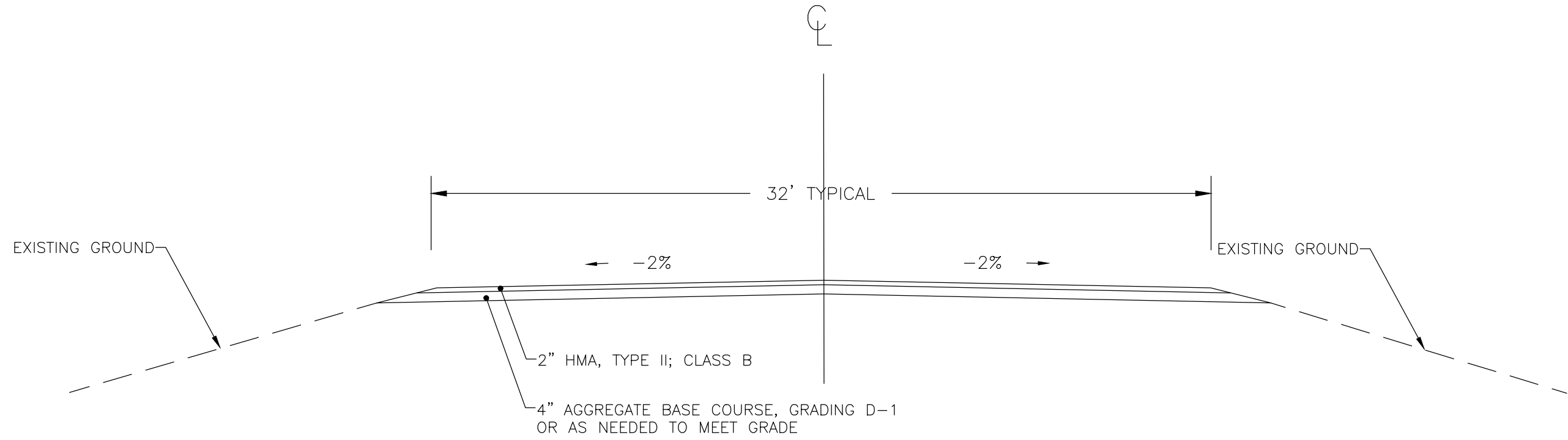


PROPOSED TYPICAL SECTION  
CHENA RIDGE ROAD AND CHENA PUMP ROAD

TYPICAL SECTION



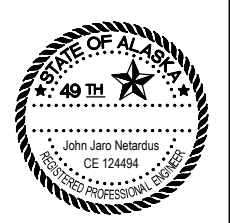
| NO. | DATE | REVISION | STATE  | PROJECT DESIGNATION | YEAR | SHEET NO. | TOTAL SHEETS |
|-----|------|----------|--------|---------------------|------|-----------|--------------|
|     |      |          | ALASKA | PENDING/NFHWY00570  | 2023 | B2        | B2           |



PROPOSED TYPICAL SECTION – REPAVED AREAS  
 CHENA RIDGE ROAD AND CHENA PUMP ROAD

PLANS DEVELOPED BY: STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES, NORTHERN REGION, 2301 PEGER ROAD, FAIRBANKS, AK 99709 (907)451-2200  
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TYPICAL SECTION 2 OF 2



## Appendix C Environmental Document

**A. Environmental Commitments and Mitigation Measures [23 CFR 771.109(b)]**

**Yes No**

1. Are there project-specific environmental commitments for this project?

**Summary**

DOT&PF and their Contractor(s) shall:

Mechanized land vegetation clearing activities will be avoided during the migratory bird nesting season (May 1 -July 15) unless a mitigative work plan is submitted by the contractor and approved by DOT&PF.

**VI. Environmental Documentation Approval**

**A. Environmental Documentation Approval**

**Yes No**

1. Do any unusual circumstances exist, as described in 23 CFR 771.117(b)?

2. Does the project meet the criteria of one of the following DOT&PF Programmatic Approvals authorized in the Nov. 13, 2017 "Chief Engineer Directive - Programmatic Categorical Exclusions"?

- Programmatic Approval 2

**Summary**

N/A

**Environmental Documentation Approval Signatures**

Prepared by:



Date: 1/12/2022

Zoe Petersen

Environmental Impact Analyst I

Reviewed by:



Date: 1/14/2022

John J Netardus

Engineer/Architect II

Approved by:



Date: 1/14/2022

Brett Nelson

Environmental Impact Analysis Manager I