TRUNK ROAD (NELSON ROAD) EXTENSION SOUTH, PHASE III (MSB)

Project No.: 0001747 / CFHWY00889

DESIGN STUDY REPORT

ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

PREPARED BY: DOT&PF Central Region – Design and Construction
4111 Aviation Avenue
Anchorage, AK 99502

July 2025

Revised December 2024

ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
DESIGN AND ENGINEERING SERVICES – CENTRAL REGION

DESIGN STUDY REPORT

For

Trunk Road (Nelson Road) Extension South, Phase III (MSB)

Project No.: 0001747 / CFHWY00889

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Chris L. Bentz, P.E. Date
Mat-Su District Chief

Approved:

_____

Luke S. Bowland, P.E. Date
Preconstruction Engineer

NOTICE TO USERS

This report reflects the thinking and design decisions at the time of publication. Changes frequently occur during the evolution of the design process, so persons who may rely on information contained in this document should check with the Alaska Department of Transportation and Public Facilities for the most current design. Contact the Design Project Manager, Chris L. Bentz P.E. at 907-707-1912 for this information.

PLANNING CONSISTENCY

This document has been prepared by the Alaska Department of Transportation and Public Facilities according to currently acceptable design standards and Federal regulations, and with the input offered by the local government and public. The department's Planning Section has reviewed and approved this report as being consistent with present community planning.

CERTIFICATION

The Alaska Department of Transportation and Public Facilities hereby certify that this document was prepared in accordance with Section 520.4.1 of the current edition of the department's Highway Preconstruction Manual and CFR Title 23, Highway Section 771.111(h).

The department has considered the project's social and economic effects upon the community, its impacts on the environment and its consistency with planning goals and objectives as approved by the local community. All records are on file with Central Region - Design and Engineering Services Division, Highway Design Section, 4111 Aviation Avenue, Anchorage, AK 99502.

Luke S. Bowland, P.E.	Date	Ben White	Date
Preconstruction Engineer		Chief, Planning	

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LIST OF ACRONYMS

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
AHDM	Alaska Highway Drainage Manual
ANSI	American National Standards Institute
APDES	Alaska Pollutant Discharge Elimination System
ARRC	Alaska Railroad Corporation
ATM	Alaska Traffic Manual
BMP	Best Management Practice
CFR	Code of Federal Regulations
CGP	Alaska Construction General Permit
DEC	Alaska Department of Environmental Conservation
DOT	U.S. Department of Transportation
DOT&PF	Alaska Department of Transportation and Public Facilities
DOJ	U.S. Department of Justice
ESCP	Erosion and Sediment Control Plan
FHWA	Federal Highway Administration
HMA	Hot Mix Asphalt
HPCM	Alaska Highway Preconstruction Manual
HSIP	Highway Safety Improvement Program
MP	Milepost
MPH	Miles per Hour
MS4	Municipal Separate Storm Sewer Systems
MSB	Matanuska-Susitna Borough
MUTCD	Manual on Uniform Traffic Control Devices
PIOP	Public Information Plan
PGDHS	A Policy on Geometric Design of Highways and Streets
PROWAG	Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way
RDG	Roadside Design Guide
ROW	Right-of-Way
SWMM	Storm Water Management Model
SWPPP	Storm Water Pollution Prevention Plan
TMP	Transportation Management Plan
TOP	Transportation Operations Plan
TRB	Transportation Research Board
USGS	United States Geological Survey

PROJECT REFERENCES

(Documents completed under a separate cover and located in the project files)

Hydraulic & Hydrologic Report for Wasilla Creek - Final, Trunk Road Extension South, Parks Highway to Nelson Road, Lounsbury & Associates, Jan 2018.

Final Geotechnical Recommendations Report, Trunk Road Extension South Parks Highway to Nelson Road, CH2MHill, February 2018.

Location Hydraulic Study, Trunk Road (Nelson Rd) Extension South, Ph III, State of Alaska, DOT&PF Bridge Section, Jan 2024.

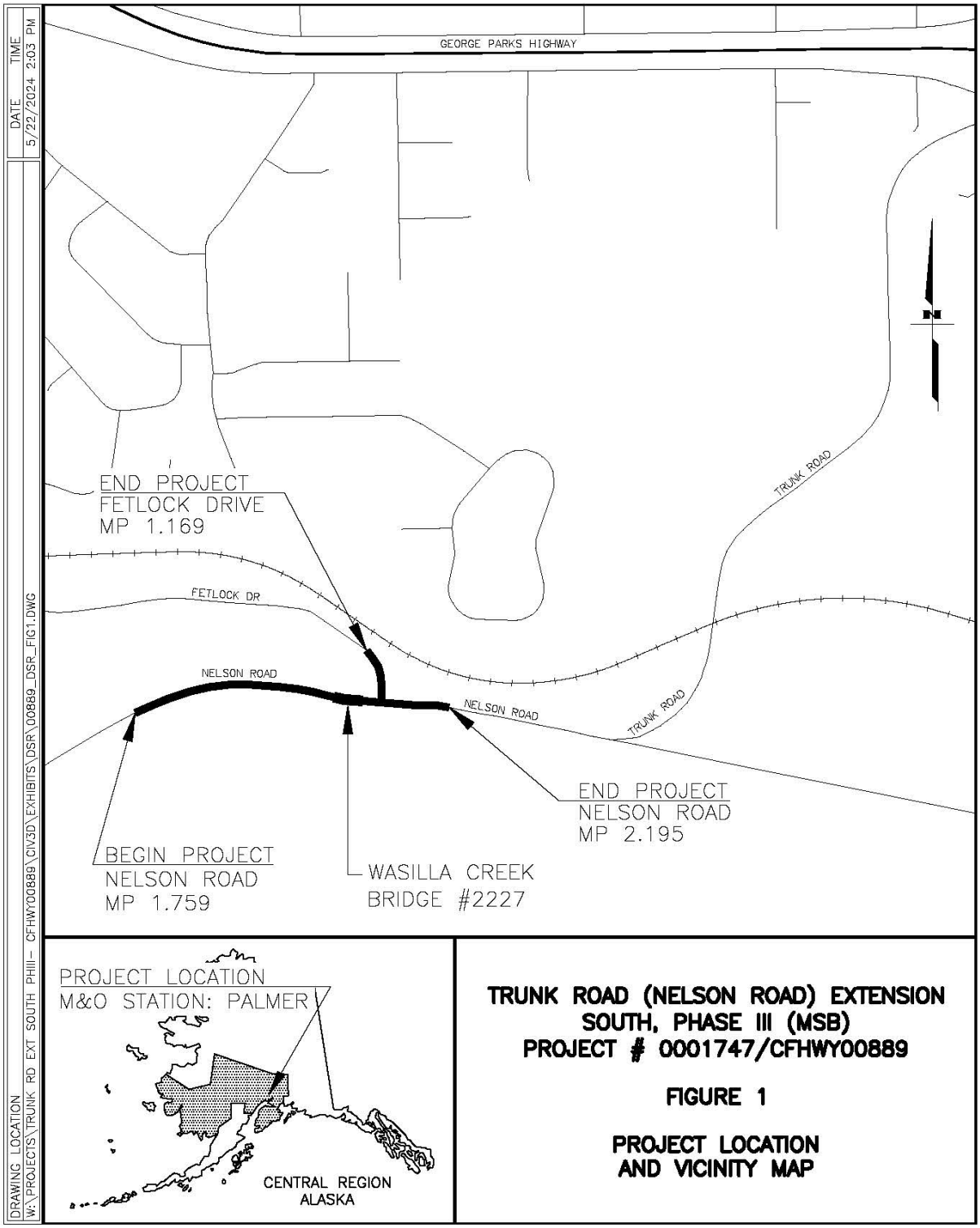

Figure 1 Location and Vicinity Map

1.0 PROJECT DESCRIPTION

1.1 Project Location and Description

The Alaska Department of Transportation and Public Facilities (DOT&PF) in cooperation with the Federal Highway Administration proposes to remove and replace Bridge Number (BN) 2227 over Wasilla Creek on Nelson/Trunk Road in the Matanuska-Susitna Borough within Southcentral Alaska. The bridge, BN 2227, is located near the intersection between Nelson Road and Fetlock Drive at Latitude 61.550°N, Longitude 149.294°W, within United States Geological Survey (USGS) quad Anchorage C-7, Seward Meridian, Township 17N, Range 1W. See Figure 1 for Location / Vicinity Map.

This project will consist of demolishing the existing bridge and constructing a new bridge at the same site. The new bridge will be longer and wider than the existing bridge, and gain several feet in elevation. To tie the new bridge into the existing roadway profile, a portion of Nelson west and east of the bridge will be reconstructed, along with the Fetlock Drive intersection. Some horizontal curvature adjustments were made to ensure appropriate tie-ins to the bridge. A typical section of two 12-foot lanes with 5-foot shoulders and an 8-foot pathway will be maintained throughout the reconstructed portions of Nelson/Trunk as well as over the bridge. This project will connect the existing pathway infrastructure as well as provide pathway access to the Wasilla Creek Boardwalk Trailhead approach.

The existing portions of Trunk/Nelson Road and Fetlock Drive included in this project are owned and maintained by the Matanuska-Susitna Borough (MSB) and will remain under the ownership of MSB post-construction. This bridge replacement project was originally an MSB project but was nominated to the DOT&PF Community Transportation Program (CTP) by the MSB in 2019.

1.2 Existing Facilities and Land Use

Nelson Road is a minor collector road that transitions into Trunk Road, a minor arterial. Fetlock is a local road intersecting Nelson Road just east of the Wasilla Creek Bridge. The Nelson Road segment is posted 45 miles per hour and has 12-foot lanes with 2-foot shoulders. Fetlock Drive has 12-foot lanes with no shoulders and is posted for 25 miles per hour.

The Wasilla Creek bridge, BN 2227, is 26 feet wide and approximately 41 feet long, consisting of two lanes over a steel stringer structure with a reinforced concrete deck and asphalt wearing surface. The bridge rail consists of timber bullrails on scuppers, approximately 33 inches high.

Biennial DOT&PF bridge inspections indicate the bridge rail and transition are substandard, and a lack of channel protection is resulting in active erosion and undercutting under the girders. No

approach rail is installed. Additionally, at both abutments, the geotextile wrapping is exposed and is acting as the sole fill retention mechanism.

Separated pathway currently exists on both the east and west sides of the bridge but stops short of the bridge itself, thereby leaving a discontinuous pathway along the corridor.

Land use within the project area is a mix of residential, commercial, recreational, institutional developments and railroad right-of-way; south of the railroad to Nelson Road is undeveloped land. The Ranch Subdivision is the current development along Nelson Road and Fetlock Drive. Residential development currently consists of single-family housing. Institutional land use consists of the Machetanz Elementary School west of the project area. The area is expected to experience continued growth in the next few years.

1.3 Purpose and Need

The Purpose and Need of the project is to replace the existing bridge over Wasilla Creek, BN 2227, which does not meet current design standards for the road use and is experiencing stream channel erosion and degradation of fill around the abutments. The project will construct a new, larger bridge meeting current design and safety standards with an increased hydraulic opening, increased clear zones, wider shoulders, drainage improvements, and a designated multi-use pathway. This project will provide increased connectivity between the large neighborhoods and Machetanz Elementary School to the Parks Highway and greater Trunk Road corridor including the Mat-Su Regional Hospital and Mat-Su College by linking existing multi-use pathways which currently stop short of the bridge on both sides.

2.0 DESIGN STANDARDS AND GUIDELINES

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 (PGDHS), 7th Edition, AASHTO, 2018.
- Roadside Design Guide (RDG), 4th Edition, AASHTO, 2011.
- Alaska Highway Preconstruction Manual (HPCM), DOT&PF, 2023 as amended at the time of design approval.
- Alaska Highway Drainage Manual (AHDM), DOT&PF, 2006.
- The Alaska Traffic Manual (ATM), consisting of the Manual on Uniform Traffic Control Devices (MUTCD), 2009 as amended, U.S. DOT, FHWA) and the Alaska Traffic Manual Supplement (ATMS), DOT&PF, 2016.

- Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG), U.S. Access Board, 2023.
- ADA Standards for Transportation Facilities, DOT, 2006.
- ADA Standards for Accessible Design, DOJ, 2010.
- Guide for the Development of Bicycle Facilities, 4th Edition, AASHTO, 2012.
- Recommended Practice for Roadway Lighting (RP-8-14), ANSI / IES, 2014.
- Highway Capacity Manual (HCM), 5th Edition, TRB, 2010.
- Guidelines for Design of Low-Volume Roads, AASHTO, 2019.

Guidelines:

- Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2nd Edition, AASHTO, 2014.

Appendix A contains the project Design Criteria and Design Designation.

3.0 DISCUSSION OF ALTERNATIVES

3.1 First Alternative – No Build

Under this alternative, the bridge at Wasilla Creek would remain in its existing condition. The existing bridge does not meet current roadway design standards and is exhibiting continuing bank protection and approach fill degradation issues, which would remain unaddressed with this alternative. No improvements to pedestrian and multi-use pathway connectivity would be effected through this alternative. The no-build alternative does not meet the project's Purpose and Need.

3.2 Second Alternative – Replace Bridge

This alternative will replace the existing bridge in its current location with a 45-foot wide, 130-foot long single-span decked bridge to carry two 12-foot lanes, provide wider 5-foot shoulders, and an 8-foot wide multi-use pathway connecting to the existing pathway facilities on both sides of the bridge. The longer span and a gain in bridge low-chord elevation will provide additional hydraulic opening. Bridge rail and approach guardrail will be included to meet length-of-need and current roadside safety standards. This alternative will result in ROW impacts due to increases to the roadway embankment. This alternative meets the project's Purpose and Need.

4.0 PREFERRED ALTERNATIVE

The preferred alternative is the *Second Alternative*. The *Second Alternative* is preferred because it meets the project Purpose and Need of replacing the bridge, increasing the hydraulic opening,

shoulder widening, and linking the existing multi-use pathway facilities on either side of the bridge.

5.0 TYPICAL SECTIONS

The typical roadway section will have 12-foot travel lanes in both directions, 5-foot shoulders, and a separated 8-foot pathway. The typical section over the bridge will differ only in that the pathway will be adjacent to the travel way and separated by a curb and gutter. This cross-section matches that adjacent cross-section to the north, which was constructed as part of the MSB's South Trunk Road project, thereby maintaining a consistent 34-foot roadway width with separated pathway throughout this portion of the Trunk/Nelson Corridor.

Foreslopes of 4:1 (Horizontal: Vertical) are generally proposed, as they provide a recoverable area within the design clear zone with 2:1 backslopes outside the design clear zone. On the north side of Nelson Road, 3:1 foreslopes are proposed outside the design clear-zone where necessary to minimize ROW impacts.

The typical sections are provided in Appendix B.

6.0 HORIZONTAL AND VERTICAL ALIGNMENT

6.1 Horizontal Alignment

Wasilla Creek bridge will be realigned on the roadway tangent, with roadway horizontal curvature work to shift and remove the reverse curve west of the bridge. Proposed pathways along Nelson/Trunk Road were designed to match existing pathway locations and are intended to maintain existing pedestrian facilities and provide a connection at the bridge site. Pathway profile grades will meet the requirements of the Americans with Disabilities Act (ADA).

6.2 Vertical Alignment

The roadway centerline profile was designed with a 45-mph design speed to:

- Match the new bridge deck elevation 4.5 feet above existing.
- Minimize ROW impacts.
- Construct the approach slabs on tangent sections.
- Satisfy current design standards for K-values and max. grades.

Pathway profiles were designed with 5% maximum grades to satisfy ADA requirements with profile curvature suitable for pedestrian traffic.

7.0 EROSION AND SEDIMENT CONTROL

The project includes temporary and permanent measures to control or prevent erosion and sedimentation during and after construction. The contractor will prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to construction that conforms to the DOT&PF Best Management Practices (BMPs) for Erosion and Sediment Control in accordance with the DOT&PF contract specifications and following the guidelines of the Erosion and Sediment Control Plan (ESCP) provided to the contractor. The contractor will submit the SWPPP for approval by the Construction Project Engineer. The contractor will conduct construction activities in accordance with the approved SWPPP. Appropriate erosion and siltation controls will be used and maintained in optimal condition during construction and all other exposed soils/fills will be permanently stabilized. Temporary BMP's will remain in place until permanent erosion and sediment control measures are in place and soil is permanently stabilized.

8.0 DRAINAGE

Topography in the project area generally slopes from north to sea level to the south, with runoff collecting and infiltrating in roadside ditches and low-lying areas, respectively. The existing and proposed bridge crosses over Wasilla Creek just as the creek enters a large alluvial flood plain and wetland (The Palmer Hay Flats). Nelson Road spans the entire flood plain created by the convergence of several watersheds.

The Nelson Road-Wasilla Creek crossing is approximately 1.9 creek miles from its confluence with the other creeks in the Palmer Hay Flats area and an additional 12 creek miles to the end of the Palmer Slough channel that flows into the Cook Inlet mud flats. There is likely a minimal backwater influence at the road crossing during extreme high tides. Wasilla Creek is in the Federal Emergency Management Agency mapped flood zone.

Cross-culverts near the existing Wasilla Creek bridge were installed as overflow routes during high water events. Culverts will be removed to accommodate the installation of the new bridge.

9.0 SOIL CONDITIONS

CH2MHILL evaluated subsurface soil conditions within the future bridge site in 2013. A test hole was drilled near each substructure location and on both approaches leading up to the bridge in April 2013.

Test holes were advanced adjacent to the west and east abutments of the existing Wasilla Creek Bridge on Nelson Road, respectively. The subsurface conditions consist of a layer of fill overlying layers of alluvium and glacial till. The consistency and relative density of the native materials increase significantly below a depth of 36 feet below ground surface where the glacial till unit is interpreted. The fill material, placed for the existing Nelson Road, consists of medium dense to

very dense sand with gravel. The fill material extends to a range of 7 to 9 feet below the ground surface.

The underlying alluvium material was encountered to a depth of 36 feet below the ground surface. The alluvium material consists of clays, silts, sands, and gravels. The underlying glacial till material was encountered to the maximum depth of exploration, 101 feet below ground surface. The glacial till consists of clays, silts, sands, and gravel with hard consistency and very dense relative density.

This information is summarized in the 2018 Final Geotechnical Recommendation Report in Appendix E.

10.0 ACCESS CONTROL FEATURES

Is this project on an Interstate and will driveways be modified or added?
☐ Yes ☒ No

Existing access from public rights-of-ways, Wasilla Creek Boardwalk trailhead, and private lots will be maintained. New access to the roadway will be managed through driveway permits and future projects' evaluations. The existing driveway serving the Wasilla Creek Boardwalk Trailhead west of the bridge will be modified to accommodate the full guardrail length-of-need for the new bridge.

11.0 TRAFFIC ANALYSIS

Average Annual Daily Traffic on the Trunk Road/Nelson Road within the project corridor is as follows:

- Existing (2021) – 1,120 vehicles per day
- Design Year (2045) – 1,905 vehicles per day

No traffic analysis was performed for this project. The roadway section was selected based on roadway classification and to match adjacent portions of the corridor that have been recently reconstructed to provide increased lane and shoulder width.

See Appendix A for additional information on traffic volumes and growth rates in the approved Design Designation from the DOT&PF Central Region Highway Data Section.

12.0 SAFETY IMPROVEMENTS

Proposed safety improvements include the following:

- Clear and grub roadside vegetation to ROW.
- Flatten roadway foreslopes to 4:1 (within or beyond the design clear zone) and to 2:1 beyond (the design clear zone).
- Install Safety Edge and a 1-foot gravel buttress along the roadway pavement edges to prevent vertical edge drops.
- Install guardrail, bridge rail, transitions, and guardrail end-terminals to current design standards.
- Relocate driveways to accommodate full guardrail length-of-need at bridge.
- Install new signs on crash-worthy bases.
- Increase bridge *length* to accommodate increased flow and higher stream elevations resulting from current hydrologic analyses standards and updated flood elevations, which consider nonstationary climate flows.
- Increase bridge *width* to accommodate shoulder width standards required for new construction, pathway, and to provide a consistent roadway cross-section consistent with adjacent portions of the corridor.

13.0 RIGHT-OF-WAY REQUIREMENTS

Through the project area, the existing Nelson Road right-of-way (ROW) is approximately 100 feet wide and the existing Fetlock Drive ROW is approximately 60 feet wide. Adjacent property is a mix of private commercial, private residential, and non-private State-managed property including a trailhead. Pathway, shoulder widening, and drainage improvements are directly increasing embankment top width and proposing bridge elevation gain for hydraulic opening needs is increasing fill boundaries, resulting in embankment slopes falling outside the current ROW in some areas. Therefore, Right-of-Way acquisition will be necessary to construct this project, and partial acquisitions of two privately owned parcels are proposed. Temporary Construction Permits will also be required to complete the project.

ROW acquired will be transferred to the MSB upon project completion.

13.1 Encroachments

An existing luminaire is located on the northeast quadrant of the Nelson Road and Fetlock Road intersection. The luminaire will be impacted by fill slopes. This luminaire is currently unpermitted and is considered an encroachment into the ROW.

14.0 PEDESTRIAN AND BICYCLE FACILITIES

The proposed design will include an 8-foot-wide shared use pathway along the north side of the corridor from Fetlock Drive westward to connect to existing facilities on the west end of the

bridge, including over the bridge where no pathway currently exists. The pedestrian/shared-use facilities will be constructed to ADA standards and will create a direct connection between existing pedestrian/shared-use facilities on Trunk Road and Nelson Road. The widened shoulders will also provide additional accommodation for bicyclists.

15.0 UTILITY RELOCATION AND COORDINATION

Utility companies with facilities in the project limits include Enstar Natural Gas and a community water main. At this time, no utility relocations are anticipated.

15.1 ENSTAR Natural Gas Co.

ENSTAR Natural Gas owns and operates transmission facilities within the project area. The transmission line passes near the east end of the project limits. No anticipated conflicts.

15.2 Community Water System

A community water main is part of the View Pointe at the Ranch Public Water System, ID# 220485, is located on the north side of Nelson Road, within the ROW, parallelling Nelson Road and crossing through a bore under Wasilla Creek. The water system is owned by Arctic Devco, and the water main was permitted by the MSB in May of 2019. No anticipated conflicts.

16.0 PRELIMINARY WORK ZONE TRAFFIC CONTROL

The HPCM Section 1400.2 defines the criteria for determining if a project is to be classified as a significant project for purposes of determining the level of effort required in developing a Transportation Management Plan.

Category 1 is not met as the roadway is not classified as an Interstate Highway within the Anchorage Transportation Management Area. Category 2 is not met as the anticipated work zone impact, by the project or projects within the area, would not exceed what would be considered acceptable. In the event of full road closure, a practical alternate route does exist. Therefore, the project is not considered a significant project.

The Transportation Management Plan is included by reference and will be provided separately to Construction staff. The following sections summarize the major points of the plan.

The Full Transportation Management Plan can be found in Appendix E.

16.1 Transportation Management Plan

PIH REVIEW NOTE TO BE REMOVED:

TMP IS STILL IN PROCESS - WILL BE ADDED TO APPENDICES UPON COMPLETION

Proceeding is a summary of the elements that will constitute the Transportation Management Plan (TMP).

A full road closure is expected for construction of this proposed bridge. Minimal ROW space exists for a temporary bridge and the existing network of roads provide connectivity sufficient for a detour during bridge construction. A full road closure is expected to reduce construction time.

With the anticipated traffic control plan, it is not expected that a road capacity analysis will be needed as the road closure will provide reasonable workspace during construction. The detour routing is anticipated to have sufficient capacity to accommodate traffic during construction.

A list of contact information of Agency representatives, School/Education, and Emergency/Medical Service personnel located within or near the project area will be maintained within the TMP. The contractor will coordinate any potential impacts to access, bus stops and bus routes with school bus services to ensure safe and accessible bus stop locations can be maintained throughout the project corridor while school is in session. Access to emergency services residence(s), businesses, and through shall be maintained throughout construction.

Alaska Railroad does operate near the project area; however, no impacts are anticipated.

16.2 Temporary Traffic Control Plan

Design has created a Temporary Traffic Control Plan (TTCP) as part of the TMP which will be used along with the contractor's specific TTCP. The TTCP was developed to safely guide and protect the traveling public in work zones, in accordance with the ATM, Chapter 9 of the AASHTO Roadside Design Guide and the project specifications. The contractor's TTCP will be assessed and approved by the department.

The contractor will develop TTCP during construction, to safely guide and protect the traveling public in work zones, in accordance with the ATM and the project specifications. The plan will be assessed and approved by the Construction Project Engineer or 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.

16.3 Public Information & Outreach Plan

With the project not considered a "Significant Project", a PIOP is not required.

Design has conducted outreach to the public about construction impacts including local business, residents, and road travelers during development of the project. This included formal discussions at public meetings, Transportation Fairs, and direct discussion with individuals regarding the project's impacts.

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 as required by the project specifications Section 643-3.03 Public Notice.

16.4 Transportation Operations Plan

The department has/will coordinate with relevant public agencies and event organizers to incorporate means and methods for minimizing traffic impacts with the contractor not covered by the TTCP or the PIOP within the project plans.

17.0 STRUCTURAL SECTION AND PAVEMENT DESIGN

The preliminary mainline and pathway structural section design is based on recommendations provided by the DOT&PF Central Region Materials section from in-situ and laboratory testing in accordance with the Alaska Flexible Pavement Design Manual.

Nelson Road/Fetlock Drive:

- 2" HMA, Type V, Class A, PG 64-40E
- STE-1 Asphalt for Tack Coat
- 2" HMA, Type II, Class A, PG 52-40E)
- 2" Aggregate Base Course, Grading D-1
- 36" Selected Material, Type A
- Existing embankment or Selected Material, Type C, as needed in deep fills to bottom of new embankment

Separated Asphalt Pathway:

- 2" Asphalt Pathway
- 4" Aggregate Base Course, Grading D-1
- 36" Selected Material, Type A
- Selected Material, Type C– as needed in deep fills to bottom of new embankment

Typical sections are shown in Appendix C.

Material sources for this project will be contractor supplied.

18.0 COST ESTIMATE

The project cost estimate is as follows:

Preliminary Engineering	$	400,000
Right-of-Way	$	50,000
Utility Relocation	$	0
Construction	$	4,500,000
Total	$	4,950,000

19.0 ENVIRONMENTAL COMMITMENTS AND CONSIDERATIONS

The proposed project does not involve any unusual circumstances or significant environmental impacts; it meets the criteria for classification as a Categorical Exclusion per 23 CFR 771.117. A Categorical Exclusion for the project was approved on March 28, 2024. A copy of the document is in Appendix H.

The contractor will be required to prepare and implement a SWPPP in accordance with Section 7.

The contractor will be required to dispose of solid waste at a DEC approved landfill. The contractor will be responsible for obtaining all necessary permits and clearances for materials sites, disposal sites, and staging areas unless DOT&PF has obtained all necessary permits.

20.0 BRIDGE

The existing 42-foot long, single-span timber bridge will be replaced with a 130-foot long, single-span decked bulb-tee girder bridge. The proposed bridge will be 45 feet wide to accommodate two 12-foot lanes, 5-foot shoulders, and a multi-use pathway.

HL-93 live load and 50 pounds per square foot (psf) dead load were used for design loading calculations. The bridge deck will be protected with a waterproofing membrane and an asphalt overlay. The substructures will be supported by driven steel pipe piles. Standard 3-tube and 2-tube steel bridge railing will be used.

In terms of Hydraulics, the replacement structure will substantially improve flood conveyance at this creek crossing. Riprap provisions around the bridge abutments and approach embankments will safeguard against flood damage and long-term channel changes.

Barrier work for the bridge includes combination-pedestrian and transition railing. Bridge abutments to include wingwalls and approach slabs.

21.0 EXCEPTIONS TO DESIGN STANDARDS

There are no exceptions to design standards for this project.

22.0 MAINTENANCE CONSIDERATIONS

Nelson Road and Fetlock Drive are owned and maintained by MSB and will remain the responsibility of the MSB post-construction. Additionally, maintenance responsibility for right-of-way acquired as a part of this project will be transferred to the MSB upon project completion.

The project will add additional pavement surface area for snow removal, new curb and gutter, asphalt pathway, install signs, striping, and guardrail and guardrail end-sections within the project limits.

Maintenance efforts will be reduced by improving roadside ditch capacity, increasing the bridge hydraulic opening, and armoring the bridge abutments. The proposed bridge-type is known for durability and low maintenance.

23.0 ITS FEATURES

No, ITS elements will be incorporated into this project.

APPENDIX A

Approved Design Criteria and Design Designation

APPENDIX B

Typical Sections

APPENDIX C

Material Recommendations

APPENDIX D

Approved Environmental Document

Do not include the Environmental Document's appendices.

APPENDIX E

Design Memos

Design Memos may include: Drainage Inspection Memos, Guardrail Inspection Memos, etc.

If no design memos have been created for the project at time of signing, insert the text below. This will serve as a placeholder in the case of any significant design changes after initial approval.

For DSR distribution:

The original, unbound DSR will be kept with the DOT&PF Project Manager until project bid opening. If no significant design changes occurred between approval of the DSR and project bid opening, the Project Manager will bind the original DSR and place it in Central Files. If significant design changes occur between the approval of the DSR and the bid opening resulting in Design Memos being produced, the Project Manager will bind the original DSR with Design Memos and file it in Central Files.

At this time, no significant design changes were made after the approval of this document. The final as-built plans for this project will be available in Central Files within the Highway Design Section (4111 Aviation Avenue, Anchorage, AK 99502).