Seward Highway MP 14 Railroad Crossing Reconstruction
Project No.: 0311037/CFHWY00947

PS&E Review

PS&E REVIEW COMMENTS are due on July 3, 2025. The review meeting will be held at **1:30 PM** on July 10, 2025 in the **Main** conference room. **Please E-mail comments, using the comment form, to Ryan Norkoli (ryan.norkoli@alaska.gov) and Rori Van Nortwick (rori.vannortwick@alaska.gov).**

*****Electronic Copy available on the internet at the following location:**
dot.alaska.gov/creg/design/highways/PS&E_Review/CFHWY00947/

*****Meeting conference call-in number*****

GCI Conference Now Number:	**(800) 315-6338**
Secondary GCI Conference Now Number:	**(913) 904-9376**
Access Code:	**85827**

DISTRIBUTION:
Rori Van Nortwick PM, Project Manager, 2525 (4+CD)
Sharon L. Smith, Chief, Contracts, 2525
Mike San Angelo, Statewide Materials Engineer, 2538 (email only)
Mike Yerkes, Central Region Materials, 2526 (2)
Mahear Aboueid, Concurrent Review Engineer, 2525
Ken Thomas, Traffic & Safety, 2525
Justin Zarr, HWY Data Supervisor, Planning, 2525 (CD)
Orion LeCroy, Hydrologist, Central Region, 2525 (2)
Travis Test, Survey, 2525 (email only)
Bob Keiner, ROW Engineering Supervisor, 2525
James Sowerwine, ROW, 2525 (CD)
Melanie Arnolds, Chief, ROW, 2525 (Memo and EE)
Cindy Ferguson, Chief, TS&U, 2525
Vacant, Utilities Engineer, 2525
David Freese, Utilities Lead, 2525
Shamsa Kordestani, Utilities Lead, 2525
Joel St. Aubin, Regional Construction Engineer, 2525 (Memo and EE)
Laura Mann, Construction Group Chief, 2525
Jake Gondek, Construction Project Manager, 2525 (2)
Athena Marinkovic, Construction ESCP Specialist
Ryan Norkoli, Review Engineer, Contracts, 2525
Fred Park, Spec./Estimating Engineer, Highway Design, 2525
Alex Read, Preliminary Design & Environmental Group Chief, 2525
Brian Elliott, Preliminary Design & Environmental, 2525
Anna Bosin, Traffic Safety, 2525 (2)
Roxanne Risse, Traffic Design, 2525 (2)
Vacant, Planning Manager, Planning, 2525
Sean Baski, Highway Design Group Chief, 2525
Kirk Warren, Chief, Maintenance and Operations, 2525 (2)
Burrell Nickeson, Maintenance and Operations, 2525 (Memo and EE)
Jeremy Thompson, Maintenance and Operations, 2525
Connor Eshleman, Highway Design, 2525
Luke Bowland, Pre-Construction Engineer, 2525 (Memo and EE)
Lauren Meyer, Regional Construction Office Engineer, 2525 (Memo and EE)
Jeff Carleton, Electrical, 2525 (email only)
Leslie Daugherty, Bridge Design, 2525 (2)

Additional Distribution Email Only (without Engineer's Estimate):
Kate Dueber, AKRR dueberk@akrr.com
Robert Ruffner, KPB Planning Director; 144 North Binkley St, Soldotna, AK 99669
(2) Emily Haynes, FHWA emily.haynes@dot.gov

MEMORANDUM State of Alaska

Department of Transportation and Public Facilities

TO: See Distribution DATE: June 9, 2025

TELEPHONE: 269-0423

FROM: **Ryan Norkoli, P.E.** SUBJECT: **Seward Highway MP 14 Railroad Crossing Reconstruction**
Project No. 0311037/CFHWY00947
PS&E Review

Attached for final review and comments are the appropriate copies of the subject assembly. The following specific replies are requested in addition to any other comments:

Right-of-Way	Either that R/W is available for the project or an estimated date when it may be available.
Utilities	Either the utility agreements have been completed or an estimated date when they may be available.
Environmental	What permits are required for this project and an estimated date when they will be acquired.

Ordinarily, only the principal reviewers are invited to attend. Comments are limited to those submitted in writing unless there are significant omissions.

Please use the review comment form located on the Library drive in /admin/forms/forms/pre PS&E review comment.doc. If you don't have access to the L drive, and still need a current version of the comment form, let me know and I will E-mail it to you.

IRIS Project No. CFHWY00947
IRIS Activity: 062P (or your sections activity code)
IRIS Template: TTPJ001
IRIS Phase: T02015

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 12/2/24 **REVIEWER: Robin Hoyer** **SECTION: PD&E** **PHONE: (**907) 269-0528	**Confirmation of action taken on comment by:**

In Sheet No. column, use a 1 for General comments, X for estimate comments, Y – pg # for Specifications, and Z - pg # for DSR, and the alpha numeric pg # of Plan sheets (use an A if no Alpha is used on the plan sheets)
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Item No.	Sheet / Page No.	Section	Comment	Response	Meeting Note
1)	A1	PDE	Missing BOP and EOP labels.	Done	
2)	A1	PDE	Missing bridge location with bridge number.	Done	
3)	A2	PDE	“Choose one” instruction should be removed.	Done	
4)	B1	PDE	Typical Section Titles: Show only the Roadway name. The words “Typical Section” should only be shown in title block.	Done	
5)	B1	PDE	Typical Section should remain within page border	Done	
6)	B1	PDE	No summary table for guardrail or MSE wall detail as referred to, presumed placeholder.	Done	
7)	C1	PDE	618.0003 Water for Seeding should be included in bid schedule and not subsidiary to Seeding, unless with approval from Construction Engineer and Group Chief.	Subsidiary per Construction	
8)	C1	PDE	Estimate of Quantities table on left side of page should have bold bottom border to match other tables.	Done	
9)	E1	PDE	Specify digout locations once known	Done	
10)	F ALL	PDE	Confirm if construction would prefer the colored background	Done	
11)	F ALL	PDE	If using hatch for asphalt, should be included on A3.	Done	
12)	F ALL	PDE	Provide scale and site map.	Key map added	

	DATE: 12/2/24 **REVIEWER: Robin Hoyer** **SECTION: PD&E** **PHONE: (**907) 269-0528	**Confirmation of action taken on comment by:**

13)	F13, F14	PDE	Page order is reversed on provided PDF.	Fixed	
14)	F14	PDE	Title block stations incorrect.	Fixed	

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 12/5/24 **REVIEWER: Maureen Orr** **SECTION: ENV** **PHONE: (**907) 269-0350	**Confirmation of action taken on comment by:**

Item No.	Sheet No. / Page No.	Section	Comment	Response	Meeting Note
15)	1	ENV	Delineate OHW for waterbodies.	Done	
16)	1	ENV	Anticipated Permits: USACE Nationwide; ADF&G Fish Habitat; KPB Conditional Use; and ADEC APDES.	Thank you!	

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 12/4/24 **REVIEWER: G. Billinger & R. Risse** **SECTION: Traffic Design** **PHONE: (**907) 269-0638	**Confirmation of action taken on comment by:**

In Sheet No. column, use a 1 for General comments, X for estimate comments, Y - pg # for Specifications, and Z - pg # for DSR, and the alpha numeric pg # of Plan sheets (use an A if no Alpha is used on the plan sheets) **In the Section column below please use your assigned Functional group identifier: Right-of-Way = RW; Traffic Design = TD; Traffic Safety = TS; Highway Design = HD; Materials = M; Bridge Design = B; Survey = SC; Internal Review = QC; Construction = C; Utilities = U; Specifications = S; Review Engineer = RE; Maintenance = M&O; Environmental = ENV; Hydrology = HY.**

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Item No.	Sheet / Page No.	Section	Comment	Response	Meeting Note
17)	A1	TD	Should the width of roadway be the same width as the typical? Typical (B1) shows 37' width.	Fixed	
18)	A2	TD	Remove S-23.00 from the Alaska Standard Plans as there are no signal mastarms or light poles to mount signing on.	Done	
19)	A2	TD	Remove T-05.10, T-06.00 as not seeing locations where these are being used.	Done	
20)	C1	TD	401.0001.0000 shouldn't the unit be 151 LB/CF as per Highway Designs Estimating Factors?	Done	
21)	C1	TD	There's 20sf of signs quantified, are sign sheets going to be added?	Done	
22)	F7	TD	There is at least one sign that will need replacement, the MP 14 sign. Please add.	Done	
23)	F13-F14	TD	Sheets are out of order.	Fixed	

	DATE: 12/10/24 **REVIEWER: B. Laposay & K. Pettijohn** **SECTION: ROW Engineering** **PHONE: (**907) 269-0678	**Confirmation of action taken on comment by:**

Item No.	Sheet No. / Page No.	Section	Comment	Response	Meeting Note
24)	A 02	RW	Please add North arrow.	Done	
25)	E 02	RW	Please change ARRC ROW to the west to the proper linetype. Please label the ARRC ROW to the east.	Fixed	
26)	E 02 – E 03	RW	Should the scaling in the title bar be 1” = 20’ for both of these sheets?	Fixed	
27)	F 6	RW	The slope near 130+50 RT slips outside the DOT ROW and crosses the ARRC ROW. Please ensure the Railroad permit covers this work.	Done	
28)	F 13 – F 14	RW	The scaling in the title bar for these two sheets states 1:20. Please revise to correct scaling.	Fixed	
29)	F 14	RW	Please adjust station numbers in Title Block.	Done	

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 12/5/24 **REVIEWER: Kate Dueber** **SECTION: ARRC** **PHONE: (**907) 265-3026	**Confirmation of action taken on comment by:**

Item No.	Sheet No. / Page No.	Section	Comment	Response	Meeting Note
30)	Not Provided	ARRC	Drainage: With the Realignment of the Seward Highway, please demonstrate flow onto the ARRC Right-of-Way (ROW) will not be increased. ARRC is concerned that a 12% finish grade and 2:1 slope, drainage will flow towards mainline track and foul the ballast.	Resolved	
31)	Not Provided	ARRC	Snow Storage: Please provide bridge plans and the DOT&PF's plan for snow removal and storage.	Done	
32)	Not Provided	ARRC	Rip Rap Protection: Please ensure rip rap is tied into existing ARRC rip rap to prevent scouring of ARRC bridge 14.5 and ARRC Right-of-Way (ROW).	Resolved; riprap will not be extended.	
33)	Not Provided	ARRC	Existing Permits/Leases: Please confirm that any required access agreements, if needed, will be continued for access to the ARRC ROW from the Seward Highway. Currently ARRC has a Letter of Non-Objection (LNO) from DOT&PF and DOT&PF has a permitted driveway within ARRC ROW.	Done	
34)	Not Provided	ARRC	Access: Access to the adjacent property (Chugach Alaska gravel pit north of the railroad tracks) will not be permitted through the ARRC ROW once project has been completed. Please confirm DOT&PF plans to provide access outside ARRC ROW.	Resolved	
35)	Not Provided	ARRC	Access: Please ensure width of proposed ARRC access road is the same as the existing ARRC access road.	Done	
36)	F ALL	ARRC	ARRC ROW linework needs to be fixed, it is misplaced/shifted within of F Sheets, primarily in Sheet F6. Plat document STP-031-1(25)/52419 identifies correct ARRC ROW.	Fixed	

	DATE: 12/5/24 **REVIEWER: Kate Dueber** **SECTION: ARRC** **PHONE: (**907) 265-3026	**Confirmation of action taken on comment by:**

37)	F6	ARRC	The plan show top of rail elevation at 499.97'. However, data ARRC provided previously to the project team assumed the new structure would be on the existing highway alignment. Please confirm that this elevation and horizontal location are correct for the new bridge location.	Resolved	
38)	F6	ARRC	ARRC has a detector hut at ARRC MP 14 within the proposed bridge fill slope. The project will need to relocate the detector hut and associated equipment. ARRC will complete this effort under the utility agreement.	Resolved	
39)	F5 – F7	ARRC	The plans indicate the ARRC access road tying into the Seward Highway from both the north and south side of the new bridge. ARRC only requires a single access point from the north side of the bridge. However, a turnaround that can accommodate the turn radius of a semi-truck with a trailer will be needed at the end of the access road.	Resolved	
40)	F6 – F7, F13 – F14	ARRC	Please provide the widths from the bridge abutments to edge of the track. ARRC requires 25 feet from edge of rail for maintenance and emergency purposes on one side and requests 66 feet from edge of rail on the other side to accommodate future second track.	Railway clear zone has been discussed previously. ARRC agreed to 53' total horizontal clear zone in May 2024.	
41)	X23 – X24	ARRC	The proposed and existing slope/grade needs to be revised.	Done	
42)	F13 – F14	ARRC	Sheets are swapped, please place in the correct order.	Fixed	

	DATE: 12/5/24 **REVIEWER: Long Nguyen** **SECTION: CONST** **PHONE: (**907) 632-9129	**Confirmation of action taken on comment by:**

Item No.	Sheet No. / Page No.	Section	Comment	Response	Meeting Note
43)	Not Provided	CONST	Specification 108: Interim completion date: depending on project bid date, completion date could be summer of 2026. Will there be any work expected for 2025? When can contractor start work on the bridge and tunnel removal? Most likely after 9/15 to 5/1 each year. Should be an interim completion date for bridge completion for tourist train season	Resolved	
44)	Not Provided	CONST	Specification 619: consider using geogrid with geotextile.	Resolved	
45)	Not Provided	CONST	General: Reconsider the use of aluminum culverts for longevity (citing extensive aluminum pipe corrosion with complete deterioration in some cases on C St., Fireweed and Benson Avenues in downtown Anchorage).	Steel is required by BABAA & CR Hydrologist recommends steel	
46)	B1	CONST	Plan: B1: typical section indicates fill is selected material, Type A in typical section but C1 lists only borrow, type A in estimate of quantities and pavement structural section shows only 9” of selected material type A over existing ground or selected material type C.	Fixed	

	DATE: 12/5/24 **REVIEWER: Long Nguyen** **SECTION: CONST** **PHONE: (**907) 632-9129	**Confirmation of action taken on comment by:**

47)	B1	CONST	Suggest increasing strength of Pavement Structural Section No. 1 as shown on B1 of the plan set with minimum 24" of Selected Material Type A but recommend 36" over existing ground or selected material type C with geotextile and geogrid.	Done, PSS now includes 36" of Select A	
48)	B1	CONST	Note: 2. What will the suitable excavated material in the structural section be used for? Not recommended to be used in the roadway structural section due to difficulty in density testing and placement.	Resolved; no material re-use anticipated	
49)	B1	CONST	Structural Section with 4" of D-1 might be a little much. Normally 2".	Resolved; left at 4"	
50)	C1	CONST	Plan: C1: Seeding should have water subsidiary.	Done	
51)	Not Provided	CONST	Consider add 2 vehicles as an paid item with directive from Project Engineer	Done	
52)	F11	CONST	Plan: F11 has P11-2 but E3 & E4 show it correctly as P11-1 as there is only one pipe on that page.	Fixed	
53)	F13-F14	CONST	Plan: F13 & F14 pages reversed.	Fixed	

	DATE: 12/5/24 **REVIEWER: Long Nguyen** **SECTION: CONST** **PHONE: (**907) 632-9129	**Confirmation of action taken on comment by:**

54)	Not Provided	CONST	Check with ARR design team that new overpass bridge clearance between top rail and bottom of decked bulb tee of 24.73' is sufficient.	Vertical railway clear zone is 23.5' minimum from top of high rail.	

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 11/27/24 **REVIEWER: O. LeCroy** **SECTION: HY** **PHONE: (**907) 269-0532	**Confirmation of action taken on comment by:**

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Item No.	Sheet / Page No.	Section	Comment	Response	Meeting Note
55)	1	HY	Please provide Draft H&H report for review to support design of P11-1, P4-1 (if fish passage or upsized >48"), and rip rap revetment along Snow River. Review discharges for non-stationarity as described in HEC-17 under Level II analysis. Evaluate resiliency of proposed designs for the upper 68% confidence interval event. Present design options/considerations that factor in additional capital costs or long-term maintenance costs over the service life of the culverts and revetment.	H&H Report will follow PS&E submittal for independent review.	
56)	1	HY	For design of rip rap revetment and MSE wall, consider glacial outburst flooding in addition to the design event in the HPCM. Reference USGS Scientific Investigations Report 2022-5099 for additional information on historical discharges and channel migration of the Snow River.	Done	
57)	1	HY	Confirm with Highway Review Engineer whether color background images are allowable in plans.	Done; aerial removed.	
58)	B1	HY	On station right, drainage is unclear where cuts are shown in plans (F1-F3). On station left, is ditching needed in both cut and fill locations?	Resolved; see typical and cross sections	
59)	B1	HY	Are MSE wall base elevations higher than Snow River flood elevations? If not, what design checks have been performed to confirm stability during flooding and draw down events?	Done	

	DATE: 11/27/24 **REVIEWER: O. LeCroy** **SECTION: HY** **PHONE: (**907) 269-0532	**Confirmation of action taken on comment by:**

60)	B1	HY	Missing rip rap typical sections. Its unclear if rip rap will be placed in water or keyed into adjacent bank. Evaluate rip rap class for stability during glacial outburst event for the design life of the project.	Done	
61)	E2	HY	Evaluate whether upsizing Culvert R4-1 may be warranted. Check that H/D is less than 1.5 for design discharge and HEC-17 upper 68% confidence interval events. Evaluate abrasion at proposed 9% pipe slope. Desirable to limit flow velocities for the design event to 11 fps for streams with an active bedload.	Done	
62)	E2/E3	HY	Provide elevation data in profile views.	culvert inverts provided in table.	
63)	E4	HY	Please reevaluate sand blanket pipe bedding material for compaction, constructability, and piping concerns. Consider in situ materials and probable excavation limits to remove unsuitable materials. Past projects with deep excavations and dewatering concerns have detailed a porous backfill lift under the pipe as a working pad with Selected Material, Type A surface and end caps to achieve compaction and decrease chances of piping. CR Construction or Materials may have input on these pipe bedding designs as they progress.	Done	
64)	E4	HY	Rather than specify Structural Fill backfill, consider using Selected Material, Type A with a sheet note that prohibits material greater than 3 inches from being placed adjacent to the pipe.	Structural fill is preferred per Construction	
65)	E4	HY	Consider the use of Waterway Bedfill (Section 690) special provisions and pay items for culvert embedment and apron material. There are several past CR projects that have used this special provision. Waterway Bedfill is specified as percentage blends of specified materials to match the existing stream substrate.	Done	

	DATE: 11/27/24 **REVIEWER: O. LeCroy** **SECTION: HY** **PHONE: (**907) 269-0532	**Confirmation of action taken on comment by:**

66)	E4	HY	Pipe 11-1 shows an embedment of greater than 50%. Was this to accomplish width criteria of Tier I fish passage culverts? If so, consider upsizing pipe to provide 40% embedment and greater hydraulic capacity.	Clarified	

PIH Review
REVIEW

PROJECT NAME: Seward Highway MP 14 Railroad Crossing Reconstruction
PROJECT NUMBER: 0311037/CFHWY00947

	DATE: 11/27/24 **REVIEWER: Travis Test** **SECTION: Surveys** **PHONE: (**907) 269-0538	**Confirmation of action taken on comment by:**

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Item No.	Sheet / Page No.	Section	Comment	Response	Meeting Note
67)	A2	SC	We will anticipate the plan set's survey control sheet from Lounsbury after PS&E review.	Ok.	
68)	A2	SC	The statement under the "General Notes" header may not be needed.	Fixed	
69)	C1	SC	Please remove pay items 642.0004.0000 and 642.0010.0000. Monuments will be (re)set by others after construction.	Done	

	DATE: 12/11/24 **REVIEWER: Jesse Escamilla** **SECTION: Bridge Design** **PHONE: (**907) 465-8411	**Confirmation of action taken on comment by:**

Item No.	Sheet / Page No.	Section	Comment	Response	Meeting Note
70)	B1 & F6	Bridge	Retaining Wall Detail: Moment slab with barrier shown to be utilized and parallel to the roadway extending from abutment ends. Do not recommend this detail as it prohibits access to abutments for bridge inspection. Would rather extend MSE walls beyond roadway edge to allow for walking access to face of abutment. As an alternative, a "bump out" can be provided to provide a pathway down near the wing wall then the MSE wall can be pulled back to the edge of roadway.	Details added	
71)	Not Provided	Bridge	Cable safety railing is required on the MSE wall coping to allow for bridge inspection.	Done	
72)	Not Provided	Bridge	RR horizontal clear zone is stated as 53ft total. Can you confirm if that is centered on the track or shifted toward the outside curve?	The 53 ft RR clear zone is centered on the track.	
73)	Not Provided	Bridge	Are proposed finished grade elevation available?	Resolved	

Transportation Management Plan

For

Seward Highway MP 14 Railroad Crossing Reconstruction

0311037 / CFHWY00947

Bear Creek, Alaska

Alaska Department of Transportation & Public Facilities
Central Region

P.O. Box 196900

Anchorage, Alaska USA 99519-6900

Prepared By: Gregory J. Hartman, PE

Company Name: HDR, Inc.

Phase: PS&E Review

Preparation Date: June 6, 2025

The following Transportation Management Plan (TMP) has been prepared for/by the Alaska Department of Transportation and Public Facilities (DOT&PF) to assist contractors in successfully planning for project transportation impacts in accordance with 23 CFR 630, Subparts J & K, and DOT&PF Policy and Procedure 05.05.015 "Highway Work Zone Safety and Mobility".

This document lays out a set of strategies for managing the work zone impacts and is required by the Work Zone Safety Mobility Rule. This TMP was developed from the Oregon DOT Transportation Management Plan Template, FHWA Sample Transportation Management Plans and Templates, and DOT&PF Highway Preconstruction Manual.

Table of Contents

1.0 Introduction

This project will reconstruct the separated-grade railroad crossing at Mile Post (MP) 14 of the Seward Highway, north of the City of Seward. The existing crossing is a steel structural plate undercrossing that allows the railroad tracks to pass beneath the Highway. The crossing is being replaced because the Alaska Railroad Corporation (ARRC) is raising the grade of their tracks at this location which results in inadequate vertical clearance within the structure. The DOT&PF is replacing the structural plate undercrossing with a traditional bridge structure which will provide the minimum vertical and horizontal clearances that ARRC requires to safely operate.

1.1 TMP Roles and Responsibilities

Design Manager
Consultant
Name/Title: Gregory J. Hartman, PE, Project Manager Company: HDR, Inc. Phone: 907-644-2103 Email: Greg.Hartman@hdrinc.com
Roles and Responsibilities: Design project manager, responsible for overseeing development of TMP, TOP, TTCP, and PIOP. Will be available for Assistance during Bidding and Construction.

Design Engineer
Consultant
Name/Title: Dustin Hannafious, PE, Project Engineer Company: HDR, Inc. Phone: 907-644-2055 Email: Dustin.Hannafious@hdrinc.com
Roles and Responsibilities: Civil Engineer of Record, responsible for developing the TTCP. Will be available for Assistance during Bidding and Construction.

The Construction Project Manager is responsible for overseeing TMP components and other safety and mobility aspects of the project. They may delegate to traffic control representatives. Personnel require training in accordance with P&P 05.05.015. (DOT&PF Alaska Construction Manual, Section 3.10, pg. 3-8)

Construction Manager
DOT&PF
Name/Title: Jacob Gondek, PE, Construction Project Manager Unit: Central Region Construction Phone: 907-269-0445 Email: Jacob.Gondek@alaska.gov
Roles and Responsibilities: Responsible for administering the project through construction, reviewing project documents, and assigning staff to perform Construction Administration

Construction Project Engineer
DOT&PF
Name/Title: TBD, Construction Project Engineer Unit: Central Region Construction Phone: 907-269-XXXX Email: TBD
Roles and Responsibilities: Responsible for reviewing and approving TTCPs submitted by the Contractor, issuing payment for traffic control, enforcing contract documents.

TMP Implementation/Monitoring Staff	
DOT&PF	**Contractor**
Name/Title: TBD Unit: Central Region Construction Phone: 907-269-xxxx Email: TBD	Name/Title: TBD Unit: TBD Phone: TBD Email: TBD
Roles and Responsibilities: Responsible for developing and implementing TTCPs for use in Construction and for monitoring traffic control items in operation to maintain intended performance.	
Public Information Officer	
DOT&PF / Consultant	**Contractor**
Name/Title: TBD Unit: TBD Phone: TBD Email: TBD	Name/Title: TBD Unit: TBD Phone: TBD Email: TBD
Roles and Responsibilities: Responsible for providing project status updates as needed to public health and safety agencies and for providing updates to the general public.	

Emergency Service Contacts	
Fire and Emergency Medical Services (FEMS)	**Police Department (PD)**
Name/Title: Brenda Ahlberg, Emergency Manager Kenai Peninsula Borough Phone: 907-262-4910 Email: bahlberg@kpb.us	Name/Title: Alaska State Troopers Unit: Seward Post Phone: 907-224-3346
Roles and Responsibilities: Respond to incidents within the project vicinity.	

2.0 Project Description

The Alaska DOT&PF will be replacing the existing structural plate railroad undercrossing with a traditional bridge at MP 14 of the Seward Highway. The origin for this project will be ARRC's upcoming project to raise its trestle bridge over the Snow River by approximately 3.5 ft, which will result in a a grade raise of the railroad tracks where they pass beneath the Highway. ARRC will raise their bridge to reduce the risk of damage or failure due to regular glacial dam outbursts from the Snow Glacier south of the project area.

The new grade separation bridge structure will be built offset from the existing highway alignment, allowing the construction of the bridge and retaining walls to be completed outside of the current traveled path. Shifting the crossing to the east has additional benefits, primarily the schedule savings of not needing to construct a temporary bridge for a detour. Traffic will remain on the existing highway embankment for the majority ofof construction and will be shifted onto the new alignment and bridge near construction completion.

There are three culvert crossings within the project area that will require single lane closures to complete. The southernmost crossing will be the most difficult, because the existing structure is more than 20 ft deep. In this case the Contractor will be required to utilize single lane closures to swap traffic back-and-forth and systematically lower the highway embankment until the culvert can be safely removed using typical half-width construction techniques. The northernmost crossing is a large diameter fish-passage structure which will, again, require the embankment to be lowered enough to allow for half-width construction. Both culvert crossings have been designed so that the new culvert is offset from the existing structure so that the existing culvert will be able to act as the means of stream diversion & dewatering, eliminating the need for temporary culverts or pumping. The third cross culvert is located between the proposed bridge and the fish-passage culvert and will be removed without installing a replacement. This culvert will require half-width construction techniques, but the structure is shallow enough that the lowering of the road embankment will not be necessary.

We assume that the culvert replacements will either be completed very early in Construction or near the end shortly before paving. It is recommended that this work will be performed during the spring shoulder season because traffic volumes will be lower and because water volumes are expected to be lower. If the culverts are replaced in the spring, the Contractor will be required to install temporary pavement and markings.

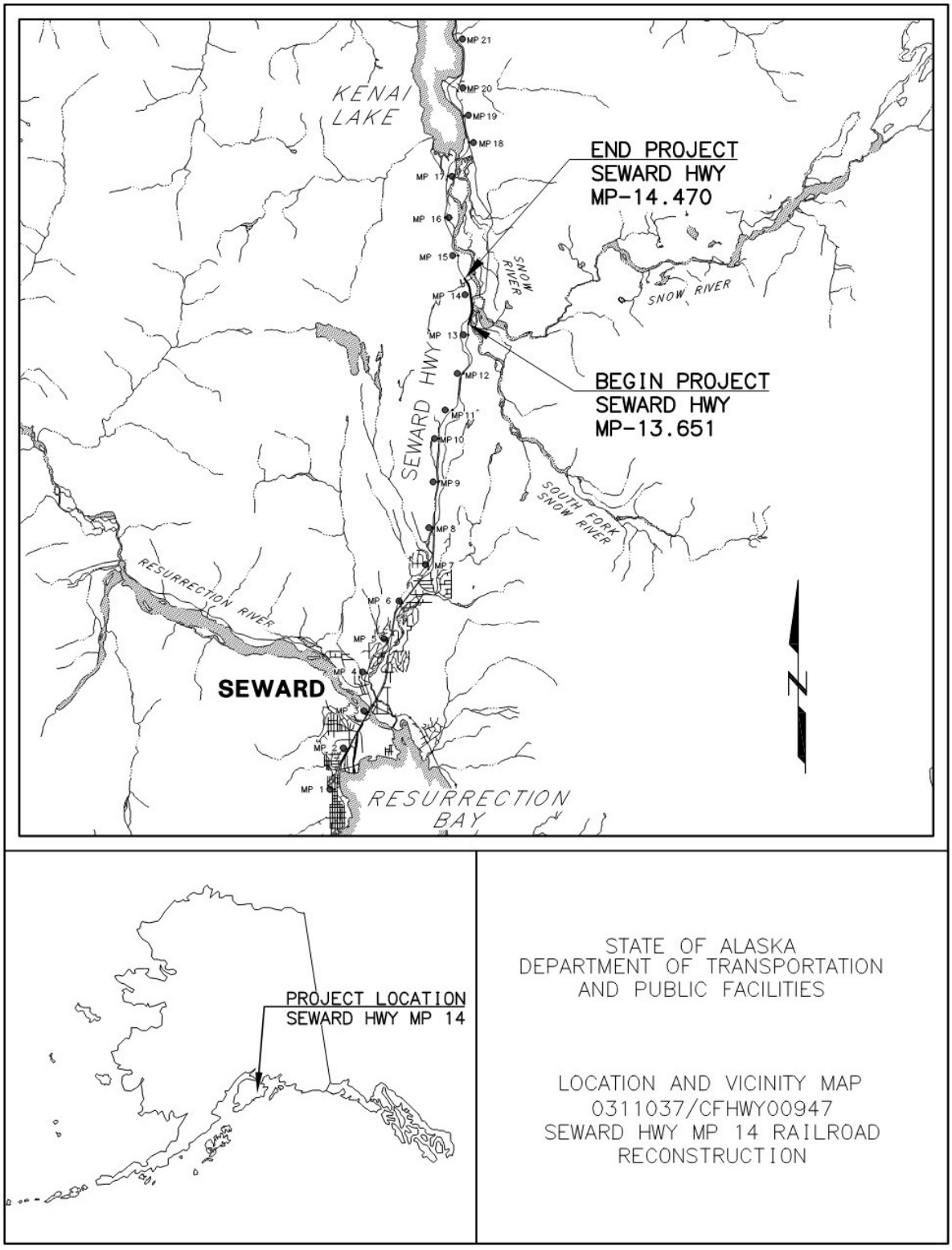


Figure 1 Location & Vicinity

2.1 Goals and Objectives

This purpose of this project will be to reconstruct the separated grade railroad crossing at MP 14 of the Seward Highway to provide adequate horizontal and vertical clearance for the railroad to operate safely. Through construction, efforts will be made to minimize impacts on ARRC operations as well as on the traveling public. The Seward Highway is the only road access between the City of Seward and the population centers of Anchorage and Soldotna, so providing an adequate level of service to extend its lifespan will be essential.

2.2 Proposed Improvements

The most prominent improvement included in this project will be the construction of the new highway bridge, however work also includes the replacement of several failing cross culverts, replacement of guardrail and signs, installation of MSE retaining walls, and reestablishment of ARRC access from the Seward Highway to their facilities down below. Naturally, new pavement and pavement markings are planned to be included in the project. The road shoulders will also be widened by approximately 6 in on either side, and centerline and shoulder rumble strips will be ground into place.

2.3 Project Schedule

As of this version, the anticipated construction schedule will begin with the Letting of the bid package in the winter of ‘25/’26, allowing for ample time for the Contractor to order and procure long-lead items such as bridge girders, piles, reinforcing steel, MSE wall panels, and structural plate pipe. Since the new bridge location will be offset from the existing highway, the Contractor can begin work on the bridge foundation without needing to establish a detour or otherwise impact traffic. We anticipate that the Contractor will be able to begin work on the bridge in the winter or spring of ’26 and build MSE walls and place embankment through the spring and summer months, with major traffic impacts minimized. By late summer ’26, we anticipate that the bridge and embankment will be sufficiently completed, and traffic will be able to be switched onto the new alignment. With traffic on the new embankment, the existing structural plate undercrossing will be able to be excavated and removed, followed by the excavation and grading necessary to reestablish ARRC access in the northwest quadrant of the project. By the end of the 2026 construction season, paving, guardrail, signing, and striping will be completed. Placement of topsoil will be completed before winter shutdown along with placement of a Bonded Fiber Matrix material to provide temporary stabilization.

In the spring of 2027, the Contractor will return to complete final stabilization as needed, including seeding, and will clean up the jobsite and demobilize any materials or equipment that remain.

2.4 Nearby Projects

There are currently no known highway projects that will be under construction concurrently with this project. However, ARRC will be actively performing construction on two bridges north of the project area, located on the east side of Snow River between Kenai Lake and the

project area. ARRC intends to utilize its existing access at Seward Highway MP 14 to move materials and equipment to their jobsite, and close coordination between ARRC and the Contractor will be required to reduce conflicts.

2.5 Project Stakeholders

Table 1. Project Stakeholders

Agency/ Organization	Name	Title	Phone Number
Agency Representatives			
DOT&PF	Elmer Fudd	Design Project Manager	907-269-XXXX
Schools			
Emergency Services			
Hospitals			
Other			

3.0 Existing Roadway & Traffic Conditions

3.1 Roadway & Traffic Characteristics

Table 2. Roadways Affected by Project

Roadways Affected by TMP – Summary					
Roadway/Street Name	Classification	ADT	Truck Percentage	Peak Hour Volume	Posted Speed

3.2 Pedestrian/Bicycle Facilities

There are no dedicated pedestrian or bicycle facilities within the project area. Bicycles do occasionally transit the corridor utilizing the road shoulders, however apart from the Alaska Relay race, which should take place in late June, and the Alaskaman Extreme Triathlon, which should take place in late July, bikes are exceedingly rare.

3.3 Transit Facilities

Not applicable.

3.4 Freight

The Seward Highway is the primary shipment route from the Port of Seward to the mainland, with fuel and goods moving both north and south throughout the day. According to traffic data, more than 12% of vehicles on this section of the highway are heavy trucks. Cruise ships frequent the city of Seward and passengers often go on excursions via tour bus or train along the Seward Highway to destinations to the north and west, contributing 1.2% to the total of heavy vehicles.

3.5 Land Use

The area surrounding the project area is largely forested or riverbed, owned by the State of Alaska of the Chugach Native Corporation. ARRC owns the Right-of-Way that encompasses their tracks, but the project vicinity is undeveloped otherwise. Approximately ½ mile south of the BOP is a public access trailhead, however the parking area will not be impacted by this project.

3.6 Stakeholder Outreach & Input

No comments or concerns have been received from the public or other stakeholders at this time.

4.0 Preliminary Work Zone Impact Assessment

Table 3. Preliminary Work Zone Impacts

Does the project include long-term closures/extended weekend closures?	**Significant Project Rating:**
☐ Yes	☐ Doesn't Meet Significant Project Criteria
☒ No	☐ Significant – Category 1
If Yes, check all applicable types of facilities	☒ Significant – Category 2
☐ Principal Arterial	☐ Significant – Exempt
☐ Minor Arterial	
☐ Collector	
☐ Local	

Can traffic be detoured?	☐ Yes	☒ No
Is the local alternate detour route in good condition?	☐ Yes	☐ No
Will the detour route have a detrimental impact on emergency vehicles, school buses, or other sensitive traffic?	☐ Yes	☐ No
Are there load limit restrictions on the detour?	☐ Yes	☐ No
Are there bridge/culvert height or width restrictions on the detour?	☐ Yes	☐ No
Is the existing shoulder sufficient to support traffic during construction?	☒ Yes	☐ No
Is additional width required on culverts or bridges to maintain traffic?	☐ Yes	☒ No
Is there a pedestrian/bicycle facility that must be maintained?	☐ Yes	☒ No
Would a temporary structure(s) be required?	☐ Yes	☒ No
Would a median crossover be needed?	☐ Yes	☒ No
Would there be a need to maintain railroad traffic?	☐ Yes	☒ No
Could maintenance of traffic have an impact on existing or proposed utilities?	☐ Yes	☒ No
Does it appear that maintenance of traffic will require additional right-of-way?	☐ Yes	☒ No

Can the contractor restrict the roadway during the time periods listed?

a.m. peak hours, one direction	☐	p.m. peak hours, one direction	☐

a.m. peak hours, both directions	☐	p.m. peak hours, both directions	☐
Overnight	☒	Local celebrations	☐
Holidays or weekends	☐	Special events	☐

Will project timing (for example, start or end date) be affected by special events:

School closings or openings ☐ Holidays ☐ Special Events ☐

Are there any projects to be considered along the corridor or in the area?

Roadwork in the immediate area that may affect traffic or the contractor's operations? ☐ Yes ☒ No

Roadwork on other roads that may affect the use of alternate routes? ☐ Yes ☒ No

Are there other maintenance of traffic issues? ☐ Yes ☒ No

Does the project need operational analysis to assess impacts?

☐ Yes

☒ No

TMP Components Included	Location	Appendix (if included)
☐ Traffic Operation Analysis		
☒ Temporary Traffic Control Plan	TMP	A (TTCP)
☐ Public Information & Outreach	TMP	B (PIOP)
☐ Traffic Operations Strategies	TMP	
☐ Traffic Operation Plan	TMP	C (TOP)
☐ Other Impact Assessment		
☐ Incident Management Plan		

4.1 Traffic

The Construction Year AADT for the Seward Highway at MP 14 is 3,265, however traffic on the Seward Highway in this area fluctuates significantly depending on the time of year, with volumes increasing by more than 75% during the peak summer season. The 2024 traffic count in July revealed an ADT of 4,857, providing a rough idea of the volumes that can be expected through June, July, and August.

4.2 Pedestrian & Bicycle

There are no existing dedicated pedestrian or bicycle facilities within the project area, and none are required through construction. Bicycles occasionally pass through the area, particularly during the Alaska Relay race and the Alaskaman Extreme Triathlon. During these events, we assume that traffic will still be on the existing highway embankment and no accommodations will be required. The Contractor will be barred from implementing any traffic restrictions during these events so that racers will not be delayed.

4.3 Environmental

No environmental impacts are anticipated as a result of the maintenance of traffic.

4.4 Utilities

No utilities will be impacted because of the maintenance of traffic. However, ARRC will require that Railway Flaggers are present on site whenever the Contractor is working within proximity of the railroad tracks.

4.5 Right-of-Way (Public Access)

There are no driveways, businesses, or other public facilities within the project area, so public access beyond passing through the jobsite on the highway does not need to be addressed. The Contractor will access the bridge construction area via the existing ARRC access on the northeast quadrant until such time as the installation of MSE retaining walls cuts off access. The Contractor will also establish an access road on the southeast quadrant, utilizing an abandoned road embankment to reach the bridge location from the south. Once traffic will be transferred onto the new alignment and bridge, the Contractor will have the old highway embankment to excavate to reestablish access to the railroad tracks. No Temporary Construction Easements or Temporary Construction Permits will be acquired for the project, except for the agreement with ARRC to work within their ROW.

4.6 Public Transportation

There are no public transit facilities within the project area.

4.7 Commercial Vehicles (including the Alaska Railroad)

Commercial vehicles make up approximately 12.11% of traffic on this section of the Seward Highway. During most of the project construction there will be minimal impacts to traffic, including commercial vehicles, however during the replacement of cross culverts, temporary single lane closures with AASHTO compliant horizontal and vertical geometry will be required. Stamped geometry designs are included in the TTCP with a design speed of 35 mph and adequate width and curvature to accommodate WB-67 design vehicles.

4.8 Navigable Waters

Not applicable.

4.9 Other

Not applicable.

5.0 Operational Analysis

5.1 Safety Analysis

Table 4. Summary of Crashes

Summary of Crashes									
Intersection Name/Control Section	Total	Injuries	Fatalities	Work Zone	Type of Crashes				
					Pedestrian	Bicycle	Rear-End	Right Angle	Left-Turn

5.2 Traffic Analysis

5.2.1 Data Collection and Traffic Modeling

5.2.2 Alternatives/Impact Assessment

Table 5. Summary of Alternatives

Summary of Measures of Effectiveness (MOEs) for Alternatives – Existing with Construction Conditions				
MOEs	**Existing**	**Alternative 1**	**Alternative 2**	**Alternative 3**
Legend				
	Indicates Selected Alternative			

6.0 Work Zone Impact Management Strategies

6.1 Work Zone Traffic Control Narrative

The Contractor will be expected to complete the bulk of construction activities outside of the traveled way and avoid major traffic impacts. By situating the proposed bridge structure offset from the existing undercrossing, bridge construction and MSE retaining wall installation will be able to be carried out without need for a traffic diversion or detour. Replacement of cross culverts, connecting the new embankment to the existing embankment, setting bridge girders, and paving will require longer duration single lane closures, and flaggers will likely be needed throughout construction to support movement of trucks and equipment entering and existing the Seward Highway within the project area.

6.1.1 Construction Stages and Phases

We assume that the contractor will mobilize materials and equipment to the job site first, staging items near the proposed bridge site in the area accessible via ARRC's gated access just north of the existing crossing. The Contractor will be able to begin working on the bridge

foundation in late winter or early spring 2026, assuming that pile driving is able to be safely conducted in winter conditions.

Independent from bridge construction, we recommend that the Contractor complete the removal and replacement of the cross culverts early in the spring. We recommend spring because traffic volumes will be lower than in summer, water levels will be lower, and early replacement will allow time for the pipe embankment to settle before final paving. Once the ground will be thawed enough to effectively do earthwork, the Contractor can remove the existing pavement above the culverts and begin excavating according to the Traffic Control Plans such that each culvert will be able to be replaced via typical half-width construction techniques.

The southernmost cross culvert is more than 20 ft deep and will require the Contractor to systematically lower the existing Seward Highway embankment, using single lane closures to remove material from one side at a time, until enough material will be removed, and enough embankment width will be exposed to install the first half of the culvert. The new culvert will be shifted south of the existing culvert to simplify stream diversion and dewatering efforts, allowing water to remain in the existing pipe until the new pipe will be completely installed. Once the first half of the culvert will be installed, backfill and swap traffic as shown in the TCP to allow for the installation of the second half. The stream will be diverted into the new culvert and the first half of the existing culvert will be removed. Traffic will be swapped onto the first half of the proposed culvert and the second half of the existing culvert will be removed. The highway embankment will be reconstructed, the traffic will be swapped back and forth as needed until the embankment matches its original alignment and profile. Temporary pavement and markings will be placed, and the segment will open to two-direction traffic again.

The northernmost cross culvert carries a fish-bearing stream from west to east across the highway. To meet fish passage criteria, the proposed culvert will be relatively large, measuring 13 ft in diameter, though the culvert will be buried 5.2 ft below the stream bottom. This culvert has much less cover than the southernmost culvert, so much less material will need to be removed to support half-width construction. The existing pavement will be removed above the culvert and the embankment will be lowered by using single lane closures and swapping traffic back and forth as needed. The TCP alignments and profiles leave approximately 12 in of cover above the existing cross culvert to reduce the risk of embankment loss or the collapse of the existing structure. Temporary embankment widening could be necessary to achieve enough width to pass traffic during half width construction, and the Contractor will confirm that adequate width will be provided to safely operate. Similar to the southern culvert, this location also features the proposed culvert designed offset from the existing culvert to simply stream diversion and dewatering. As before, the first half of the new culvert will be installed, traffic will be swapped, the second half of the new culvert will be installed, the first half of the existing culvert will be removed, traffic will be swapped, the second half of the existing culvert will be removed, the embankment will be reconstructed to match existing, then temporary pavement and markings will be placed.

With the cross culverts replaced, traffic interruptions on the Seward Highway through the summer should be minimal, consisting of short duration (less than 15 minutes) single lane or full closures as needed to move materials and equipment throughout the jobsite. Bridge construction and MSE wall construction will be largely removed from traffic, but eventually single lane closures will be needed to construct the north and south transitions as well as the upper portion of the MSE walls. Setting bridge girders will be able to be completed during the daytime with single lane closures, however the Contractor could find it easier to do this work at night when traffic volumes will be lower. The Contractor will pull up alongside the proposed bridge location and cranes located near each abutment will lift the beam into place. We assume bridge girders will be manufactured in Anchorage and will be hauled to the job site.

Once the bridge and MSE walls are completed, the Contractor will be able to install the waterproofing membrane on the bridge deck and place a lift of HMA on the bridge and the bridge approaches. Next the Contractor will be able to prepare to switch traffic from the existing alignment and onto the new. This work will be able to be completed during daylight hours with flaggers and short duration closures, however the job will be quicker, easier, and safer if it will be done during nighttime full closure. The project specifications include two weeknight full closures to complete this work. Once traffic will be on the new alignment, the Contractor can use single lane closures to do final lift paving and final pavement markings.

Once the existing highway embankment no longer has traffic on it, the Contractor will be able to remove the existing pavement, will obliterate the road on the southern half, will remove the existing structural plate undercrossing, and will excavate the northern embankment to establish a new ARRC access road from the Seward Highway to the railroad tracks.

6.1.2 Construction Schedule

Construction could be sufficiently completed in the 2026 construction season. This will eliminate the need to build a detour and have the existing structure demolished, before beginning new construction shaves several months from the schedule, allowing the Contractor to be able to begin work on the new bridge foundation on day one. Final stabilization will be likely to extend the official project completion into the early summer of 2027, but traffic impacts will be minimal and for a short duration.

6.1.3 Lane Use

Lane use will not change through construction. One lane northbound and one lane southbound will be maintained apart from the single lane closures needed to replace cross culverts.

6.1.4 Work Zone Traffic Analysis/Lane Restriction Hours

Traffic analysis has not been completed for this project. Traffic restrictions will not be allowed on weekends or during the morning and evening rush hours.

6.1.5 Holidays, Local and Special Events

Traffic restrictions will not be allowed on the Friday before or the Monday following a holiday weekend, nor will restrictions be allowed during the Alaska Relay race and the Alaskaman Extreme Triathlon. The 4th of July falls on a Saturday in 2026, so Alaskans will generally have Friday, July 3rd off. Traffic restriction will not be allowed on Thursday, July 2nd.

6.1.6 Detours

There are no long-term detours anticipated for this project, only the short duration shooflies located at the cross culverts.

6.1.7 Other Information

6.2 Temporary Pedestrian & Bicycle Accessible Routing

There are no existing dedicated pedestrian or bicycle facilities, therefore no temporary facilities are proposed. Bicyclists are rare in this corridor and Pedestrians are even rarer. Bicycles will be able to use the roadway as vehicles if they need to pass through the corridor, and pedestrians could be shuttled through on a case-by-case basis as needed by the Contractor.

6.3 Property Access

ARRC will continue using their gated access road throughout construction, and as of this writing, ARRC will be actively working several of their bridges on the east side of the snow river in 2026. Close coordination with ARRC will be required to maintain reliable access to ARRC's facilities.

6.4 Freight Mobility

Freight mobility will be largely unaffected by construction beyond short-duration delays. Shoofly detours for half-width construction have been designed to a 35 mph design speed so freight will have no difficulty passing through the work area.

6.5 Public Information and Outreach

Public information will generally go through the State of Alaska 511 website, with warnings about delays or closures being posted on portable message boards at the BOP and EOP. Because traffic interruptions are anticipated to be short duration and low impact, special effort for public information and outreach should not be necessary.

6.6 Traffic Operations
6.7 Work Zone Strategies Checklists

Table 6. Temporary Traffic Control Strategies Checklist

Temporary Traffic Control			
Traffic Control Devices			
Temporary signs	☒	Flaggers	☒
Sequential arrow boards	☒	Flaggers station lighting	☒
Channelizing devices (tubular markers, drums)	☒	Radar speed trailers	☐
Pedestrian channelizing devices (PCD)	☐	Temporary barrier glare screen	☐
Bicycle channelization devices (BCD)	☐	Surface mounted tubular markers	☐
Temporary pavement markings	☒	Uniformed traffic control officers	☐
Temporary traffic signals	☐		☐
Project Coordination Strategies			
Other area projects	☐	Right-of-Way	☐
Utilities	☐	Other transportation infrastructure	☒
Innovative Contracting Strategies			
Alternative Contracting Procurement	☐	Performance specifications	☐
Incentive / Disincentive clauses	☐		
Innovative or Accelerated Construction Techniques			
Prefabricated / precast elements	☐	Rapid cure materials	☐
Traffic Control Strategies			
Construction phasing / staging	☒	Day work	☒
Full roadway closures / detour	☐	Weekend work	☐
Lane shifts or closures	☒	Work hour restrictions for peak travel	☒
Two-way, one-lane closures	☒	Pedestrian accommodation	☐
Ramp closures	☐	Bicycle accommodation	☐
Night work	☒	Business access improvements	☐

Reduced speed limits should be used only in the specific portion of the TTC zone where conditions or restrictive features are present. However, frequent changes in the speed limit should be avoided. A TTCP should be designed so that vehicles can travel through the TTC zone with a speed limit reduction of no more than 10 mph.

A reduction of more than 10 mph in the speed limit should be used only when required by restrictive features in the TTC zone. Where restrictive features justify a speed reduction of more than 10 mph, additional driver notification should be provided. The speed limit should be stepped down in advance of the location requiring the lowest speed, and additional TTC warning devices should be used.

Reduced speed zoning (lowering the regulatory speed limit) should be avoided as much as practical because drivers will reduce their speeds only if they clearly perceive a need to do so. (ATMS, Part 6, pg. 143)

Table 7. Transportation Operations Strategies Checklist

Transportation Operations			
Demand Management Strategies			
Transit service improvements	☐	Variable work hours	☐
Transit incentives	☐	Telecommuting	☐
Shuttle services	☐	Ridesharing / carpooling incentives	☐
Parking supply management	☐	Park-and-Ride promotion	☐
Corridor/Network Management Strategies			
Signal timing / coordination improvements	☐	Coord with adjacent construction site(s)	☐
Bus turnouts	☐	Reversible lanes	☐
Turn restrictions	☐	Dynamic lane closure system	☐
Parking restrictions	☐	Railroad crossing controls	☐
Truck / heavy vehicle restrictions	☐		
Work Zone ITS Strategies			
Late lane merge (zipper merge)	☐	Smart work zone system(s)	☐
Portable changeable message signs	☐		
Work Zone Safety Management Strategies			
Speed limit reduction	☐	Temp sign supplemental warning light	☐
Temporary traffic barrier	☐	Automated flagger assistance devices	☐
Mobile / Movable barrier	☐	Traffic control supervisor	☐
Impact attenuators	☐	Temporary widening	☐
Temporary transverse rumble strips	☐	Road safety audits	☐
Intrusion alarms	☐		
Incident Management and Enforcement Strategies			
ITS for traffic monitoring/management	☐	Local detour routes	☐
Surveillance (e.g., CCTV)	☐	Contract for Incident Management	☐
Increased penalties for work zone violations	☐	Incident/Emergency management coord	☐
Call boxes	☐	Incident/Emergency response plan	☐
Mile-post markers	☐	Dedicated (paid) police enforcement	☐
Tow/freeway service patrol	☐	Cooperative police enforcement	☐
Total station units	☐	Automated enforcement	☐
Photogrammetry	☐	Traffic Screen	☐
Media coordination	☐	Emergency pull-offs	☐

Table 8. Public Information and Outreach Strategies Checklist

Public Information and Outreach			
Public Awareness Strategies			
Branding	☐	Project website	☐
Press kits	☐	Public meetings, hearings, workshops	☐
Brochures and mailers	☐	Community task forces	☐
Work zone education and safety campaigns	☐	Coordination with media/schools/business/EMS	☐
Mass media (earned and/or paid)	☐	Press releases / media alerts	☐
Paid advertisements	☐	Work zone safety highway signs	☐
Project Information Center	☐	Rideshare promotions	☐
Telephone hotline	☐	Visual information	☐
Planned lane closure website	☐		
Motorist Information Strategies			
Radio traffic news	☐	Traveler information systems	☒
Variable message signs (VMS)	☒	Live traffic camera(s) on a website	☐
Temporary motorist information signs	☐	Project information hotline	☐
Trip Check	☐	Email alerts	☐

7.0 Construction Monitoring

Construction staff should monitor the work zone and if necessary, make changes. Any changes to the work zone strategies, including Contractor proposed modifications, should be consistent with the decisions and commitments made during the design of the project. All changes to the Work Zone Strategies should be documented in the TMP.

The changes to the project temporary traffic control may include the following sections – add, delete, and/or modify as needed.

7.1 Traffic
7.2 Pedestrian & Bicycle
7.3 Environmental
7.4 Utilities
7.5 Right-of-Way (Property Access)
7.6 Public Transportation
7.7 Commercial Vehicles (including Alaska Railroad)
7.8 Navigable Waters
7.9 Other

8.0 TMP Evaluation

The TMP should include an evaluation report upon completion of construction to document the temporary traffic control lessons learned and provide recommendations on how to improve the TMP process and/or modify guidelines.

The evaluation report should include an overall statement reflecting the usefulness, suggested improvements or changes for similar future projects, and incidents related to the TMP.

For a small project, a TMP evaluation could be a discussion with the TMP designer regarding what elements of the TMP went well and which could be further improved.

For larger projects, an actual evaluation report should be developed. The evaluation report not only helps the designer with lesson learned but could also help policy makers improve the overall design process.

Appendix A: Temporary Traffic Control Plan

Standard: The needs and control of all road users (motorists, bicyclists, and pedestrians within the highway, or on private roads open to public travel (see definition in Section 1A.13), including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) through a TTC zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents. (2009 MUTCD, Part 6, pg. 547)

MEMORANDUM

State of Alaska

Department of Transportation & Public Facilities
Design and Engineering Services – Central Region
Highway Design

TO: File

DATE: June 6th, 2025

TELEPHONE NO: 907-644-2103

FROM: Gregory Hartman, PE
Project Manager
HDR, Inc.

SUBJECT: Temporary Traffic Control Plan
Seward Highway MP 14
Railroad Crossing
Reconstruction
0311037 / CFHWY00947

This Temporary Traffic Control Plan (TTCP) has been prepared to summarize and provide details for the temporary traffic control methods necessary for construction of the Seward Highway MP 14 Railroad Crossing Reconstruction project.

The Alaska Department of Transportation & Public Facilities (DOT&PF) requires a TTCP that identifies what traffic control devices to use and show their location and operation in a work zone to ensure traffic flow. This plan informs the contractor with Design's assumed phasing and plans to construct the project.

It's recognized that different contractors will have various methods for controlling traffic and safety and additional TTC drawings may be needed. All TTC drawings must adhere to the Alaska Traffic Manual and Chapter 9 of the AASHTO Roadside Design Guide.

This TTCP includes plans and detail drawings, special provisions, and typical applications from the ATM. Alaska Standard Plans C-04, C-05, and C-06 are included in the plans for location of double traffic fine signs, interim pavement markings, roadside safety treatment for work zones.

See the project special provisions for specific traffic restrictions. A summarization of allowable work includes:

- The Contractor will be allowed to implement single-lane closures with flaggers during weekdays and non-holidays. Pilot cars may be necessary depending on the length of the work zone, however it is anticipated that work zones will be relatively short, with one zone near the BOP and one zone near the EOP.
- The Contractor will be allowed two nighttime full road closures, limited to weeknights, to complete paving operations at the BOP and EOP such that transitions are smooth and flush.
- Temporary full closures of less than 15 minutes are anticipated to support the Contractor's efforts to haul materials and equipment through and within the job site.

Refer to the project specifications for further guidance on public information efforts and agency coordination requirements.

DESIGNED BY	---
CHECKED BY	---
DRAFTED BY	---

SCALE	N/A

DATE	TIME
6/6/2025	3:58 PM

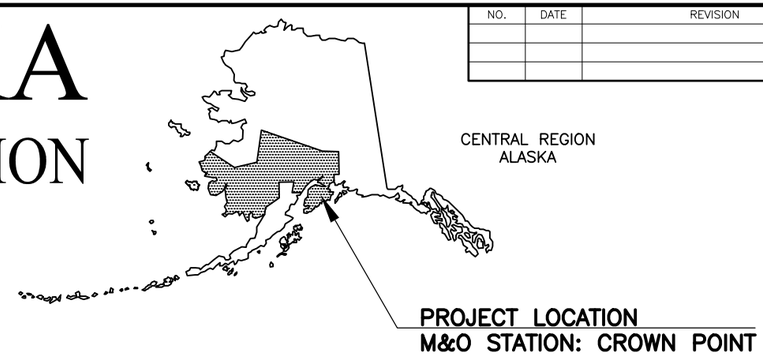
DRAWING LOCATION
C:\USERS\GHARTMAN\DC\ACCDOCS\HDR\10396931_MP_14_SEWARD_HWY_RR_XING_2024\PROJECT FILES\HDR\CAD\PRODUCTION\00947_T01_TTL.DWG

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION		YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0311037/CFHWY00947		2025	T1	T16
ROUTE ID	1020000X000	MILEPOINT	12.500 - 15.500		
LATITUDE	60.285294	LONGITUDE	-149.343277		

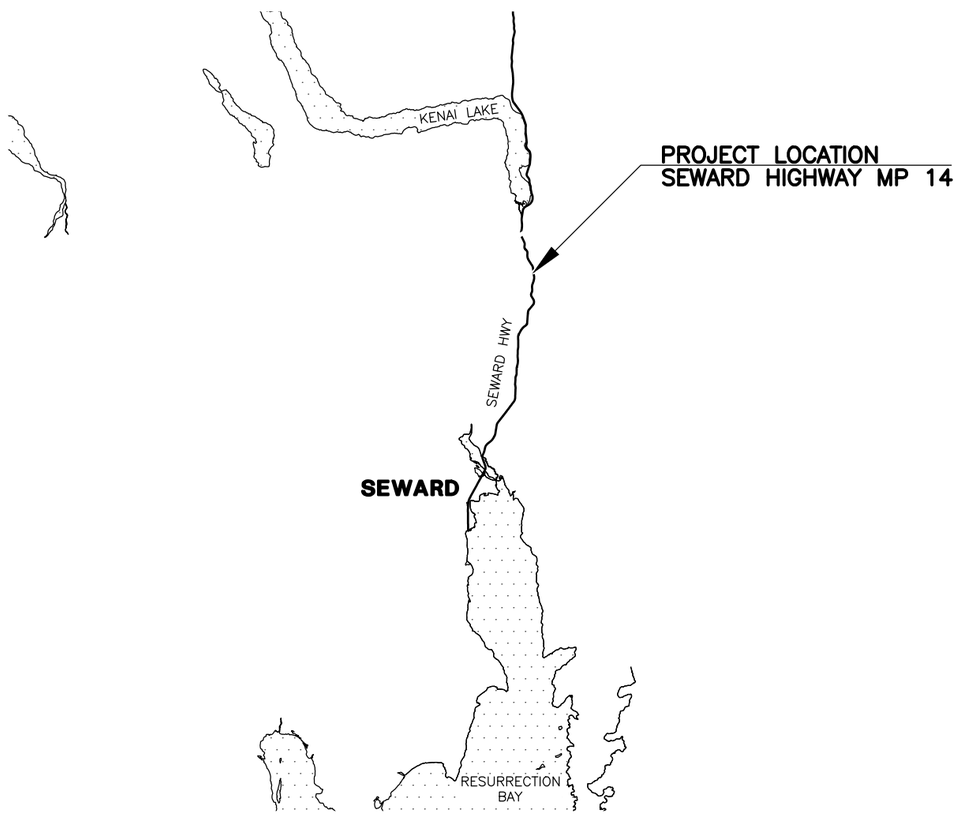


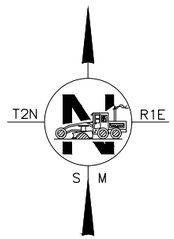
PROPOSED HIGHWAY PROJECT

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

PROJECT NO. 0311037/CFHWY00947

TRAFFIC CONTROL PLAN





PROJECT SUMMARY		
ROADWAY	WIDTH	LENGTH
SEWARD HIGHWAY MP 14	36 FT	1 MILE

DESIGN DESIGNATIONS	
	SEWARD HIGHWAY
FUNCTIONAL CLASS	RURAL ARTERIAL
AADT (2022)	3,205
AADT (2045)	3,662
DESIGN SPEED (V) (MPH)	55
DHV (2022)	723
DHV (2045)	827
T-PERCENT COMMERCIAL TRUCKS (%)	12.11
D-DIRECTIONAL DISTRIBUTION (%)	62 / 38

PS&E REVIEW
JUNE 2025

PLANS DEVELOPED BY: HDR, INC.

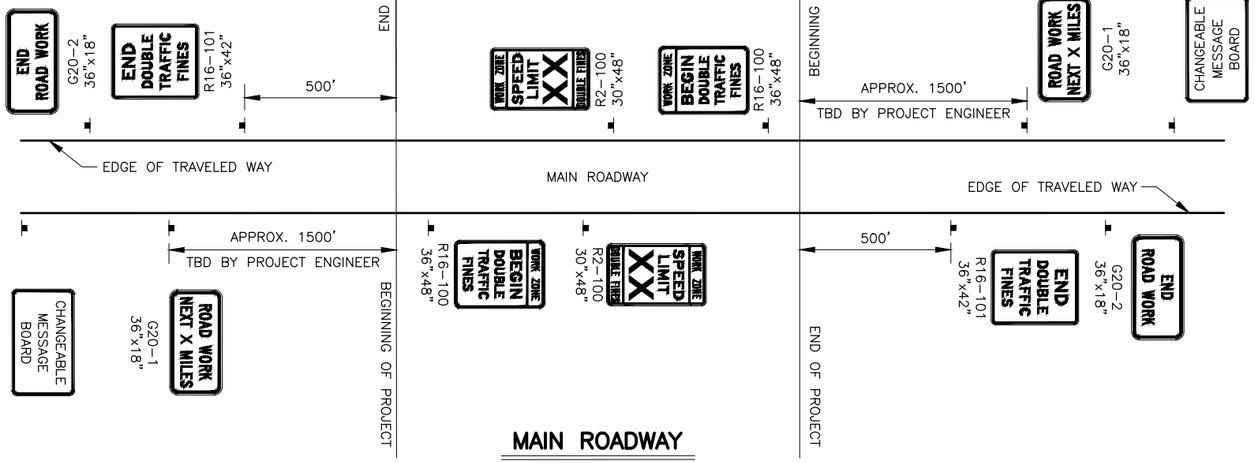
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
4111 AVIATION AVENUE, ANCHORAGE, AK 99502
(907)269-0590

NO.	DATE	REVISION

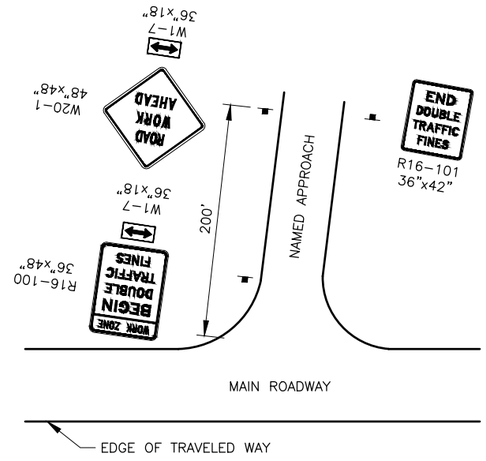
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0311037/CFHWY00947	2025	T2	T16

NOTES:

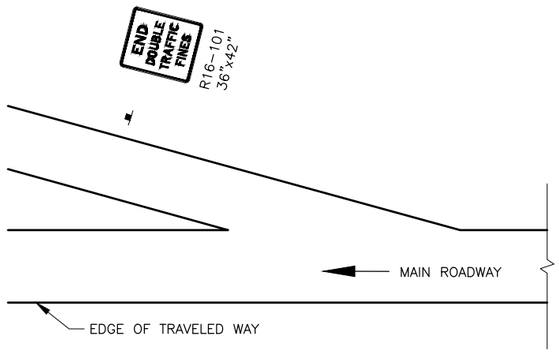
1. THESE TRAFFIC CONTROL DETAILS APPLY TO THE FISH CULVERT AT APPROXIMATE MP XX. THESE DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE NOT A CONTRACT DOCUMENT.
2. DE-WATER WORK AREA PRIOR TO BEGINNING EXCAVATION.



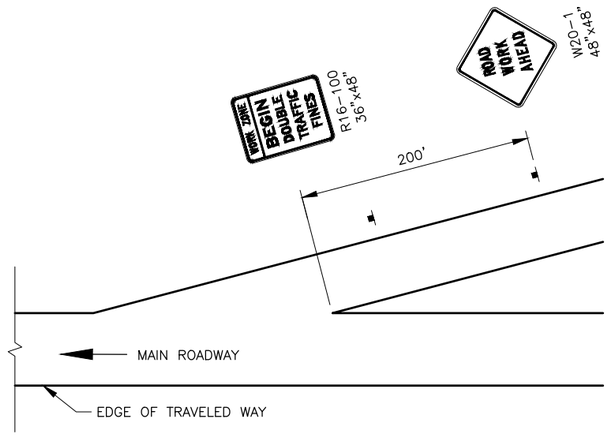
MAIN ROADWAY



MAJOR SIDE STREETS



OFF RAMPS



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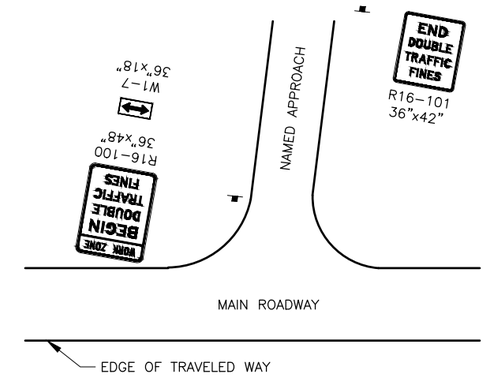

MINOR SIDE STREETS

CONSTRUCTION SIGN NOTES:

1. SPEED LIMIT TO BE DETERMINED BY THE PROJECT ENGINEER.
2. SEE ALASKA STANDARD PLAN C-04 FOR SPACING OF DOUBLE FINE SIGNS AND SPEED LIMIT SIGNS.
3. CHANGEABLE MESSAGE BOARD SHALL BE USED FOR ADVANCED NOTIFICATION. LOCATION OF CHANGEABLE MESSAGE BOARDS SHALL BE DETERMINED BY THE ENGINEER.
4. CHANGEABLE MESSAGE BOARDS SHOWN ON THIS SHEET SHALL BE PAID FOR UNDER PAY ITEM 643.0003.0000.
5. FOR W1-7 SIGNS SHOWN ON THIS SHEET, BACKGROUND SHALL BE ORANGE.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

PERMANENT CONSTRUCTION SIGNS LAOUT

DESIGNED BY ---
CHECKED BY ---
DRAFTED BY ---

SCALE 1" = 1'

DATE 6/6/2025 TIME 4:07 PM

DRAWING LOCATION
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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0311037/CFHWY00947	2025	T3	T16

DESIGNED BY ---
CHECKED BY ---
DRAFTED BY ---

SCALE 1" = 1'

DATE TIME 6/6/2025 4:07 PM

DRAWING LOCATION
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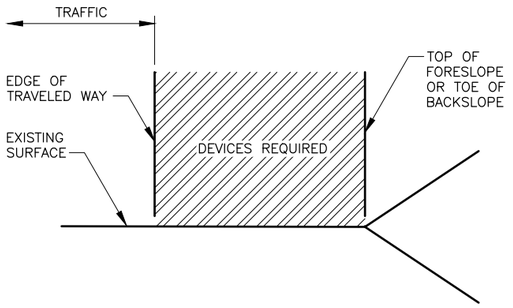
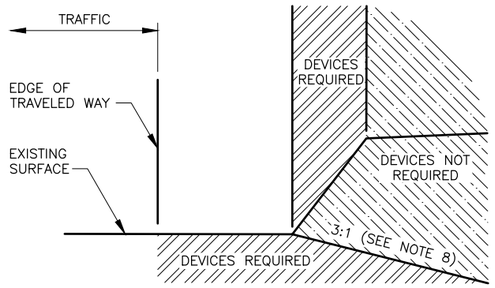
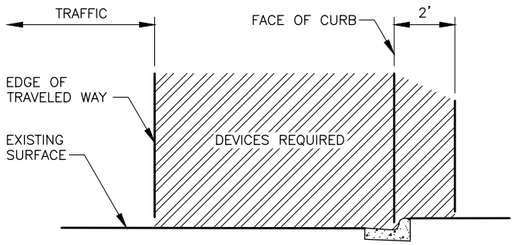


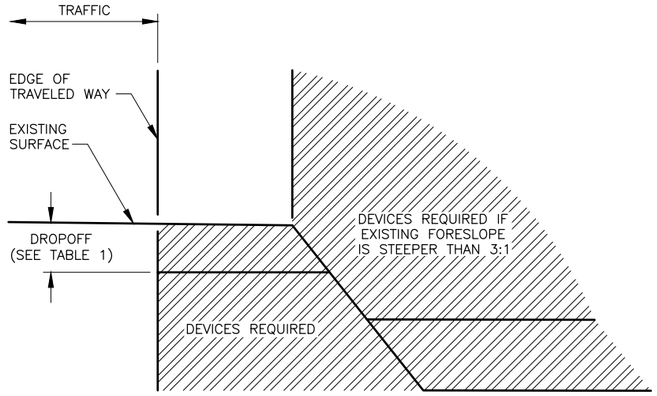
EMBANKMENT SECTION



BACKSLOPE SECTION



CURB AND GUTTER SECTION



FORESLOPE SECTION

NOTES:

1. TRAFFIC CONTROL DEVICES REQUIRED BY THE GUIDELINES ON THIS SHEET ARE INTENDED FOR CONDITIONS WHICH WILL BE IN PLACE LONGER THAN ONE CONTINUOUS WORK SHIFT. AN APPROVED TRAFFIC CONTROL PLAN IS REQUIRED PRIOR TO BEGINNING WORK.
2. THE EXISTING GROUND CROSS SECTION AT A LOCATION DETERMINES WHETHER TRAFFIC CONTROL DEVICES ARE NEEDED AT THE SAME LOCATION DURING CONSTRUCTION.
3. GUARDRAIL EXISTING AT A LOCATION BEFORE CONSTRUCTION SHALL REMAIN IN PLACE DURING CONSTRUCTION OR APPROVED ALTERNATE DEVICES SHALL BE INSTALLED.
4. INSTALL TRAFFIC CONTROL DEVICES BETWEEN THE EDGE OF TRAVELED WAY AND THE WORK AREA ON ANY ROADWAY OPENED TO TRAFFIC WHEN REQUIRED BY THIS DRAWING.
5. FOR EXISTING ROADWAY ALIGNMENTS INSTALL TRAFFIC CONTROL DEVICES WHEN WORK OCCURS IN THE "DEVICES REQUIRED" AREAS SHOWN ON THIS DRAWING.
6. FOR DETOURS, TEMPORARY ROADWAYS, OR NEW ROADWAYS NOT YET COMPLETE, INSTALL TRAFFIC CONTROL DEVICES WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
   A. THE PROPOSED HORIZONTAL OR VERTICAL CURVATURE IS STEEPER THAN THE EXISTING.
   B. THE ROADWAY OR SHOULDER WIDTH IS LESS THAN THE EXISTING.
   C. THE PROPOSED BACKSLOPE OR FORESLOPE IS STEEPER THAN THE EXISTING.
7. FOR DROPOFFS, INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL AND TABLE 1.
8. ON ANY NEWLY CONSTRUCTED SLOPE STEEPER THAN 4:1 BUT FLATTER THAN 3:1, PROVIDE A TEN FOOT FLAT RECOVERY AREA AT THE TOE OF SLOPE OR INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL.
9. TRAFFIC CONTROL DEVICE REQUIREMENTS:
   A. ON ROADWAYS WITH A SPEED LIMIT GREATER THAN 40 MILES PER HOUR OR AVERAGE DAILY TRAFFIC VOLUME GREATER THAN 4000 VEHICLES PER DAY, INSTALL TEMPORARY PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL. ON MULTI–LANE ROADWAYS, CLOSE THE LANE CLOSEST TO THE WORK AREA AND INSTALL DRUMS.
   B. TERMINATE RUNS OF TEMPORARY PORTABLE CONCRETE BARRIER USING ONE OF THE FOLLOWING TWO METHODS:
      i. TEMPORARY CRASH ATTENUATOR
      ii. RIGID TO SEMI–RIGID GUARDRAIL TRANSITION WITH AN APPROVED CRASHWORTHY END TREATMENT
   C. TERMINATE RUNS OF TEMPORARY GUARDRAIL USING EITHER OF THE FOLLOWING TWO METHODS:
      i. AN APPROVED CRASHWORTHY END TREATMENT
      ii. FLARE THE ENDS OF THE TEMPORARY GUARDRAIL AWAY FROM THE ROADWAY AT A RATE OF 15:1 ON A TRANSVERSE SLOPE OF 10:1 OR FLATTER TO THE OUTSIDE EDGE OF THE CLEAR ZONE.
   D. ON ALL OTHER ROADWAYS, INSTALL TYPE II BARRICADES, DRUMS OR DELINEATORS WHEN DEVICES ARE REQUIRED. SPACE THE DEVICES IN ACCORDANCE WITH THE REQUIREMENTS FOR SPACING TYPE II BARRICADES AND DRUMS SET FORTH IN THE ALASKA TRAFFIC MANUAL.
10. DO NOT CONSTRUCT VERTICAL DROPOFFS GREATER THAN 1.5" WITHIN THE TRAFFIC LANE OR ACTIVE WHEEL TRACK. PROVIDE 2' OF SHY DISTANCE FROM EDGE OF ALL TRAFFIC CONTROL DEVICES TO THE EDGE OF THE TRAVELED WAY.

TABLE 1
TRAFFIC CONTROL DEVICES REQUIRED FOR VERTICAL DROPOFFS ≤ 4 FEET FROM THE TRAVELED WAY *

ROADWAY TYPE	DROPOFF ≤ 2"	2" < DROPOFF < 12"	DROPOFF ≥ 12"
AVERAGE DAILY TRAFFIC >4000 OR SPEED >40 MPH	TAPER ASPHALT AT 1:1 (45°)	TYPE II BARRICADES OR DRUMS	TEMPORARY PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL
ALL OTHER ROADWAYS	NONE REQUIRED	TUBULAR CANDLES OR DELINEATORS	TYPE II BARRICADES OR DRUMS

SPACE THE DEVICES IN ACCORDANCE WITH REQUIREMENTS FOR SPACING TYPE II BARRICADES AND DRUMS SET FORTH IN THE ALASKA TRAFFIC MANUAL.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

ROADSIDE SAFETY TREATMENT FOR WORK ZONES

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0311037/CFHWY00947	2025	T4	T16

DESIGNED BY ---
CHECKED BY ---
DRAFTED BY ---

SCALE 1" = 1'

DATE TIME 6/6/2025 4:07 PM

DRAWING LOCATION
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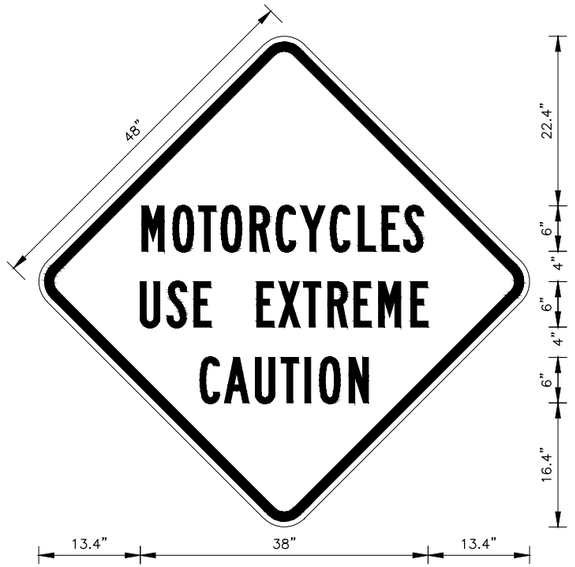
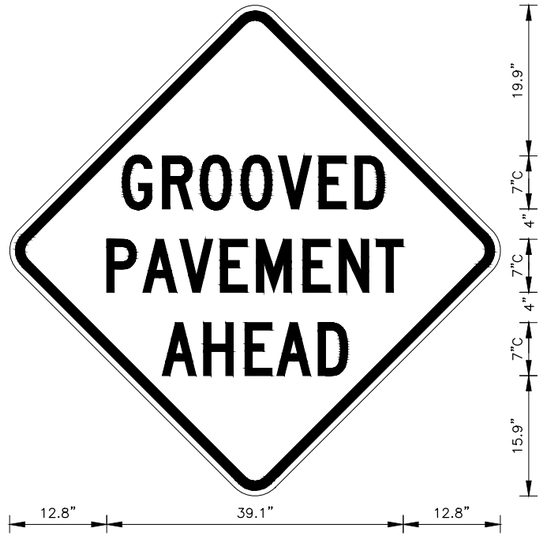


MOTORCYCLE CAUTION SIGN

MOTORCYCLE CAUTION NOTES:

1. BORDER DIMENSIONS: R=3", TH=1.25", IN=0.75"
2. PROVIDE XX EACH ON WINDMASTER STANDS AS MOVEABLE CONSTRUCTION SIGNS AT LOCATIONS DETERMINED BY THE ENGINEER.



GROOVED PAVEMENT SIGN

GROOVED PAVEMENT NOTES:

1. BORDER DIMENSIONS: R=3", TH=1.25", IN=0.75"
2. PROVIDE XX EACH ON WINDMASTER STANDS AS MOVEABLE CONSTRUCTION SIGNS AT LOCATIONS DETERMINED BY THE ENGINEER.

PROJECT INFORMATION SIGN

PROJECT INFORMATION NOTES:

1. SIGN FONT: SERIES 2000
2. PROVIDE XX EACH ON 4"x4" POSTS AS PERMANENT CONSTRUCTION SIGNS AT LOCATIONS DETERMINED BY THE ENGINEER.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

PERMANENT CONSTRUCTION SIGNS

NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0311037/CFHWY00947	2025	T5	T16

NOTES:

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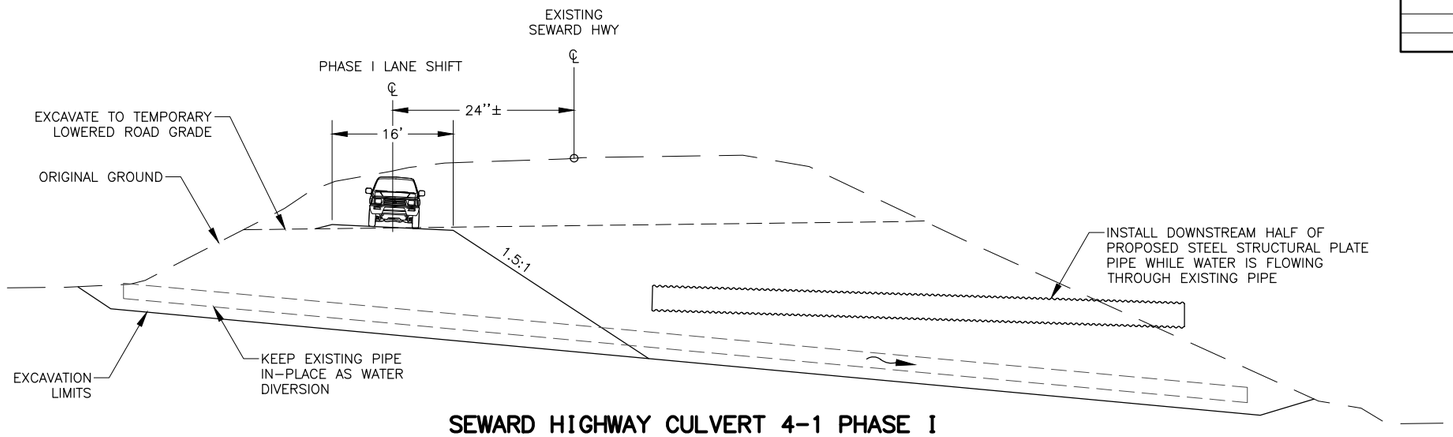
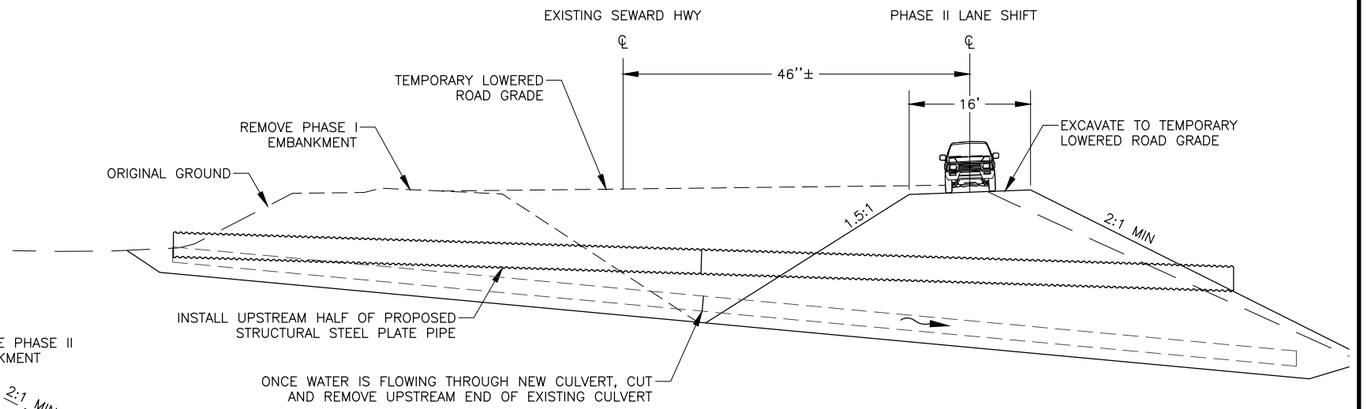


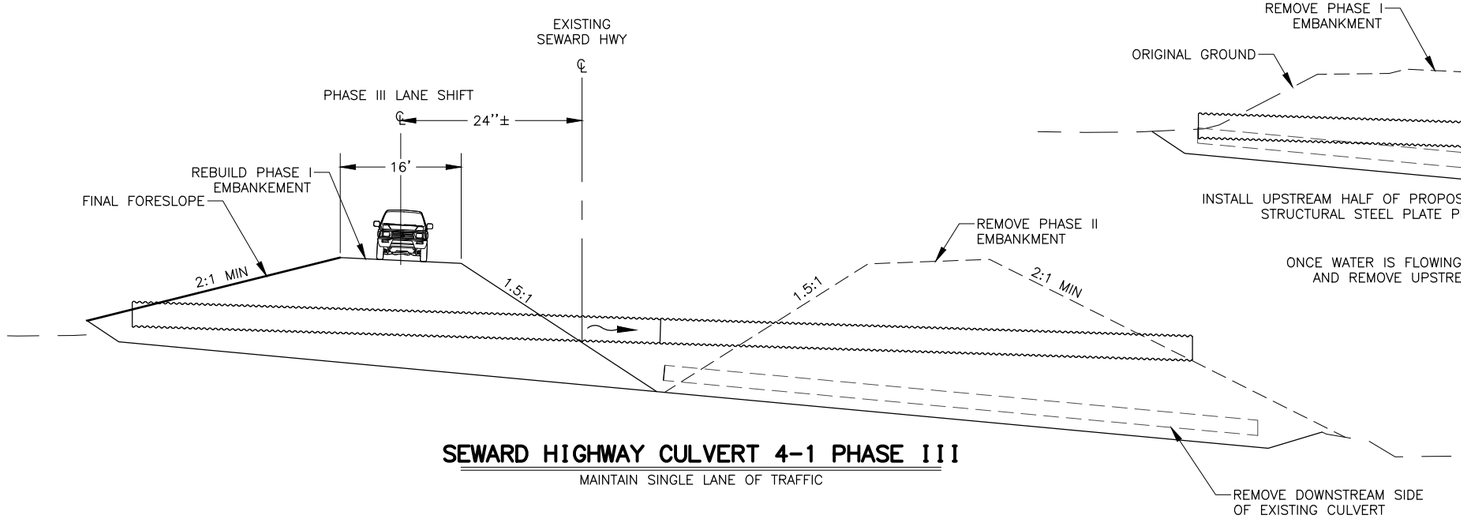
SEWARD HIGHWAY CULVERT 4–1 PHASE I

MAINTAIN SINGLE LANE OF TRAFFIC



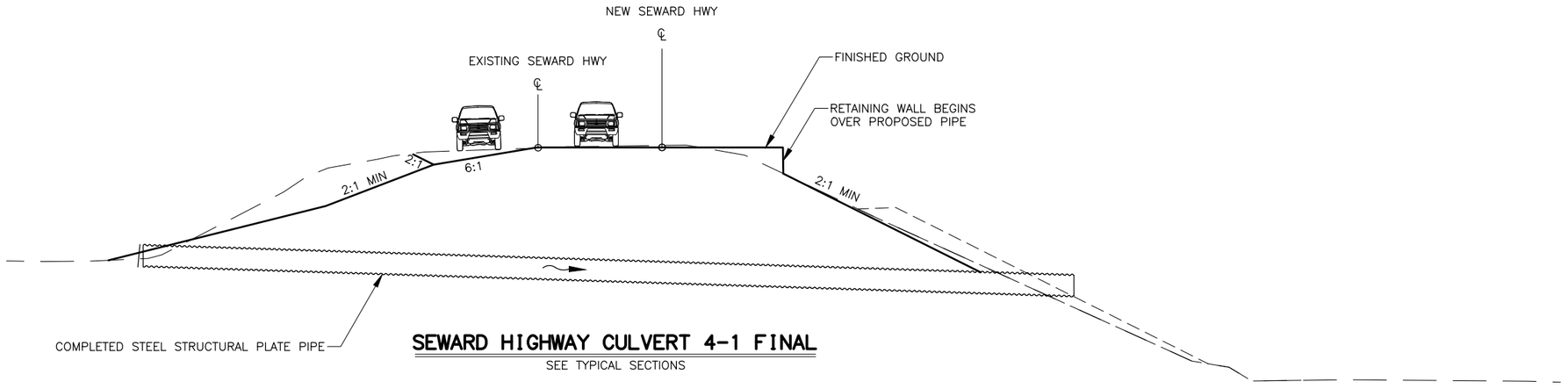
SEWARD HIGHWAY CULVERT 4–1 PHASE II

MAINTAIN SINGLE LANE OF TRAFFIC



SEWARD HIGHWAY CULVERT 4–1 PHASE III

MAINTAIN SINGLE LANE OF TRAFFIC



SEWARD HIGHWAY CULVERT 4–1 FINAL

SEE TYPICAL SECTIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

TRAFFIC CONTROL PLANS PIPE 4–1

DESIGNED BY ---
CHECKED BY ---
DRAFTED BY ---

SCALE 1" = 1'

DATE 6/6/2025 TIME 4:07 PM

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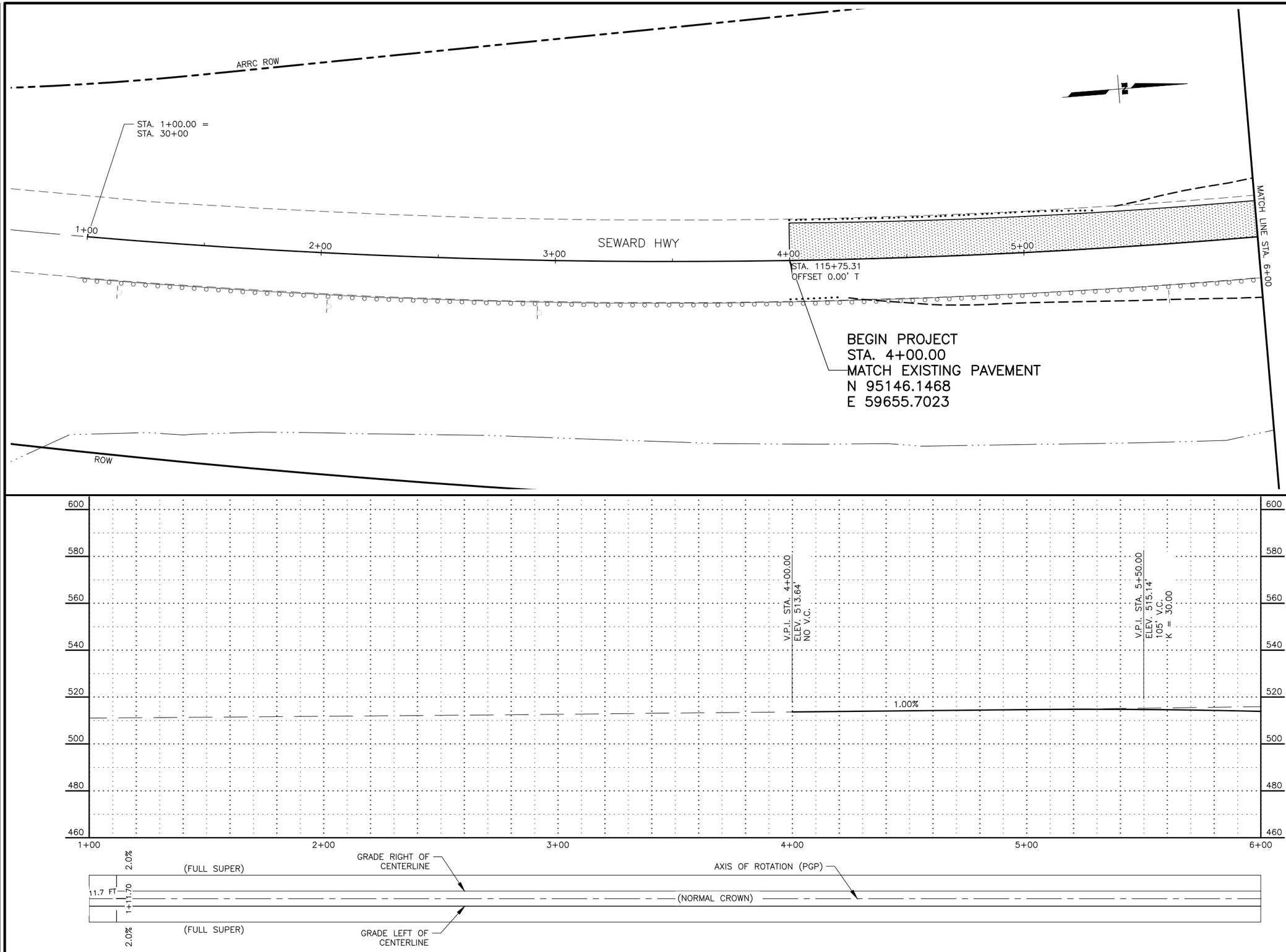
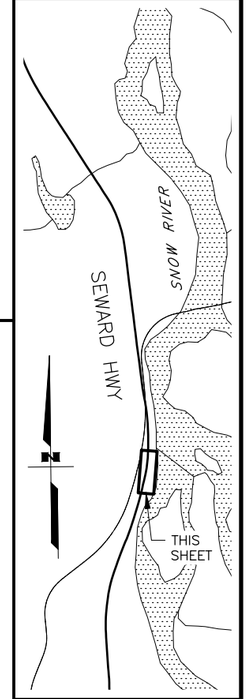


SHEET NO.	TOTAL SHEETS
T6	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



PS&E
JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4–1 DETOUR
PHASE I

DESIGNED BY --
CHECKED BY --
DRAFTED BY --

SCALE X" = XX'

DATE TIME
6/6/2025 4:07 PM

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DESIGNED BY
CHECKED BY
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SCALE
X" = XX'

DATE TIME
6/6/2025 4:07 PM

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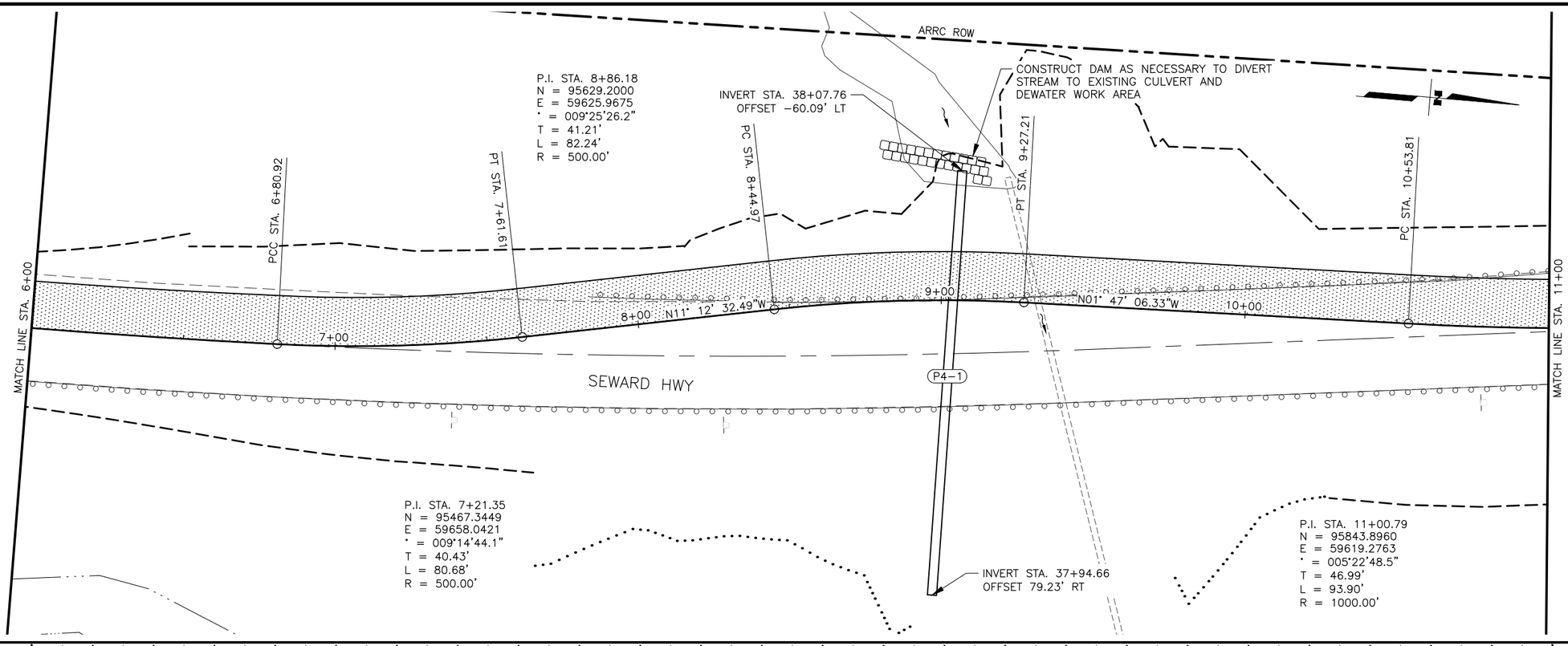
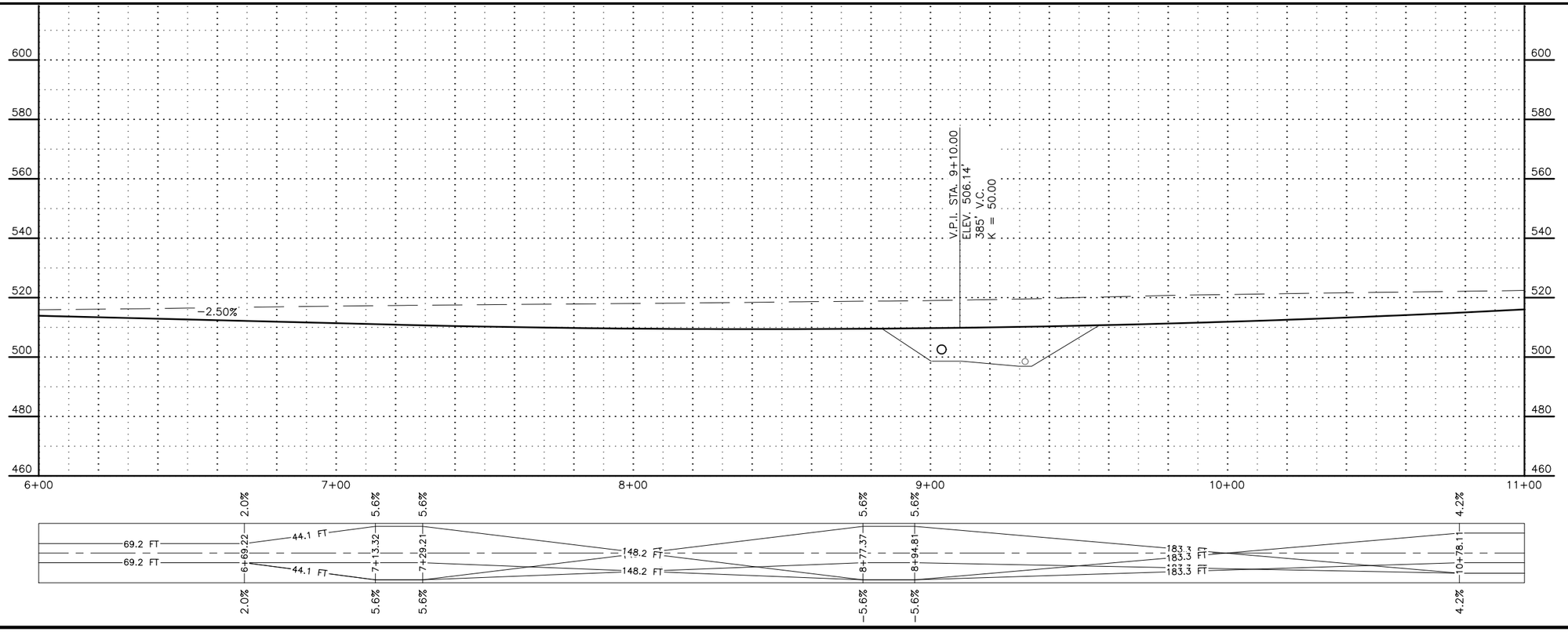


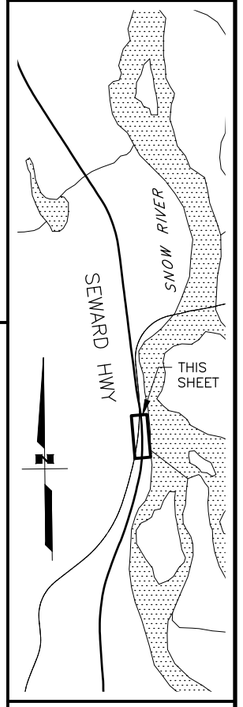


SHEET NO.	TOTAL SHEETS
T7	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



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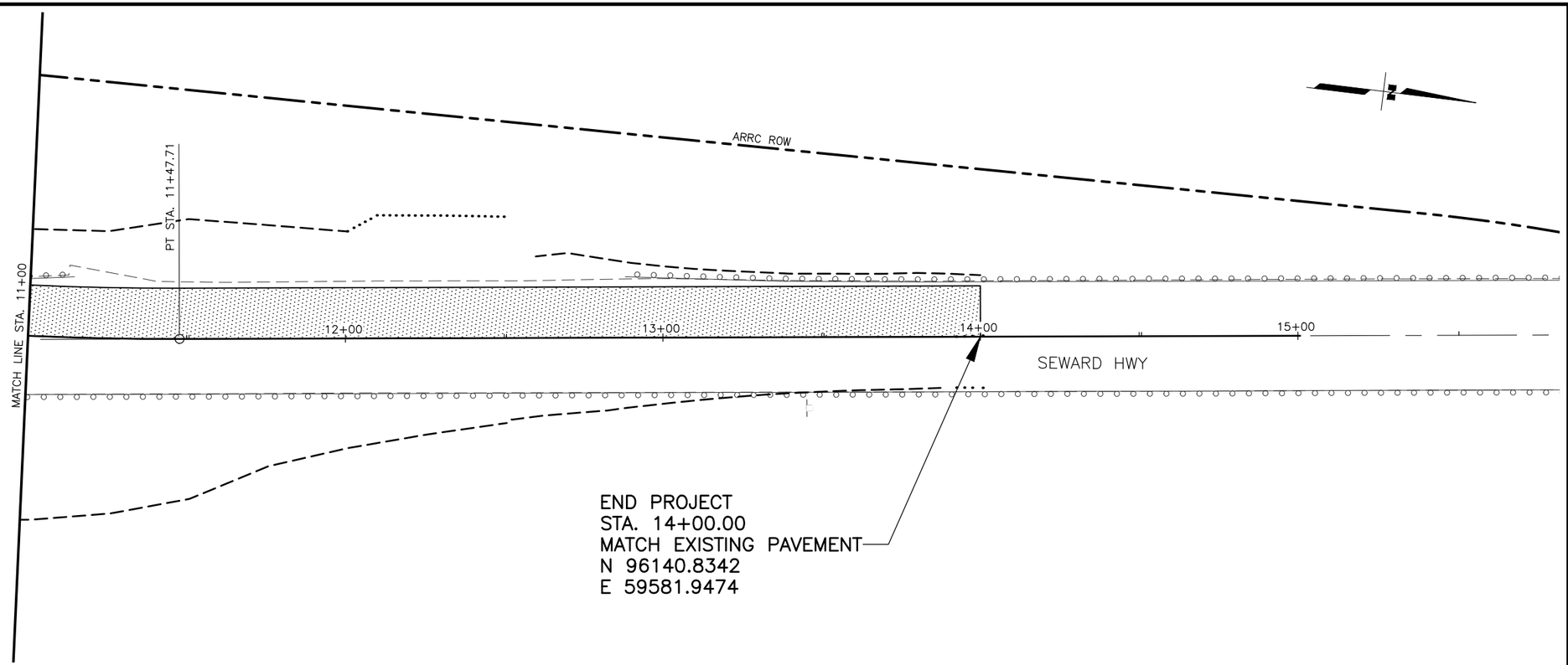
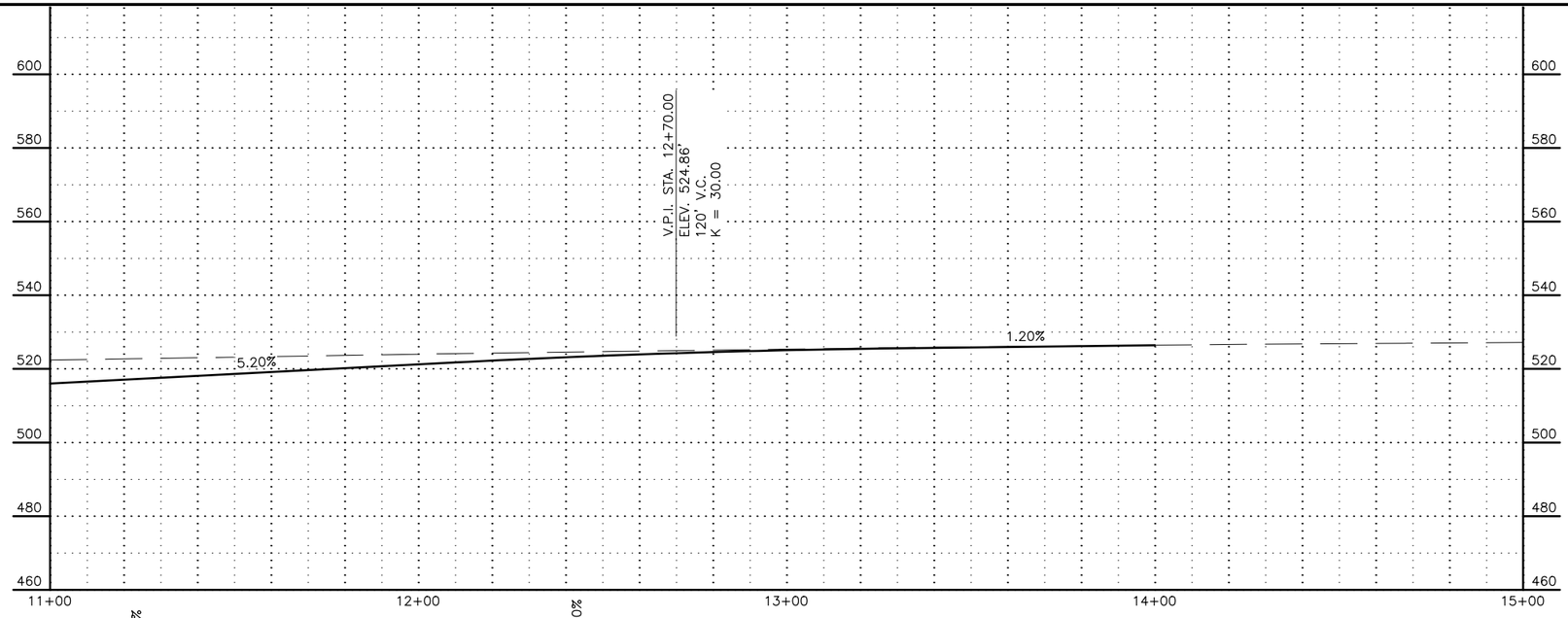
JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4−1 DETOUR
PHASE I



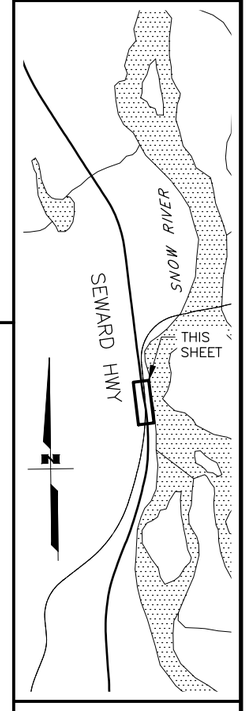


SHEET NO.	TOTAL SHEETS
T8	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	



PS&E
JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4-1 DETOUR
PHASE I

DESIGNED BY --
CHECKED BY --
DRAFTED BY --

SCALE 1" = 20'

DATE TIME
6/6/2025 4:07 PM

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DESIGNED BY --
CHECKED BY --
DRAFTED BY --

SCALE
X" = XX'

DATE TIME
6/6/2025 4:07 PM

DRAWING LOCATION
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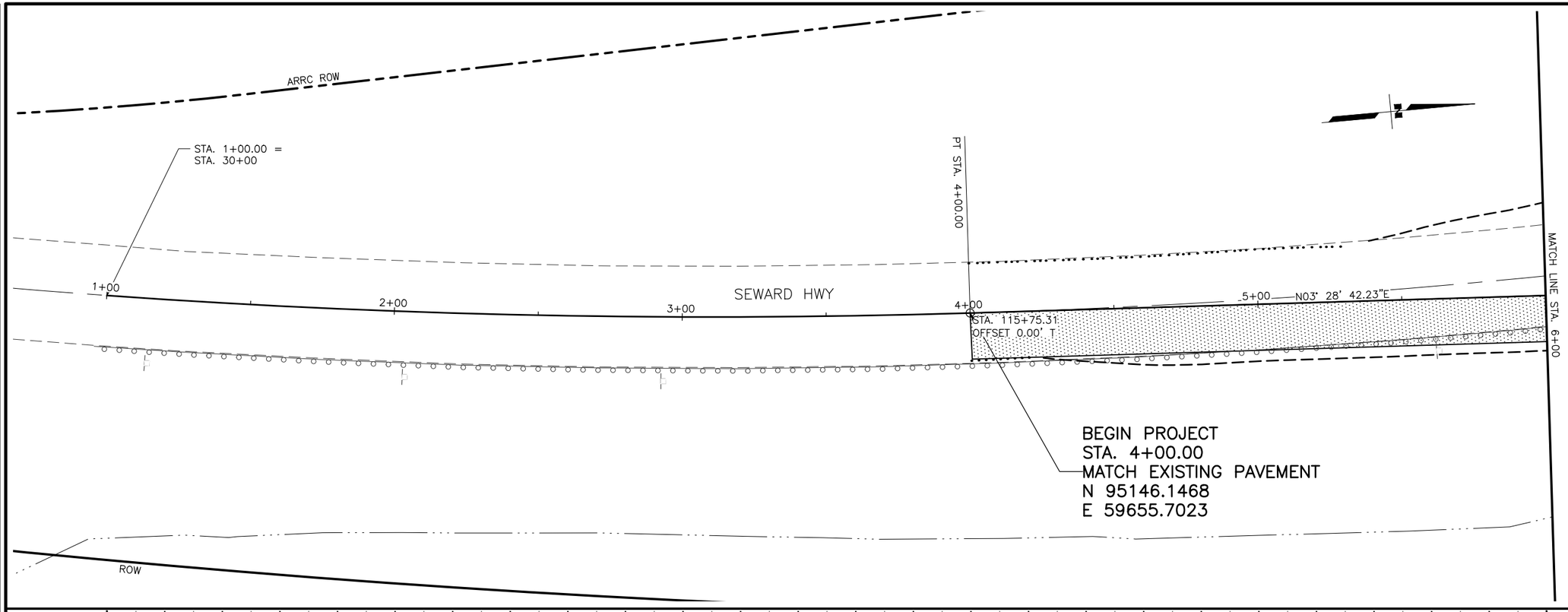
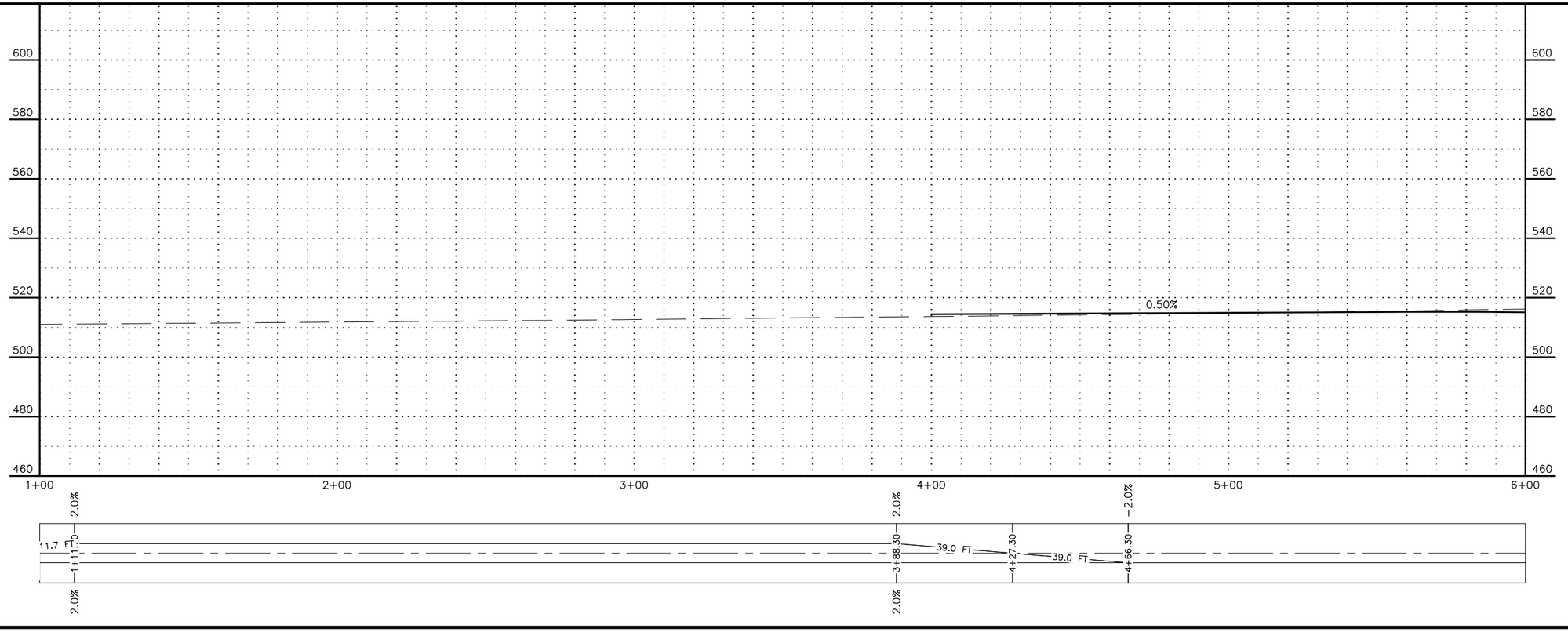
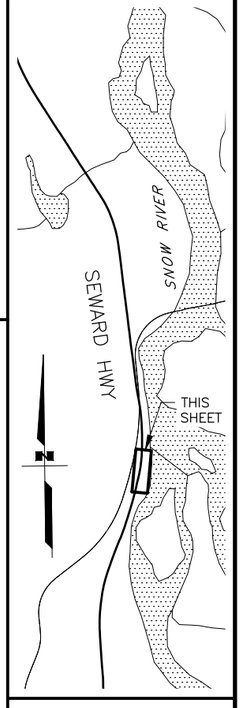




SHEET NO.	TOTAL SHEETS
T9	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION
0311037/
CFHWY00947

NO.	REVISION
DATE	
NO.	REVISION
DATE	
NO.	REVISION
DATE	

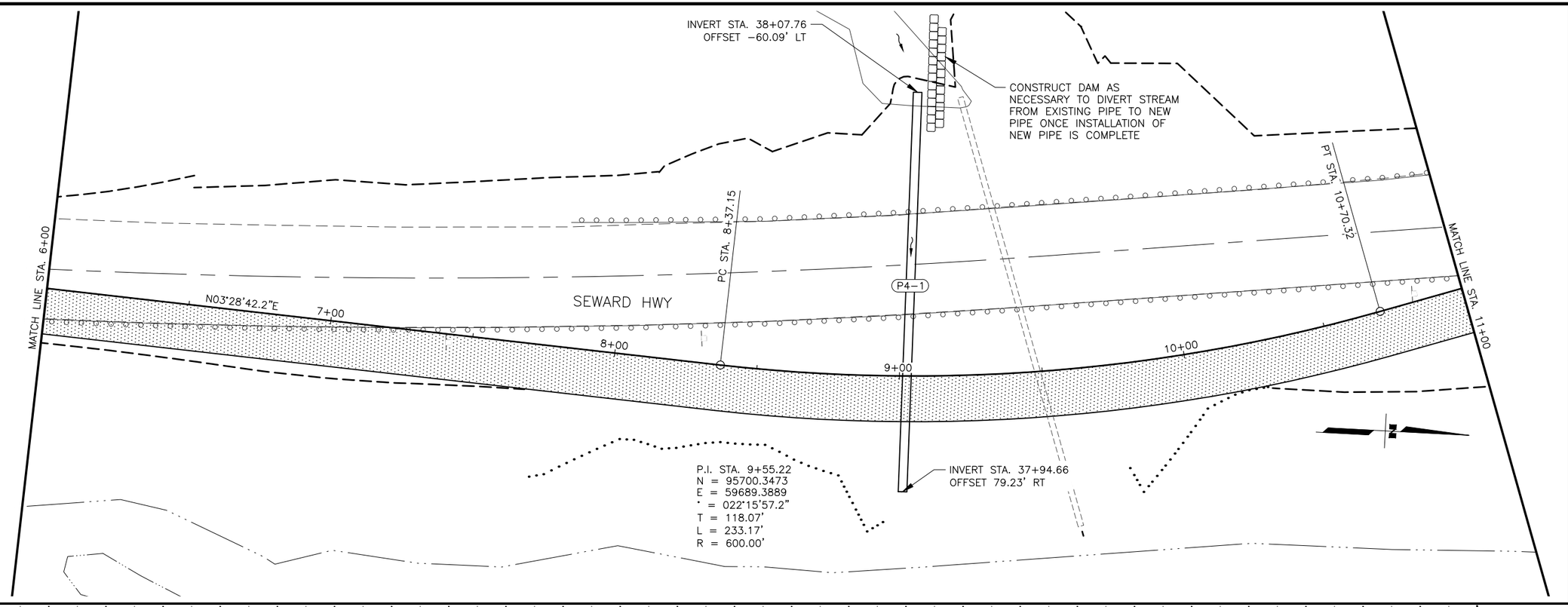


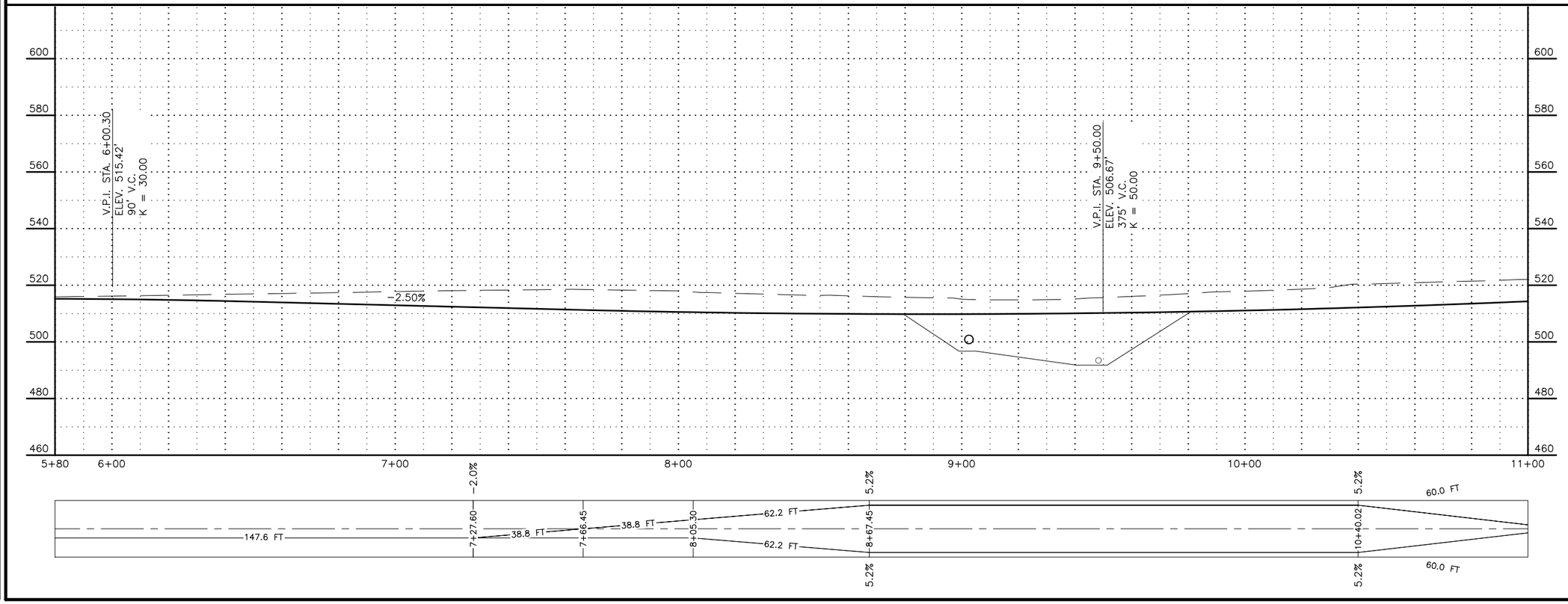
PS&E
JUN '25

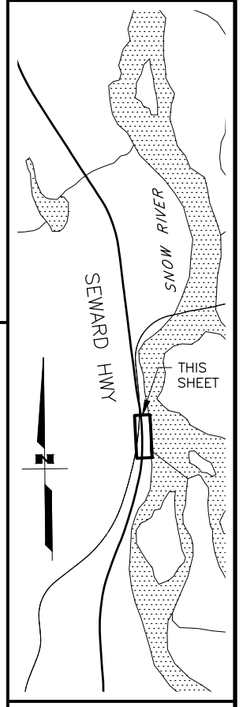
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4–1 DETOUR
PHASE II







SHEET NO.	TOTAL SHEETS
T10	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

NO.	REVISION
DATE	
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DATE	
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PS&E
JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4−1 DETOUR
PHASE II

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DRAFTED BY --

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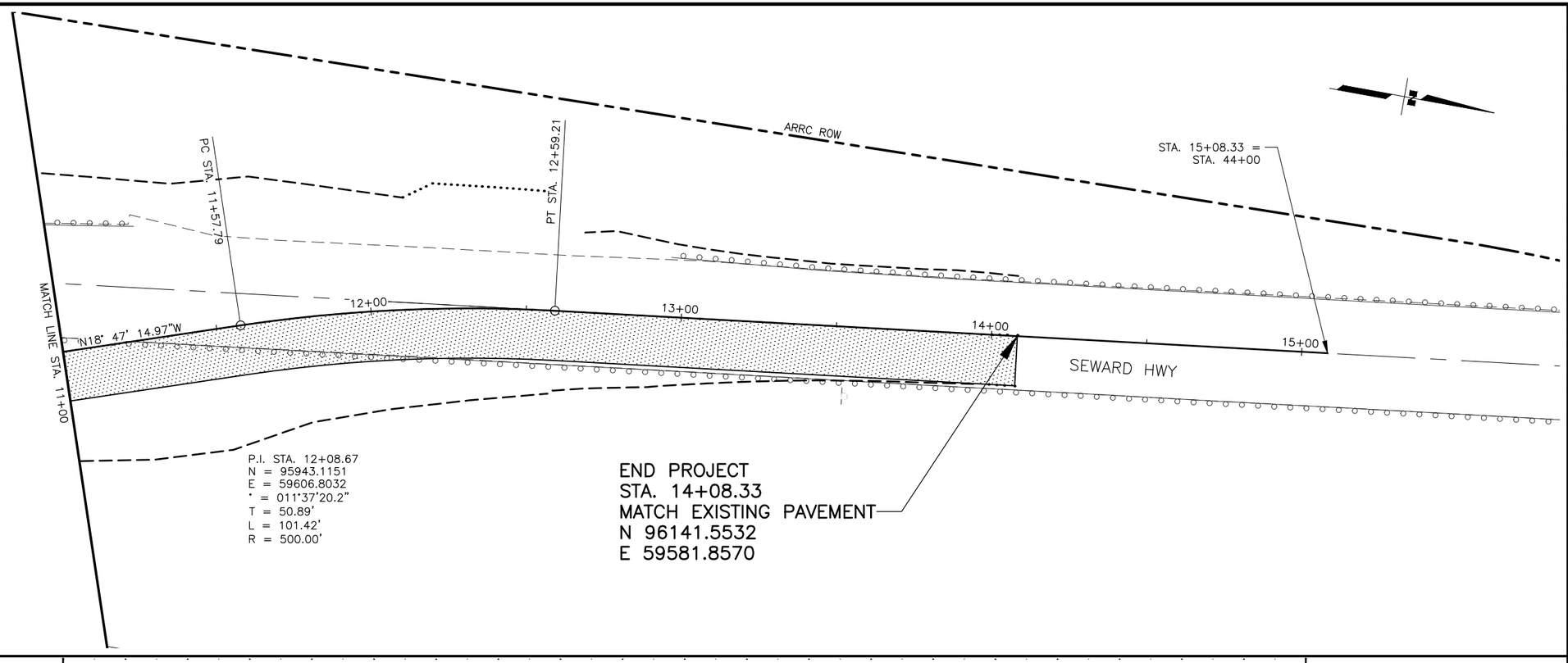

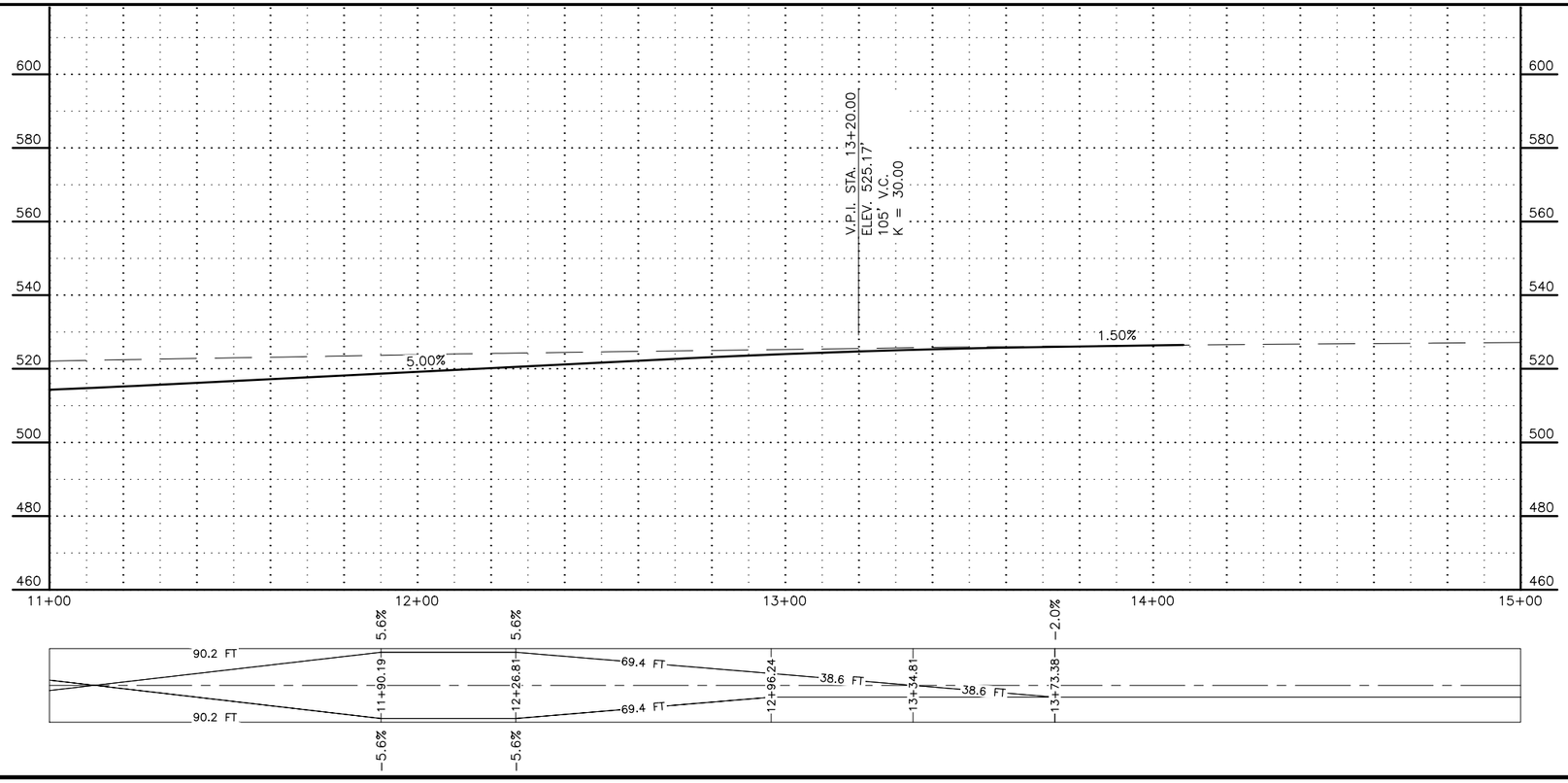

SHEET NO.	TOTAL SHEETS
T11	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

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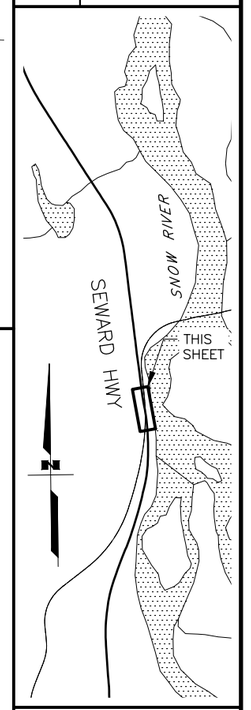

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JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
P4-1 DETOUR
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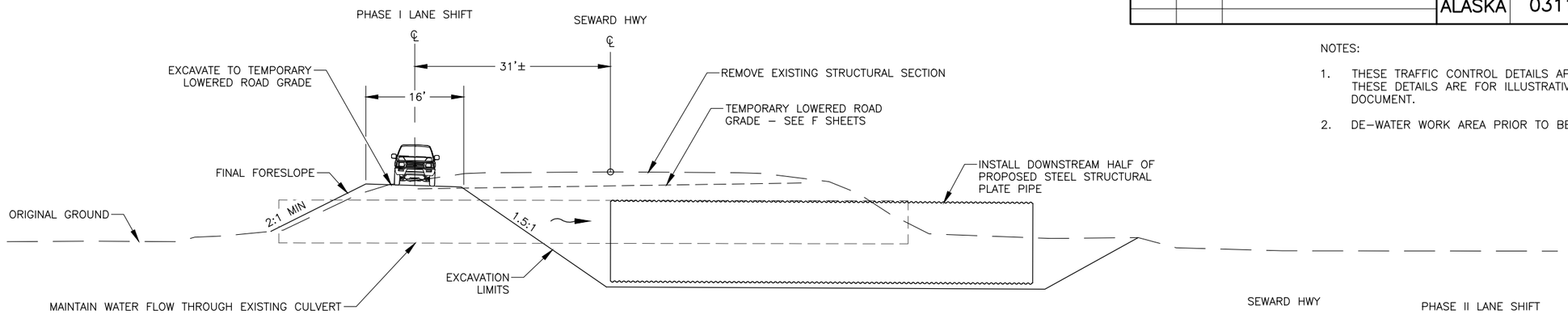
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0311037/CFHWY00947	2025	T12	T16

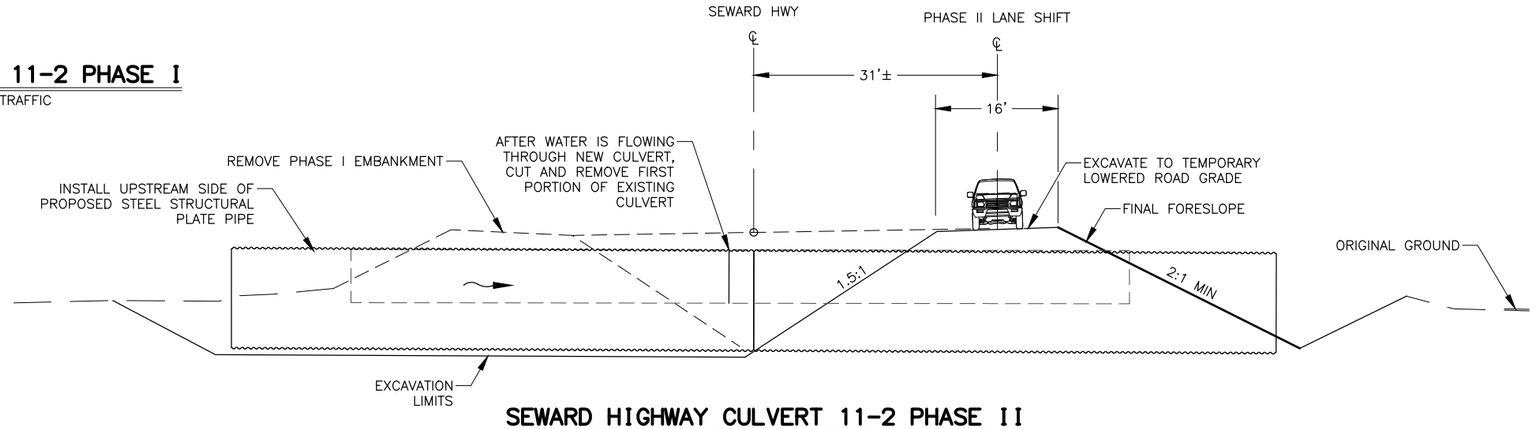
NOTES:

1. THESE TRAFFIC CONTROL DETAILS APPLY TO THE FISH CULVERT AT APPROXIMATE MP XX. THESE DETAILS ARE FOR ILLUSTRATIVE PURPOSES ONLY, AND ARE NOT A CONTRACT DOCUMENT.
2. DE-WATER WORK AREA PRIOR TO BEGINNING EXCAVATION.



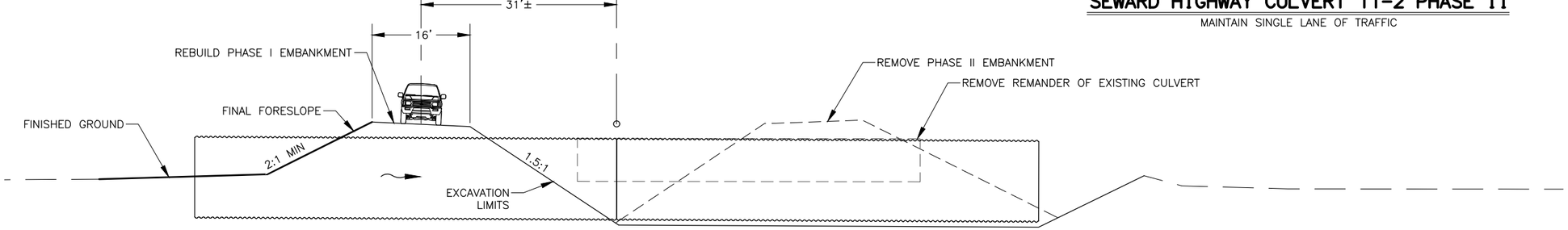
SEWARD HIGHWAY CULVERT 11-2 PHASE I

MAINTAIN SINGLE LANE OF TRAFFIC



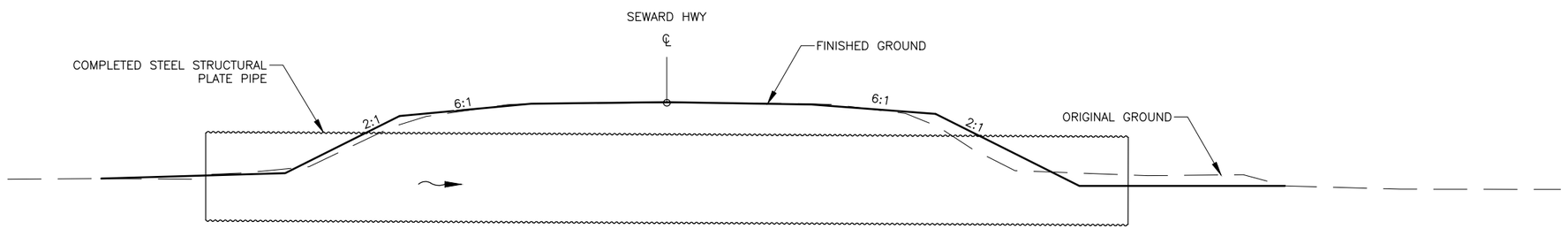
SEWARD HIGHWAY CULVERT 11-2 PHASE II

MAINTAIN SINGLE LANE OF TRAFFIC



SEWARD HIGHWAY CULVERT 11-2 PHASE III

MAINTAIN SINGLE LANE OF TRAFFIC



SEWARD HIGHWAY CULVERT 11-2 FINAL

SEE TYPICAL SECTIONS IN PLANS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14 RAILROAD CROSSING RECONSTRUCTION

TRAFFIC CONTROL PLANS PIPE 11-2

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SCALE 1" = 1'

DATE TIME 6/6/2025 4:07 PM

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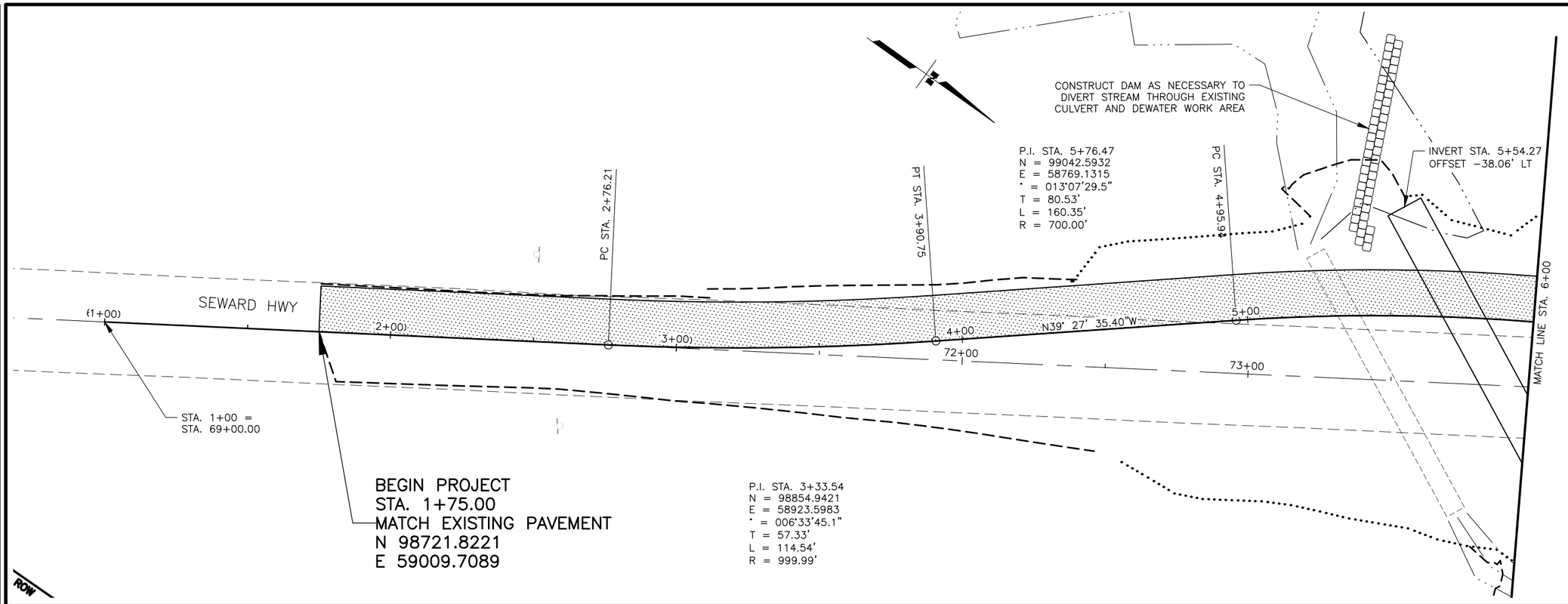

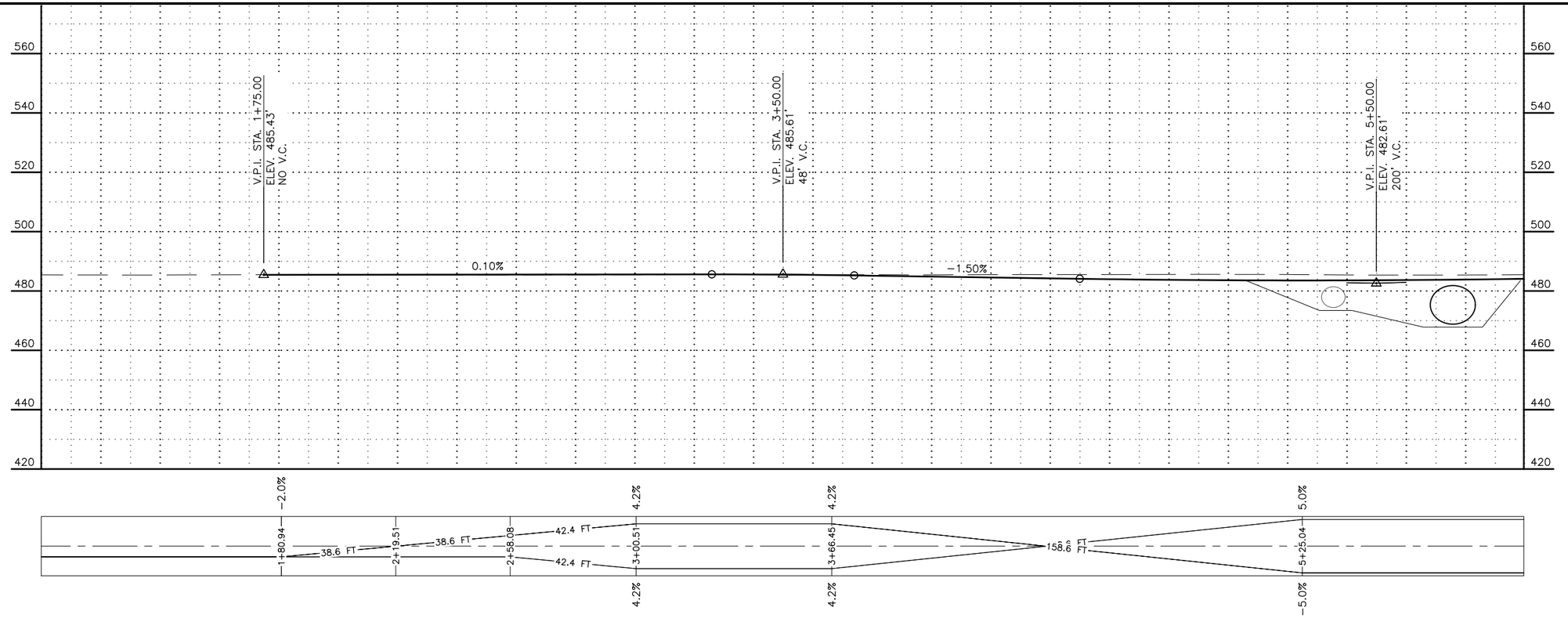

SHEET NO.	TOTAL SHEETS
T13	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION
0311037/
CFHWY00947

NO.	REVISION
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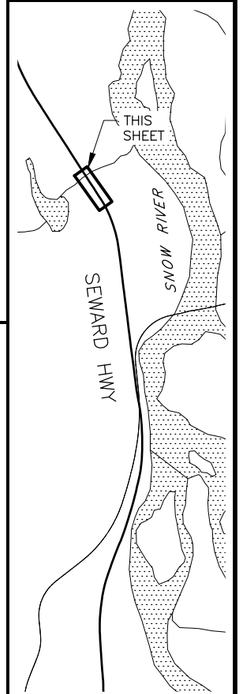

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JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
PIPE 11−2 DETOUR
PHASE I

P.I. STA. 5+76.47
N = 99042.5932
E = 58769.1315
Δ = 013°07'29.5"
T = 80.53'
L = 160.35'
R = 700.00'

RT STA. 6+56.29

PC STA. 7+61.48

PT STA. 8+76.02

MATCH LINE STA. 6+00

N26° 20' 05.92"W

6+00

75+00

8+00

78+00

9+00

10+00

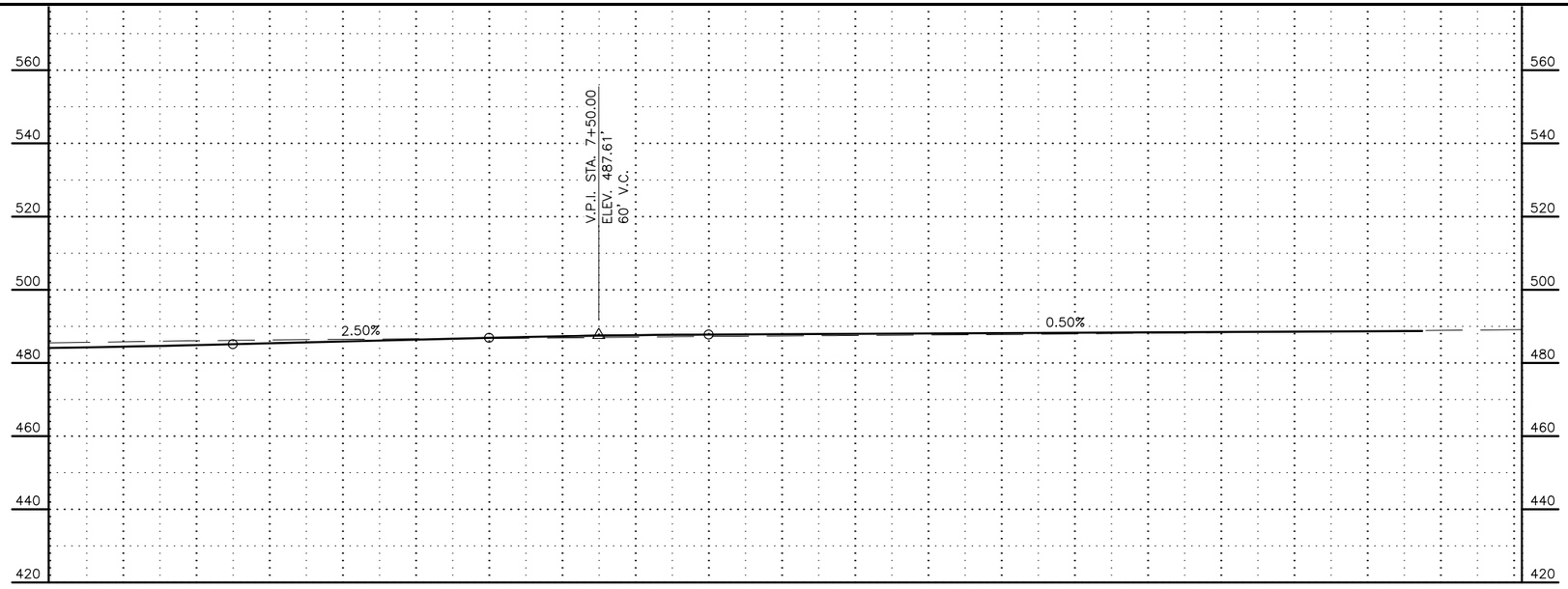
SEWARD HWY

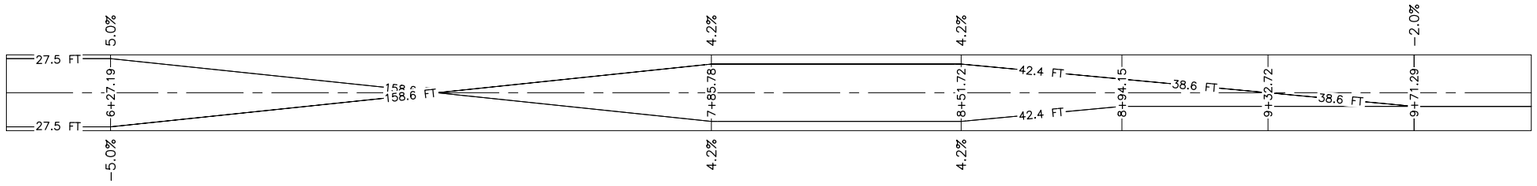
STA. 10+02.55 =
STA. 78+00.00

INVERT STA. 6+31.73
OFFSET 80.28' RT

P.I. STA. 8+18.81
N = 99260.4177
E = 58661.3103
Δ = 006°33'44.7"
T = 57.33'
L = 114.54'
R = 1000.00'

END PROJECT
STA. 9+75.00
MATCH EXISTING PAVEMENT
N 99391.6658
E 58576.4106





SHEET NO.	TOTAL SHEETS
T14	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION
0311037/
CFHWY00947

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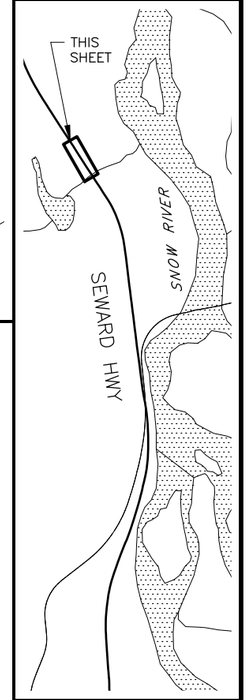

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JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
PIPE 11-2 DETOUR
PHASE I

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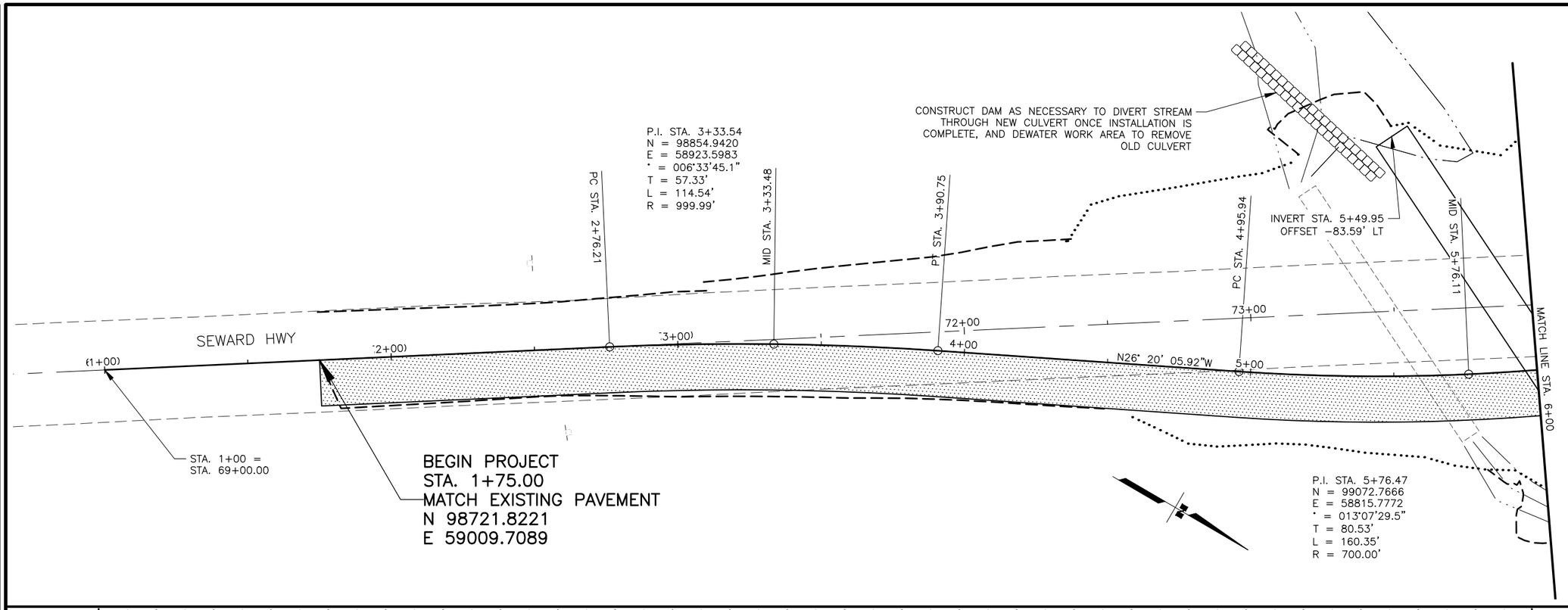

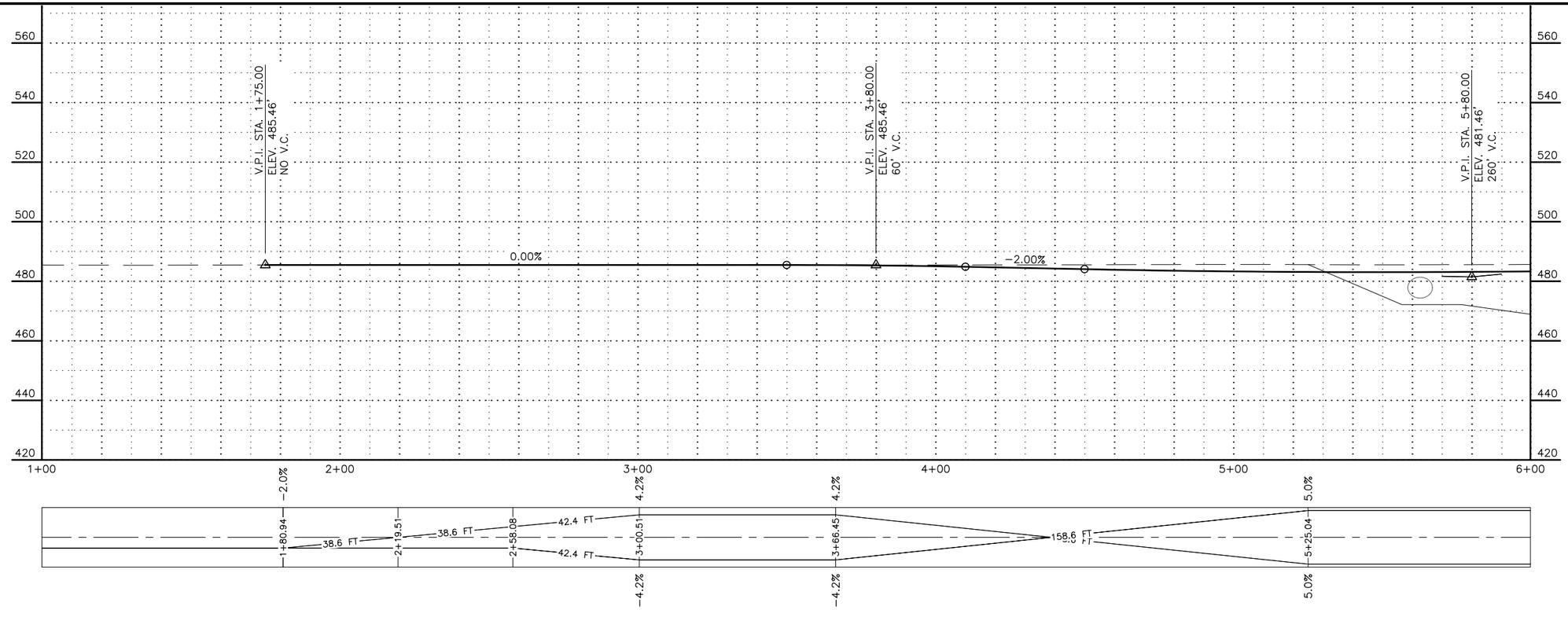

SHEET NO.	TOTAL SHEETS
T15	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

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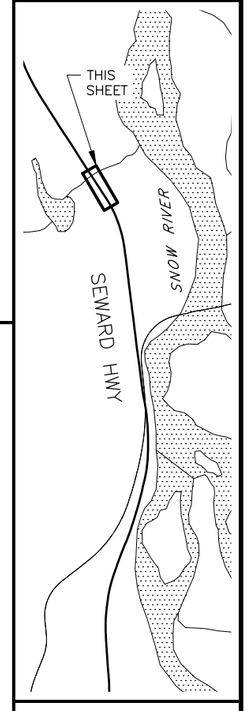

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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
PIPE 11–2 DETOUR
PHASE II

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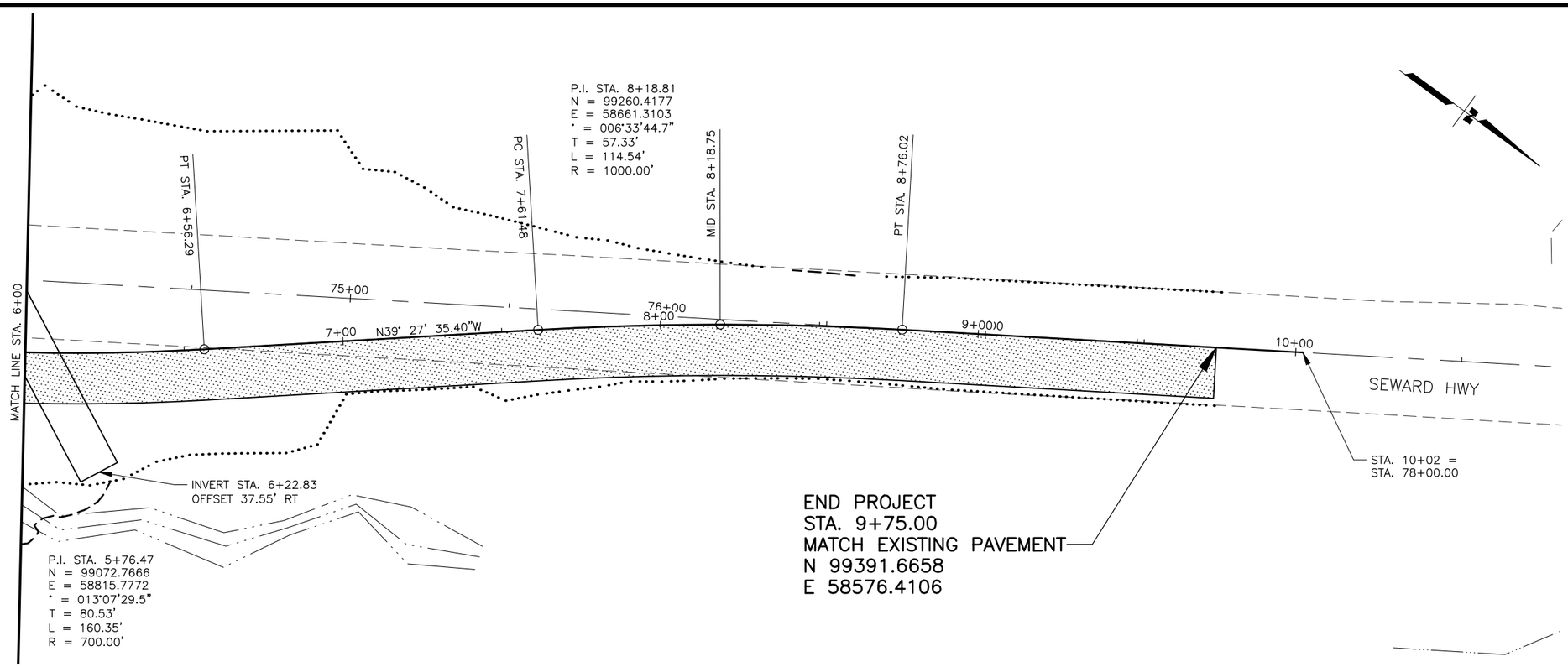

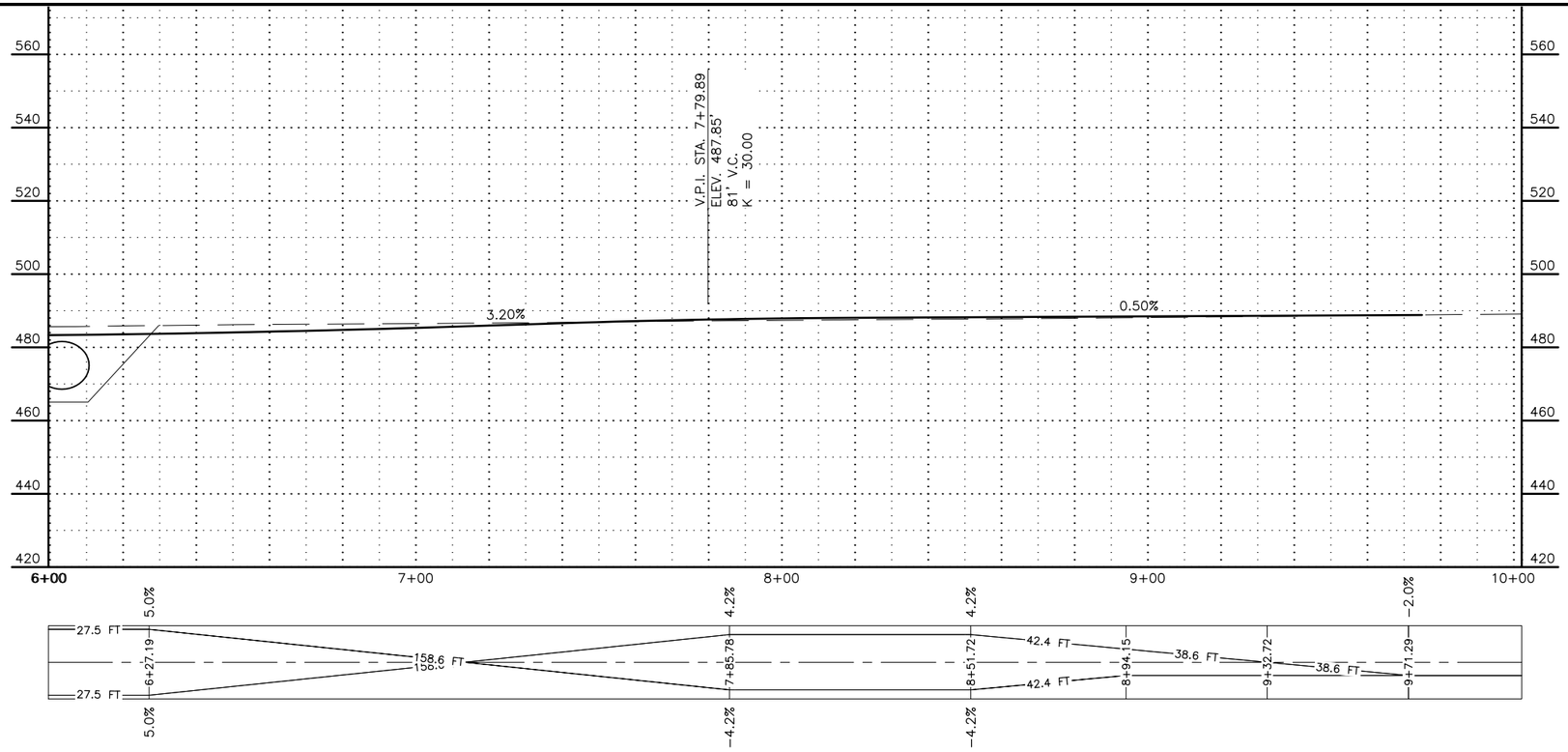

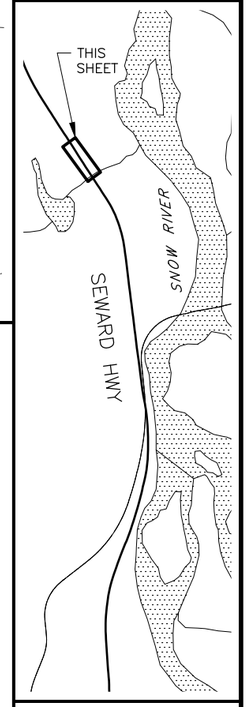

SHEET NO.	TOTAL SHEETS
T16	T16
STATE	YEAR
ALASKA	2025

PROJECT DESIGNATION

0311037/
CFHWY00947

NO.	REVISION
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JUN '25

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SEWARD HIGHWAY MP 14
RAILROAD CROSSING
RECONSTRUCTION

PLAN & PROFILE
PIPE 11-2 DETOUR
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Appendix B: Public Information & Outreach Plan

Appendix C: Traffic Operations Plan

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION

BID FORM, CONTRACT, BOND, STANDARD MODIFICATIONS
AND SPECIAL PROVISIONS FOR:

Seward Highway MP 14 Railroad Crossing Reconstruction
Project No. 0311037 / CFHWY00947

AS ADVERTISED: TBD
Document Fee: $100.00

To be used in conjunction with State of Alaska Standard Specifications for Highway Construction dated 2020, and the Plans for the above referenced project.

www.dot.alaska.gov - "Procurement"

TABLE OF CONTENTS

(Federal-Aid Highways)

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

INVITATION TO BID

for Construction Contract

Date TBD

Seward Highway MP 14 Railroad Crossing Reconstruction
Project No. 0311037 / CFHWY00947

The Department invites bidders to submit bids for furnishing all labor, equipment, and materials and performing all work for the project described below. The Department will only consider bids received **before 2:00 PM local time (per the Department's time source) on the TBD day of Month 2025.** On that date, the Department will assemble, open, and then publicly announce the timely-received bids at Anchorage, Alaska at 2:15 PM, or as soon thereafter as practicable.

Location of Project: Seward, Alaska
Contracting Officer: Sean L. Holland, P.E., Regional Director
Issuing Office: Central Region

State Funded ☐ Federal Aid ☒

Description of Work:
This federally funded project will reconstruct the separated grade railroad crossing on the Seward Highway near MP 14 to accommodate an ARRC project to raise the Snow River bridge's railroad track elevation.

Project DBE Utilization Goal: ☒ Race-Neutral

The Engineer's Estimate is between **$30,000,000** and **$40,000,000**

All work shall be completed in **N/A** Calendar Days, or by **TBD.**
The Department will identify interim completion dates, if any, in the Special Provisions.

The apparent successful bidder must furnish a payment bond in the amount of 100% of the contract and a performance bond in the amount of 100% of the contract as security conditioned for the full, complete and faithful performance of the contract. The apparent successful bidder must execute the said contract and bonds within **ten (10)** calendar days, or such further time as may be allowed in writing by the Contracting Officer, after receiving notification of the acceptance of their bid.

Submission of Bidding Documents

Bidders may submit bidding documents electronically via the Department's approved online bidding service, through the mail or hand delivered. For mailed or hand delivered bids and for electronically submitted bids with a paper bid guaranty, documents shall be submitted in a sealed envelope marked as follows:

Bidding Documents for Project: **Seward Highway MP 14 Railroad Crossing Reconstruction** **Project No. 0311037 / CFHWY00947**	**ATTN:** **State of Alaska** **Department of Transportation & Public Facilities** **PO Box 196900** **4111 Aviation Avenue** **Anchorage, AK 99519-6900**

It is incumbent upon the bidder to ensure its bid, any amendments, and/or withdrawal arrive, in its entirety, at the location and before the deadline stated above. A bidder sending a bid amendment or withdrawal via email must transmit its documentation to the Department at this email address: crdotpfcontracts@alaska.gov.

To be responsive, a bid must include a bid guaranty equal to 5% of the amount bid. (*When calculating the bid amount for purposes of determining the 5% value of the bid guaranty, a bidder shall include its base bid amount, plus the amount bid for alternate and supplemental bid items, if any.)*

The Department hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this Invitation, Disadvantaged Business Enterprises will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

NOTICE TO BIDDERS

Bidders must have a Vendor ID or your bid may not be accepted. More information can be obtained at the following website: http://dot.alaska.gov/aashtoware/docs/AWP-Vendor-List-Guidance.pdf

The following data may assist a bidder in preparing its bid:

See attached Special Notice to Bidders for this project.

A bidder may obtain hard copy project plans and specifications for the price of **$100.00** from:
State of Alaska, Department of Transportation & Public Facilities
Plans Room
4111 Aviation Avenue
PO Box 196900
Anchorage, AK 99519-6900

Phone: (907) 269-0408

If a bidder has a question relating to design features, constructability, quantities, or other technical aspects of the project, it may direct its inquiry to the questions and answers area of the Bid Express proposal page: https://www.bidx.com/ak/lettings

A bidder requesting assistance in viewing the project site must make arrangements at least 48 hours in advance.
The point of contract for inquiries for this project is **Rori Van Nortwick, P.E.**

Email: rori.vannortwick@alaska.gov Phone: (907) 269-0587

For questions relating to electronic bidding or for assistance with your Bid Express account, contact Bid Express customer support at customer.support@bidx.com or call toll free (888)352-BIDX(2439) Monday through Friday 7:00am to 8:00pm (Eastern).

A bidder may direct questions concerning bidding procedures and requirements to:
Sharon L. Smith, P.E.
Chief of Contracts
PO Box 196900
Anchorage, AK 99519-6900

Email: sharon.smith@alaska.gov Phone: (907) 269-0414

Other Information:

The Bid Calendar, Plan Holder List, Bid Results and DBE information are available on the Internet at: www.dot.alaska.gov under Procurement.

This project was designed in the US customary (USC) units. Inspection will take place in USC units. Submittals must be provided in USC units.

To report bid rigging activities call: 1-800-424-9071.

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

The **2020 Standard Specifications for Highway Construction** can be obtained at
http://www.dot.state.ak.us/stwddes/dcsspecs/assets/pdf/hwyspecs/sshc2020.pdf

SPECIAL NOTICE TO BIDDERS

The Department hereby notifies bidders that information to assist in bid preparation is available from the Department of Transportation and Public Facilities, Anchorage office, located at 4111 Aviation Avenue.

1. **Publications**. The following are available from the Plans Room, download online, or as noted:

   a. Standard Specifications for Highway Construction, 2020 Edition comb bound ($25.00), download at: www.dot.state.ak.us/stwddes/dcsspecs/assets/pdf/hwyspecs/sshc2020.pdf, or order bound book from LuLu at: https://www.lulu.com/en/us/shop/state-of-alaska-dept-of-transportation/2020-alaska-standard-specification-for-highway-construction/paperback/product-1gq9j9qk.html
   b. Alaska Test Methods Manual (Lab & Field), September 01, 2024 Edition ($25.00). Available online at: www.dot.state.ak.us/stwddes/desmaterials/mat_waqtc/testman.shtml
   c. Alaska Storm Water Pollution Prevention Plan Guide, March 2021. www.dot.state.ak.us/stwddes/desenviron/resources/stormwater.shtml
   e. Quantity Computations
   f. Cross Sections
   g. Geotechnical Report, Seward Highway MP 14 Railroad Crossing Reconstruction, Project No. 0311037/CFHW000947, September 2024. DRAFT
   I. Erosion, Sediment Control Plan (ESCP). Seward highway MP 14 Railroad Crossing Reconstruction, Project No. 0311037/CFHW000947, June 2025
   j. Traffic Control Plan (TCP). Seward highway MP 14 Railroad Crossing Reconstruction, Project No. 0311037/CFHW000947, June 2025

2. **Materials Certification List (MCL)**. The MCL provides the Engineer with the appropriate approving authority. Contractor, submit certification for each material to the Engineer. The MCL is included in Appendix _____.

3. **Environmental Documents**. The Department has approved an environmental document addressing concerns and environmental commitments. This document is available for review in the Department Section of Preliminary Design and Environmental. (907) 269-0542.

4. **Section 120, Disadvantaged Business Enterprise (DBE) Program**. The Department, in coordination with US DOT, has adopted a Race-Neutral DBE Program effective for Federal-aid projects advertised in Central Region after June 30, 2015. In particular, all bidders shall be aware that Good Faith Effort Documentation is required from the successful bidder for all contracts, regardless of DBE goal or DBE utilization, in accordance with Section 120 Disadvantaged Business Enterprise (DBE) Program.

   The overall DBE Utilization Goal is revised to 9.39 percent.

   Direct questions about this notice to the Manager of the Civil Rights Office, (907) 269-0848, http://www.dot.state.ak.us/cvlrts/index.shtml.

5. **Cargo Preference Act Requirements**. The provisions of the Cargo Preference Act (CPA) must be physically incorporated into all Federal-aid Projects awarded after February 15, 2016, and must be physically incorporated in all agreements with subcontractors and lower tier subcontractors.

   Form 25D-55 (2/16) is revised to include the CPA provisions to the Required Contract Provisions for Federal-Aid Construction Contracts. See the last page of Form 25D-55 for the CPA requirements.

   For additional details, please visit: https://www.fhwa.dot.gov/construction/cqit/cargo.cfm

6. **Buy America Provision**. Effective for Federal award obligations after October 23, 2023, meet the requirements at 2 CFR 184 for construction materials.

   Iron products, steel products, and predominantly iron or steel manufactured products remain subject to the requirements of 23 CFR 635.410 and related FHWA Interpretations and waivers.

   Manufactured products that are not predominantly iron or steel continue to be waived under FHWA's 1983 waiver of manufactured products.

   On August 16, 2023, USDOT issued a waiver at 88 FR 55817 applicable to construction materials on FHWA funded projects.

   HSP20-7A revises the specifications in 106-1.01 to incorporate these new requirements.

   2 CFR 184:
   https://www.federalregister.gov/documents/2023/08/23/2023-17724/guidance-for-grants-and-agreements
   23 CFR 635.410:
   https://www.govinfo.gov/content/pkg/CFR-2022-title23-vol1/xml/CFR-2022-title23-vol1-sec635-410.xml
   USDOT waiver at 88 FR 55817:
   https://www.federalregister.gov/documents/2023/08/16/2023-17602/waiver-of-buy-america-requirements-for-de-minimis-costs-and-small-grants
   FHWA interpretations, waivers, regulations, policy and guidance on Buy America:
   https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

7. **Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment**. 2 CFR 200.216, as amended effective August 13, 2020, Federal Register, Vol. 85, No. 157, 49506 – 49582, Prohibition on certain telecommunication and video surveillance services or equipment. Refer to Subsection 106-1.01.

8. **COVID-19 Management Plan**. The Governor's emergency declaration and mandates relating to COVID-19 expired on February 14, 2021. However, contractors are encouraged to review COVID-19 Response and Recovery Health Advisories that can be accessed at:
   https://covid19.alaska.gov/health-advisories/

   Contractors will still be required to meet any applicable local ordinances or requirements currently in effect, and comply with any future federal, state, or local declarations or mandates that might be adopted while work on the project is ongoing.

   Consistent with Section 107-1.01 of the Standard Specifications for Highway Construction, the Contractor will be responsible for paying all costs and expenses incurred to comply with any COVID-19 Health Mandates or Health Advisories in effect during times when the Contractor is performing project-related work activities. The Contractor will additionally be responsible for preparing any general or site-specific mitigation and response plans required for its forces, along with any attendant schedule delays or impacts.

9. **Certified Payroll**. Certified payroll must be submitted electronically through AASHTOWare for contracts awarded after January 1, 2021.

   In order to submit certified payroll, Contractors, Subcontractors, and lower tier Subcontractors must be active in AASHTOWare, which requires they have a valid Vendor ID with a 913 commodity code.

   To obtain a Vendor ID, register with the State of Alaska via the Vendor Self-Serve (VSS). Instructions for creating a new account in the VSS system can be found under Reference Guides and Forms at the following link:
   https://iris-vss.alaska.gov/PRDVSS1X1/Advantage4

   For information on certified payroll, contact the Department of Labor and Workforce Development, Wage and Hour Administration:

Juneau	(907) 465-4842
Anchorage	(907) 269-4900
Fairbanks	(907) 451-2886

   DOT&PF AASHTOWare Project guidance, including schedule, FAQs, training options:
   http://dot.alaska.gov/aashtoware/

10. **Laborers Mechanics Minimum Rate of Pay**. The current Laborers Mechanics Minimum Rate of Pay contains information on remote sites and per diem. The Department of Labor has issued WHPL #197, which further clarifies this requirement. See pay item 640.0004 ____.

11. **Interim Completion Phase**. This project includes at least one interim completion phase. Refer to Subsection 651-1.05 Interim Completion and Subsection 652-1.05 Failure to Complete on Time for further information.

12. **Section 408 and 703 Hard Aggregate**. Hot Mix Asphalt, Type VH requires hard aggregate. Refer to the table in 703-2.04 Coarse Aggregate for the specified Nordic Abrasion value. Material suppliers are also included in 703-2.04.

13. **Limitation of Operation**. Limit disturbed unstabilized ground. Refer to Subsection 652-1.04 Limitation of Operation for further information.

14. **Contract Price Adjustment(s)**. The Department will not provide cost escalation or de-escalation price adjustment for this contract, except for specific items described in the bid package at the time of bid opening.

15. **Post Award Conference**. There will be a mandatory post award conference held in Anchorage, Alaska prior to the Contractor beginning work. Refer to Subsection 108-1.10 Post Award Conference.

16. **USDOL Davis-Bacon and Related Acts Final Rule**. On September 29, 2023 FHWA updated form FHWA-1273 to incorporate the new Davis-Bacon and Related Acts final rule. Form FHWA-1273 is required to be physically incorporated into construction contracts, subcontracts, and lower-tier subcontracts for awards made after October 23, 2023. DOT&PF satisfies this requirement by incorporating Form 25D-55H into contracts.

    A section-by-section change of form FHWA-1273 is available at
    https://www.fhwa.dot.gov/construction/cqit/form1273.cfm

    The USDOL has a website containing the final rule, frequently asked questions, and a comparison chart of changes at https://www.dol.gov/agencies/whd/government-contracts/construction/rulemaking-davis-bacon

CSNtB-25.0528_SSHC20

PART 4

STANDARD MODIFICATIONS AND SPECIAL PROVISIONS

To the **STATE OF ALASKA**

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

2020
EDITION

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TABLE OF CONTENTS

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SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

Standard Modification

102-1.05 PREPARATION OF BID.

In the third paragraph, replace the fourth sentence with the following:

If the bidder is a joint venture, the bid must be signed by an officer or agent with authority to bind the joint venture.

HSM20.42-22.0430

SECTION 104
SCOPE OF WORK

Standard Modification

104-1.06 VALUE ENGINEERING CHANGE PROPOSALS BY CONTRACTOR.

Replace 104-1.06.3.e with the following:

e. The Contractor may submit VECPs for an approved subcontractor. If the Contractor elects to submit a VECP for an approved subcontractor and it is subsequently accepted by the Department, the Department will reimburse the Contractor per 104-1.06.5.

HSM20.2-20.1130-1

SECTION 105
CONTROL OF WORK

Special Provisions

Add the following Subsection 105-1.011 Related Sections:

105-1.011 RELATED SECTIONS.

Section 651, Control of Work – Supplemental Requirements

C105.5-16.0128-2

105-1.15 PROJECT COMPLETION.

Replace the 1st sentence in the 3rd paragraph with the following:

When all physical work and cleanup provided for under the Contract is found to be complete, except for work specified for Period of Establishment, the Engineer will issue a letter of project completion.

C105.6-23.0601

SECTION 106
CONTROL OF MATERIAL

Standard Modification

106-1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.

Add the following:

PROHIBITION ON CERTAIN TELECOMMUNICATION AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT. On projects using federal funds, the Contractor shall comply with the requirements of 2 CFR 200.216, Prohibition on certain telecommunication and video surveillance services or equipment, including any future amends thereto that are applicable to the project**.**

By submitting a bid or by execution of the contract, the Contractor certifies that it has not entered into a contract nor extended or renewed a contract to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system produced by:

- Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Any entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Contractor further certifies that it has complied with the requirements of 2 CFR 200.216 and that it will continue to do so throughout the term of the Contract.

HSM20.20-21.1231

Special Provision

Replace the BUY AMERICA PROVISION with the following:

BUY AMERICA PROVISION. On projects using federal funds the Contractor shall ensure all iron, steel, manufactured products, and construction materials incorporated into the project are produced in the United States as required by 2 CFR Part 184 Buy America Preferences for Infrastructure Projects and 23 CFR §635.410, Buy America requirements.

The Contractor shall submit a completed Non-Domestic Minimal Use and De Minimis Register, Form 25D-60, prior to award of the contract. When the Contractor becomes aware of a change from or error in a previously submitted Form 25D-60, the Contractor shall submit an updated Form 25D-60.

The Contractor shall submit a certificate of compliance according to Subsection 106-1.05 for each item listed on the Material Certification List. The Engineer may authorize the use of materials based on a certificate of compliance and Form 25D-62 Certificate of Buy America Act Compliance. Materials incorporated into the project on the basis of a certificate of compliance may be tested at any time, whether in place or not, and if they do not conform to Contract specifications, they may be rejected and ordered removed under the Subsection 105-1.11.

Manufactured products that are not predominantly steel or iron, or a combination of both, or construction materials are not subject to Buy America provisions. Declare manufactured products on Form 25D-62 regardless of their exemption.

Non-domestic products in excess of the minimal use and/or the de minimis amounts shall be replaced at no expense to the State. Failure to comply may also subject the Contractor to default and debarment.

The supplier certifying Form 25D-62 may be the manufacturer, fabricator, vendor, or supplier; provided they have sufficient control and knowledge of the manufacturing process to accept responsibility and certify full and complete conformance with 23 CFR §635.410 and 2 CFR Part 184. The Prime Contractor shall also certify Form 25D-62. Provide additional certifications and backup documentation to signed Form 25D-62 when required by the Engineer. False statements may result in criminal penalties prescribed under AS 36.30.687 and Title 18 US Code Section 1001 and 1020.

The United States, Mexico, Canada Agreement (USMCA) does not apply to the Buy America requirement.

Buy America does not apply to construction materials, steel products, and iron products, brought temporarily to the construction site and removed at or before the completion of the project. Further, it does not apply to construction materials, steel products, and iron products which remain in place at the Contractor's convenience. Buy America does not apply to iron ore, pig iron, and processed, pelletized and reduced iron ore.

The following materials are exempt from Build America, Buy America requirements per Section 70917(c) of P. L. 117-58:

1. Cement and cementitious materials
2. Aggregates such as stone, sand, or gravel
3. Aggregate binding agents or additives

De Minimis amount:

Small amounts of non-domestic construction materials, are allowed provided the total value of the non-domestic products is no more than the lesser of $1,000,000 or 5% of total material costs for the project including freight to the project location.

The total material costs of the project include (Form 25D-60):

1. Predominantly Iron and Steel products
2. Construction Materials
3. Manufactured Products

Do not include the cost of materials exempted per Section 70917(c) of P. L. 117-58, earth materials, processed aggregates, asphalt, concrete, fuel, lubricant, equipment repair parts, etc. in the total material costs of the project.

PREDOMINANTLY STEEL OR IRON PRODUCTS. Products and materials where the cost of the iron and steel, or a combination of both, exceeds 50 percent of the total cost of all its components. The cost of iron and steel is the cost of the iron or steel mill products (such as bar, billet, slab, wire, plate, or sheet), castings, or forgings utilized in the manufacture of the product, or a good faith estimate of the cost of iron or steel components.

To be classified as domestic, all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

Iron and Steel minimal use:

All predominately steel and iron, or a combination of both, products incorporated into the work, shall be manufactured in the United States except that minor amounts of steel and iron products of foreign manufacture may be used, provided the aggregate cost of such does not exceed one tenth of one percent (0.001) of the total contract amount, or $2,500, whichever is greater. For the purposes of this paragraph, the cost is the value of the products as they are delivered to the project, including shipping.

CONSTRUCTION MATERIALS. The following list contains the categories of construction materials, and the requirements for domestic origin. Construction materials are an article, material, or supply that is:

1. **Non-ferrous metals**. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

2. **Plastic and Polymer-based products**. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

3. **Glass**. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

4. **Fiber Optic Cable**. All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.

5. **Optical Fiber**. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

6. **Lumber**. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.

7. **Drywall**. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

8. **Engineered Wood**. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

If one construction material contains as inputs other construction materials, it remains classified as a construction material for the purposes of this section. Minor additions of articles, materials, supplies, or binding agents to a construction material do not change the categorization of the construction material.

MANUFACTURED PRODUCTS. Articles, materials, or supplies that have been processed into a specific form and shape or combined with other articles, materials, or supplies to create a product with different properties than the individual articles, materials, or supplies.

If an item is classified as an iron or steel product, a construction material, or an exempted material per Section 70917(c) of P. L. 117-58 then it is not a manufactured product.

An article, material, or supply classified as a manufactured product may include components that are construction materials, iron or steel products, or an exempted material per Section 70917(c) of P. L. 117-58.

Replace Subsection 106-1.05 with the following:

106-1.05 CERTIFICATES OF COMPLIANCE. A certificate of compliance must meet one of the following:

1. If by manufacturer's certification, the certificate must include the project name and number, the signature of the manufacturer, and must include information that clearly demonstrates the material or assembly complies with all Contract requirements except for domestic preference.

2. If by Contractor's summary sheet, the summary sheet must include the project name and number, the signature of the contractor, and must include attached documentation that clearly demonstrates the material or assembly fully complies with all Contract requirements except for domestic preference.

Electronic submittals that are submitted by email from the Contractor's email account are considered signed by the Contractor.

The Contractor shall submit additional certificates of compliance or test data if required by the Contract or by the Engineer. The Engineer may refuse permission to incorporate materials or products into the project based on a certificate of compliance that does not meet the Contract requirements.

HSP20.7A-23.1114

SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Special Provisions

107-1.02 PERMITS, LICENSES, AND TAXES.

The Department will: Add No. 3:

3. The Department has received the following permits on the Contractor's behalf:

    a. TBD
    b. TBD

C107.4-17.1201-2

The Contractor shall:

Replace No. 1. with the following:

1. Acquire all permits and licenses required to complete the project that are not acquired by the Department.

    a. Complete all draft permits. Draft permits are included in Appendix _, when there are draft permits.

C107.2-21.0701

Add No. 10:

10. Provide a wetland specialist able to conduct wetlands determinations and delineations according to the Corps of Engineers 1987 Wetland Delineation Manual, and the Regional Supplement to the Corps of Engineers Wetland Delineations Manual (Alaska Region, Version 2.0, September 2007). The wetland specialist shall conduct the determination and delineations of sites outside the project limits or not previously permitted, impacted by the Contractor's operations. These delineations will be subject to Corps of Engineers approval.

C107.5-17.12011-1

107-1.07 ARCHAEOLOGICAL OR HISTORICAL DISCOVERIES.

Replace the 1st sentence including numbers 1, 2, and 3, with:

When operation encounters historic or prehistoric artifacts, burials, remains of dwelling sites, paleontological remains, (shell heaps, land or sea mammal bones or tusks, or other items of historical significance), cease operations immediately and notify the Engineer.

107-1.11 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE.

Add the following:

Non-municipal Water Source. If water is required for a construction purpose from a nonmunicipal water source, obtain a Temporary Water Use Permit from the Water Resource Manager, and provide a copy to the Engineer. The Water Resource Manager is with the Department of Natural Resources in Anchorage and may be contacted at (907) 269-8645.

C107.3-17.0515

107-1.13 RESPONSIBILITY FOR DAMAGE CLAIMS.

Replace the first paragraph with the following:

The Contractor shall indemnify, hold harmless, and defend the State of Alaska, and the Municipality of Anchorage and its agents and employees from any and all claims or actions for injuries or damages whatsoever sustained by any person or property that arise from or relate to, directly or indirectly, the Contractor's performance of the Contract; however, this provision has no effect if, but only if, the sole proximate cause of the injury or damage is the Department's negligence.

C107.7-C103.1-23.0401

SECTION 108
PROSECUTION AND PROGRESS

Standard Modification

108-1.01 SUBCONTRACTING OF CONTRACT.

In item 1g. replace AS 45.45.101(a) with AS 45.45.010(a).

In item 2f. replace AS 45.45.101(a) with AS 45.45.010(a).

HSM20.41-22.0101

Special Provision

Replace Subsection 108-1.01 1h. with the following:

1h. Other required items listed in Form 25D-042 are included in the subcontracts;

Replace Subsection 108-1.01 2g. with the following:

2g. Other required items listed in Form 25D-042, are included in the lower tier subcontracts;

C108.4-20.0101

Add the following Subsection 108-1.011 Related Sections:

108-1.011 RELATED SECTIONS.

Section 652, Prosecution and Progress – Supplemental Requirements

C108.3-16.0128-1

108-1.07 FAILURE TO COMPLETE ON TIME.

Replace Table 108-1 with the following:

Table 108-1
DAILY CHARGE FOR LIQUIDATED DAMAGES
FOR EACH CALENDAR DAY OF DELAY

Original Contract Amount		Daily Charge
From More Than	To and Including	
$ 0	1,000,000	$1,500
1,000,000	5,000,000	2,900
5,000,000	25,000,000	5,500
25,000,000	---------	6,900

HSM20.43A-24.0701-1

Special Provision

Add the following Subsection 108-1.10 Post Award Conference:

108-1.10 POST AWARD CONFERENCE. The post award conference is a public meeting held in the community of the project location. The Department will schedule the post award conference and notify the Contractor at least 7 days prior to the conference date. The Contractor shall attend the post award conference and present information together with the Department to the community. The conference will be scheduled in cooperation with the local community and other participants.

The post award conference will last approximately one hour. The Contractor shall present the following minimum information at the post award conference:

1. Overview of the project

2. Project timeline

3. Project impacts on the community

4. Project job numbers and types of employees

5. Contractor's employment opportunities and hiring process

The Department and DOLWD will also present information at the post award conference. The Contractor shall attend the entire meeting and participate in answering public questions raised during the post award conference.

All costs incurred by the Contractor to attend the post award conference are at the Contractor's expense. The Department is not liable for delays or rescheduling of the post award conference due to unforeseen circumstances.

HSP20.9-23.0310

SECTION 109
MEASUREMENT AND PAYMENT

Special Provision

109-1.01 GENERAL.

Replace the 2nd paragraph with the following:

When more than one type of material or work is specified for a pay item, the proposal line number, and the description are used to differentiate the material or work.

C109.4-20.0101

109-1.05 COMPENSATION FOR EXTRA WORK ON TIME AND MATERIALS BASIS.

Under Item 3. Equipment, Item a. add the following to the second paragraph:

The rental rate area adjustment factors for this project shall be as specified on the adjustment maps for the Alaska – South Region.

Provide a printed copy of the current EquipmentWatch rate sheet for each piece of equipment utilized on time and materials work.

C109.2-18.1101

Standard Modification

109-1.08 FINAL PAYMENT. Add the following after the fifth paragraph:

On federally funded projects, if DOLWD Wage and Hour Administration notifies the Department of a pending prevailing wage investigation, and that the investigation is preventing the closing out of the project, the Contractor may place the notified amount in escrow under Wage and Hour for the exclusive purpose of satisfying unpaid prevailing wages. Upon receipt of notice from Wage and Hour that the Contractor has satisfactorily transferred the necessary funds into escrow, the Department will proceed to issue final payment.

HSM20.3-20.1130-1

SECTION 120
DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

Standard Modification

120-1.01 DESCRIPTION.

In the first sentence of the second paragraph, delete “8.83 percent" and substitute the following: “9.39 percent”.

120-3.01 DETERMINATION OF COMPLIANCE.

2. Phase II – Award.

    a. Written DBE Commitment. Delete in its entirety and substitute the following: Complete Form 25A-326 for each DBE to be used on the project.

HSM20.21A-24.0415

DIVISION 200 — EARTHWORK

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SECTION 201
CLEARING AND GRUBBING

Special Provisions

201-3.01 GENERAL.

Add the following:

Perform the work necessary to preserve and/or restore land monuments and property corners from damage. Restore land monuments and/or property corners that are disturbed according to Section 642. An undisturbed area five feet in diameter may be left around existing monuments and property corners.

C201.3-13.0423

Add the following:

Clearing and grubbing is not permitted within the migratory bird window of May 1 to July 15; except as permitted by Federal, State and local laws when approved by the Engineer.

C201.1-14.0101

201-5.01 BASIS OF PAYMENT.

Add the following:

The work required to cut, de-limb, and stack timber for public removal is subsidiary to 201 Pay Items.

C201.2-14.0101

Add the following:

The work required to preserve and restore land monuments and property corners is subsidiary to 201 Pay Items.

C201.3-13.0423

SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provisions

202-1.01 DESCRIPTION.

Add the following:

Fugitive Materials: remove and dispose of fugitive materials from under guardrails, around luminaire bases, and as specified. Conduct a pre-construction inspection of the project area with the Engineer to determine the limits of the fugitive material removal and disposal work.

C202.4-20.0401

202-2.01 MATERIALS.

Add the following:

Fugitive Materials: including but not limited to organic matter (peat, roots, sticks, sod or other), muck, earth (where not part of surface material) rocks, gravel, sand, silts and debris (trash and similar) and as identified by the Engineer.

C202.4-20.0401

Replace Subsection 3.05 with the following:

202-3.05 REMOVAL OF PAVEMENT, SIDEWALKS, AND CURBS. In removing pavements, curbs, walks, driveways and similar structures, make all cuts clean, vertical, and true to designated lines where an abutting structure or a part of a structure is to be left in place.

Pavement materials, base course, sidewalks, curbs, gutters, etc., designated for removal may be placed in the embankment in accordance with 203-3.03 with written approval. Maximum allowed dimension of material is 6 inches.

Dispose of materials, not placed in the embankment, outside the right-of-way project limits according to Subsection 202-3.06.

C202.2-20.0401

Add the following Subsection 202-3.06 Salvage and Disposal of Construction and Demolition Materials:

202-3.06 SALVAGE AND DISPOSAL OF CONSTRUCTION AND DEMOLITION MATERIALS. Unless otherwise noted, remove, handle, salvage, transport, store, and dispose waste materials according to the Occupational, Safety, and Health Administration (OSHA), Environmental Protection Agency (EPA), Alaska Department of Environmental Conservation (ADEC), and other Federal, State and local government agency's statutes, rules and regulations.

Use disposal sites outside the project right-of-way limits unless directed otherwise, in writing, by the Engineer. Obtain written consent from the private or public property owner for such disposal and a waiver of all claims against the State for any damage to such land which may result, together with all permits required by law for such disposal. Furnish a copy of such permission, waiver of claims, and permits to the Engineer before commencing work. Grade disposal areas to drain.

C202.1-20.0401

Add the following Subsection 202-3.09 Removal of Fugitive Materials:

202-3.09 REMOVAL OF FUGITIVE MATERIALS. Remove fugitive materials from in front of, under, and for a width of 10 ft behind sections of guardrail, measured from the roadside face of guardrail, or as directed by the Engineer. Provide positive drainage away from the roadway. Slope edges of sand removal at 3:1 or flatter.

Clean around the base of a luminaire when the base falls within the 10 ft. The 10 ft width is measured from the roadside face of the guardrail toward the shoulder to the closest point of the luminaire base plate, or as directed by the Engineer. Remove fugitive materials from around the base to a level flush with surrounding ground - or as directed by the Engineer.

Remove disturbed materials in the same work shift the disturbance occurred. Do not reuse these materials within the project limits without the written approval of the Engineer.

Dispose of removed materials according to Subsection 202-3.06

C202.4-20.0401

202-4.01 METHOD OF MEASUREMENT.

Add the following:

Item 202.2023.____. Pavement planing measured by the square yard of the pavement planed.

C202.3-20.0401

Add the following:

Item 202.2013.____.Removing and disposing fugitive materials measured along the edge of the traveled way on the side of the road nearest the area of work by the linear foot.

C202.4-20.0401

Standard Modification

202-5.01 BASIS OF PAYMENT.

In the first paragraph, replace "and 22.0013.____." with the following: "and 202.0013.____."

In the fourth paragraph, replace "Items 020.0014.____" with the following: "Items 202.0014.____"

HSM20.4-20.1130-1

Add the following:

Acquiring waste disposal permits is subsidiary to 202 Pay Items.

C202.1-20.0401

Add the following:

Item 202.2023.____. At the Contract Unit Price - payment is full compensation for activities and equipment associated with pavement planing:

- removal of pavement from curbs, and gutters;
- mechanical sweepers, and power brooms used during the planing operation;
- stockpiling planed material when required.

Repair work and materials for thin and unstable pavement is subsidiary to HMA Pay Items.

Replace damaged loop detectors, piezoelectric sensors, RWIS, or other data sensors **outside the specified planing depth** according to the requirements of section 660 and 669 at no expense to the Department.

Replace damaged loop detectors, piezoelectric sensors, RWIS, or other data sensors **inside the specified planing depth** according to the requirements of section 660 and 669. Payment is in Section 660.

PAY ITEM		
Item Number	**Item Description**	**Unit**
202.2023.____	Pavement Planing	SY

C202.3-20.0401

Add the following:

PAY ITEM		
Item Number	**Item Description**	**Unit**
202.2013.____	Remove Fugitive Materials	LF

C202.4-20.0401

SECTION 203
EXCAVATION AND EMBANKMENT

Standard Modification

203-3.04 COMPACTION WITH MOISTURE AND DENSITY CONTROL.

In the second paragraph delete "and ATM 214".

HSM20.5-20.1130-1

Special Provision

Replace Section 204 with the following:

SECTION 205
EXCAVATION AND FILL FOR MAJOR STRUCTURES

Standard Modification

205-3.05 COMPACTION.

1. Compaction with Moisture and Density Control. 2nd paragraph delete: "and ATM 214".

HSM20.5-20.1130-1

DIVISION 300 — BASES

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SECTION 301
AGGREGATE BASE AND SURFACE COURSE

Special Provision

301-2.01 MATERIALS.

Add the following after the first sentence:

Recycled Asphalt Material (RAM) may be substituted for aggregate base course, inch for inch, if the following conditions are met:

1. RAM shall be crushed or processed to 100 percent by weight passing the 1.5-inch sieve and 95-100 percent by weight passing the 1-inch sieve.

2. The gradation of the extracted aggregate shall meet the following:

TABLE 301-2.01-1
EXTRACTED AGGREGATE GRADATION

Sieve	Percent Passing by Weight
1-inch	100
3/4-inch	70 – 100
3/8-inch	42 – 90
No. 4	28 – 78
No. 16	11 – 54
No. 50	5 – 34
No. 100	3 – 22
No. 200	2 - 12

3. The asphalt content shall be 2.5 – 5.0 percent by weight of the RAM.

C301.1-07.0124-1

301-3.01 PLACING.

Add the following:

Place base course material, used for the sidewalk and pathway foundations, with equipment capable of providing a specified depth and uniform surface.

C301.2-16.0621

Add No. 5 after the 5th paragraph:

5. within 50 feet of detector loops.

C301.3-15.0220

Standard Modification

301-3.03 SHAPING AND COMPACTION.

In the second paragraph delete "and ATM 214".

HSM20.5-20.1130-2

Add the following:

If recycled asphalt material is substituted for aggregate base course, the following conditions shall be met:

1. Density acceptance will be determined by control strip method ATM 412. Use a test strip with a vibratory compactor with a minimum dynamic force of 40,000 pounds. The optimum density will be determined by the Engineer using a nuclear densometer gauge to monitor the test strip. Adequate water shall be added to aid compaction.

2. After the appropriate coverage with the vibratory compactor, a minimum of 6 passes with a pneumatic tire roller shall be completed. Tires shall be inflated to 80 psi (± 5 psi) and the roller shall have a minimum operating weight per tire of 3,000 pounds.

301-5.01 BASIS OF PAYMENT.

Add the following:

Recycled asphalt material substituted for aggregate base course will be paid for as Item 301.0001.____ Aggregate Base Course, at the unit price shown in the bid schedule for that Item.

C301.1-07.0124-1

DIVISION 400 — ASPHALT PAVEMENTS AND SURFACE TREATMENTS

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Special Provision

Replace Section 401 with the following:

SECTION 401
HOT MIX ASPHALT PAVEMENT

401-1.01 DESCRIPTION. Construct one or more courses of plant-produced Hot Mix Asphalt (HMA) pavement on an approved surface, to the lines, grades, and depths shown on the Plans.

1. In this Section, HMA refers to Type I, II, III, and IV.

    a. Temporary Asphalt Pavement: HMA, Type II, Class B, minimum.
    b. Preleveling/Leveling Course: HMA, Type IV, Class B.

MATERIALS

401-2.01 ASPHALT BINDER. Conform to Subsection 702-2.01. If binder performance grade is not specified, use PG 52-28.

Provide test reports for each batch of asphalt binder showing conformance to the specifications in Section 702 before delivery to the project. Require that the storage tanks used for each batch be noted on the test report, the anti-strip additives required by the mix design be added during load out for delivery to the project, and a printed weight ticket for anti-strip is included with the asphalt binder weight ticket. The location where anti-strip is added may be changed with the written approval of the Engineer.

Furnish the following documents at delivery:
1. Manufacturer's certificate of compliance (Subsection 106-1.05).
2. Conformance test reports for the batch (provide prior to delivery as noted above).
3. Batch number and storage tanks used.
4. Date and time of load out for delivery.
5. Type, grade, temperature, and quantity of asphalt binder loaded.
6. Type and percent of liquid anti-strip added.

Asphalt binder may be conditionally accepted at the source if a manufacturer's certification of compliance is provided, according to Subsection 106-1.05, and the applicable requirements of Section 702 are met.

401-2.02 LIQUID ANTI-STRIP ADDITIVE. Use anti-strip agents in the proportions determined by ATM 414 and included in the approved Job Mix Design (JMD). At least 90% of the aggregate must remain coated when tested according to ATM 414. The following minimum dose (percent) of liquid anti-strip by weight of asphalt binder is required:

TABLE 401-2.02-1
MINIMUM DOSE OF LIQUID ANTI-STRIP BY WEIGHT OF ASPHALT BINDER

Liquid Anti-strip Type	Minimum Dose by Weight of Asphalt Binder, %
Amines based	0.30
Phosphate Ester based	0.30
Organ-Silane based	0.05

401-2.03 JOINT ADHESIVE. Conform to Subsection 702-2.05.

401-2.04 JOINT SEALANT. Conform to Subsection 702-2.06.

401-2.05 WARM MIX ASPHALT. Conform to Subsection 702-2.07.

401-2.06 ASPHALT RELEASE AGENT. Conform to Subsection 702-2.08.

401-2.07 AGGREGATES. Conform to Subsection 703-2.04. Use a minimum of three stockpiles of crushed aggregate (coarse, intermediate, and fine). Place blend material, if any, in a fourth pile.

401-2.08 RECYCLED ASPHALT PAVEMENT. Recycled asphalt pavement (RAP) may be used in the production of HMA. The RAP may be from pavements removed under the Contract, or from an existing stockpile. Conform to Subsection 703-2.16

401-2.09 JOB MIX DESIGN (JMD). Provide target values for gradation that satisfy both the broad band gradation limits shown in Table 703-4 and the requirements of Table 401-1, for the Type and Class of HMA specified.

TABLE 401-1
HMA MARSHALL DESIGN REQUIREMENTS

DESIGN PARAMETER	CLASS "A"	CLASS "B"
HMA (Including Asphalt Binder)		
Stability, Pounds	1800 Min.	1200 Min.
Flow, 0.01 Inch	8 – 14	8 - 16
Voids in Total Mix (VTM), %	3.0 – 5.0	3.0 – 5.0
Compaction, Number of Blows Each Side of Test Specimen	75	50
Asphalt Binder		
Voids Filled with Asphalt (VFA), %	65 - 75	65 - 78
Asphalt Content, Min. % @ 4% VTM	5.0	5.0
Dust-Asphalt Ratio*	0.6 - 1.4	0.6 - 1.4
Voids in the Mineral Aggregate (VMA), %, Min.		
Type I	12.0	11.0
Type II	13.0	12.0
Type III, IV	14.0	13.0
Liquid Anti-Strip Additive**,%, Min.	0.30	0.30
RAP, %, Max.	15.0	25.0

*Dust-Asphalt ratio is the percent of material passing the No. 200 sieve divided by the percent of effective asphalt binder (calculated by weight).
** By Weight of Asphalt Binder

The approved Job Mix Design (JMD) will specify the Target Values (TV) for gradation, the TV for asphalt binder content, the Maximum Specific Gravity (MSG) of the HMA, the additives, and the recommended mixing temperature range.

Submit the following to the Engineer at least 15 days before the production of HMA:

1. A letter stating the location, size, and type of mixing plant. The letter shall state whether or not WMA and/or RAP will be used. The letter shall include the proposed gradation for the JMD, gradations for individual stockpiles, and the blend ratio of each aggregate stockpile.

2. Representative samples of each aggregate (coarse, intermediate, fine, blend material and mineral filler, if any) in the proposed mix design. Furnish a total of 500 pounds of material in the proportional amounts in the proposed JMD.

3. Five separate 1-gallon samples of the asphalt binder proposed for use in the HMA. Include name of product, manufacturer, test results of the applicable quality requirements of Subsection 702-2.01, manufacturer's certificate of compliance according to Subsection 106-1.05, a temperature-viscosity curve for the asphalt binder or manufacturer's recommended mixing and compaction temperatures, and current Material Safety Data Sheet.

4. One sample, minimum 1/2 pint, of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current Material Safety Data Sheet.

5. Testing results per Subsection 106-1.03.1 for each aggregate type proposed for use.

6. If applicable, a letter stating the WMA technology (Subsection 702-2.07) to be used, location where additive will be introduced and manufacturer's recommended usage rate for each type of HMA. Supply a minimum of 2-pint samples for each proposed additive.

7. If applicable, representative samples of any RAP proposed for use. Furnish a minimum of 200-pound sample of proposed RAP.

The Engineer will evaluate the material and the proposed gradation using ATM 417 and the requirements of Table 401-1 for the appropriate Type and Class of HMA specified, and establish the approved JMD which will become a part of the Contract.

Anti-strip evaluation (ATM 414) of HMA mix designs that include RAP will be completed without the inclusion of the RAP.

Obtain an approved JMD prior to shipment of aggregates to an asphalt plant site or producing HMA for payment.

1. Contractor Mix Design. If a bid item for JMD appears in the contract, or if the Engineer approves a request from the Contractor to perform the JMD at no cost to the Department, provide a JMD following the requirements specified in this section. Submit the JMD to the Engineer at least 15 working days before HMA production. Submit samples to the Engineer upon request for JMD verification testing.

   All Contractor-furnished JMDs must be sealed by a professional Engineer registered in the State of Alaska. The Professional Engineer shall certify that the JMD was performed according to the specified procedures, and meets all project specifications.

2. Changes. Submit a new JMD with changes noted and new samples in the same manner as the original JMD submittal when:

   a. The results of the JMD evaluation do not achieve the requirements specified in Table 401-1
   b. The asphalt binder source is changed
   c. The source of aggregate, aggregate quality or gradation is changed
   d. The results of a Test Strip do not meet the requirements of the specification – the Engineer may require a new JMD.

Do not produce HMA for production paving and payment before the Engineer provides written approval of the JMD; the original, or a replacement JMD.

The Engineer has the option to require further verification of the JMD under 401-2.10 Process Quality Control. If a Test Strip(s) is required, do not produce HMA for production paving and payment before the Engineer provides written approval of the Test Strip construction, construction process, materials, and the JMD, Subsection 401-2.10.

Payment for HMA will not be made until the new JMD and the Test Strip, when required, is approved.

Approved changes apply only to HMA produced after the submittal of changes.

The Engineer will assess a fee for each mix design evaluation subsequent to the approved Job Mix Design, per Subsection 401-5.01.

401-2.10 PROCESS QUALITY CONTROL. Sample and test materials for quality control of the HMA according to Subsection 106-1.03. Submit to the Engineer at the "Pre-Paving Meeting," Subsection 401-3.01, the JMD and a documentation plan that provides a complete, accurate, and clear record of the sampling and testing results.

Failure to perform quality control forfeits the Contractor's right to a retest under Subsection 401-4.02

Provide copies of the documented sampling and testing results no more than 24 hours from the time taken.

Supplemental Process Quality Control:

The Engineer has the option to require supplemental process quality controls including additional sampling and testing. Include the supplemental process quality controls in the documentation plan.

When directed by the Engineer: provide “Density Profiles” and or “Test Strips”.

1. Density Profiles. Provide density profile testing, with a nuclear density gauge, of the mat and longitudinal joints. Include the frequency of the test groups, configuration of the test groups for mat density and joint density individually or combined. Indicate the number of tests in a test group intended to confirm the density of the mat and joints.

   Locations that may require testing include: all lanes on bridge decks, adjacent to longitudinal joints, areas where segregation is visible, thermal segregation potential exists, where mat density is lower than the minimum (considered segregated), and the paver starts/stops. The Engineer will identify these and other areas that require density testing.

2. Test Strips. Construct test strips (ATM 412) using the approved job mix HMA a minimum of 5 working days prior to planned production paving, except use the proposed JMD when the test strip is being constructed to help evaluate the JMD as part of the mix performance analysis. Submit a proposed test strip location to the Engineer for coordination, and approval; include in the process control documentation plan. The Engineer's approval and written authorization of the location, date, and time, is required before construction of a test strip.

   Establish roller patterns and the number of passes required to assure that proper placement and compaction is achieved. The test strip shall include no less than 300 tons and no more than 1000 tons, except as may be authorized, in writing, by the Engineer. The full complement of the paving train shall be on site to receive instructions from the Engineer as needed to complete the mix performance analysis. Make the equipment available for inspection as required by Subsection 401-3.04. Provide an onsite process control representative with authority to modify mix components as instructed by the Engineer.

   Failed Test Strip: the Engineer may direct the Contractor to remove and dispose of test strips not meeting specification requirements. Contractor, construct a new test strip or return the surface materials and grade to their original condition as directed by the Engineer.

   Only after the Engineer approves the test strip may HMA be produced for production paving and payment.

   Refer to Subsection 401-5.01 for payment of test strips.

CONSTRUCTION REQUIREMENTS

401-3.01 PRE-PAVING MEETING. Meet with the Engineer for a pre-paving meeting in the presence of the project superintendent and paving foreman at least (5) working days before beginning paving operations. Submit a paving plan and pavement inspection plan at the meeting. When directed, make adjustments to the plan and resubmit.

1. Paving Plan. Include the following:

   a. Sequence of operations

   b. List of equipment that will be used for production, transport, pick-up (if applicable), laydown, and compaction

   c. Summary of plant modifications (if applicable) for production of WMA

d. Procedures to produce consistent HMA
e. Procedures to minimize material and thermal segregation
f. Procedures to minimize premature cooling
g. Procedures to achieve HMA density
h. Procedures for joint construction including corrective action for joints that do not meet surface tolerance requirements
i. Quality control testing methods, frequencies and sample locations for gradation, asphalt binder content, and density, and
J. Any other information or procedures necessary to provide completed HMA construction that meets the Contract Requirements

2. Pavement Inspection Plan. Include the following:

a. Process for daily inspections
b. Means and methods to remove and dispose of project materials

401-3.02 CONTRACTOR QUALITY CONTROL. Perform quality control (QC) of HMA materials in accordance with Subsection 106-1.03.

401-3.03 WEATHER LIMITATIONS. Place HMA on a stable/non-yielding roadbed. Do not place HMA when the base material is wet or frozen, or when weather conditions prevent proper handling or finishing of the mix. Do not place HMA when the roadway surface temperature is colder than 40° F.

401-3.04 EQUIPMENT, GENERAL. Use equipment in good working order and free of HMA buildup. Make equipment available for inspection and demonstration of operation a minimum of 24 hours before placement of production HMA and test strip HMA.

401-3.05 ASPHALT MIXING PLANT. Meet AASHTO M 156. Use an HMA plant capable of producing at least 150 tons of HMA per hour noted on posted DEC air quality permit, designed to dry aggregates, maintain consistent and accurate temperature control, and accurately proportion asphalt binder and aggregates. Calibrate the HMA plant and furnish copies of the calibration data to the Engineer at least 24 hours before HMA production.

Provide a scalping screen at the asphalt plant to prevent oversize material or debris from being incorporated into the HMA.

Provide a tap on the asphalt binder supply line just before it enters the plant (after the 3-way valve) for sampling asphalt binder. Provide aggregate and asphalt binder sampling locations meeting OSHA safety requirements.

You may use belt conveyor scales to proportion plant blends and mixtures if the scales meet the general requirements for weighing equipment and are calibrated according to the manufacturer's instructions.

If WMA is approved by the Engineer, modify the mixing plant as required by the manufacturer and WMA additive manufacturer.

401-3.06 HAULING EQUIPMENT. Haul HMA in vehicles with tight, clean, and smooth metal beds. Keep beds free of petroleum oils, solvents, or other materials that will adversely affect the mixture. Apply a thin coat of approved asphalt release agent to beds as necessary to prevent mixture adherence.

Provide hauling vehicles with covers attached and available for use. When directed, cover the HMA in the hauling vehicle(s).

Do not haul HMA on barges.

401-3.07 ASPHALT PAVERS. Use self-propelled asphalt pavers with heated vibratory screed assemblies to spread and finish HMA to the specified section widths and thicknesses without introducing thermal or material segregation.

Equip the paver with a receiving hopper having sufficient capacity for a uniform spreading operation and a distribution system to place the HMA uniformly in front of screed. Use a screed assembly that produces a finished surface of the required smoothness, thickness, and texture without tearing, shoving, or displacing the HMA. Heat and vibrate screed extensions. Place auger extensions within 20 inches of the screed extensions or per written manufacturer's recommendations.

Equip the paver with a means of preventing segregation of the coarse aggregate particles from the remainder of the HMA when carried from the paver hopper back to the augers.

Equip the paver with automatic screed controls capable of operating from a reference line or a ski from either or both sides of the paver.

The use of a "Layton Box" or equivalent towed paver is allowed on bike paths, sidewalks, and driveways.

401-3.08 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Use rollers designed to compact HMA and capable of reversing without shoving or tearing the mixture. Select rollers that will not crush the aggregate or displace the HMA. Equip vibratory rollers with separate vibration and propulsion controls.

Equip the rollers with an infrared thermometer that measures and displays the surface temperature to the operator. Infrared thermometer may be hand-held or fixed to the roller.

Utilize a pneumatic roller in the complement of rollers to compact the leveling course. Use fully skirted pneumatic-tire roller having a minimum operating weight of 3000 pounds per tire.

401-3.09 RESERVED.

401-3.10 PREPARATION OF EXISTING SURFACE. Prepare existing surfaces according to the Contract. Prior to placing HMA, clean existing surfaces of loose material and uniformly coat contact surfaces of curbing, gutters, manholes and other structures with tack coat material meeting Section 402. Treat cold joint surfaces according to 401-3.17. Allow tack coat to break before placement of HMA on these surfaces. Do not apply the tack coat material until the Engineer approves the existing surface including, not limited to; the existing paved surface, the milled surface, and a prior layer of HMA pavement.

Before applying tack coat to an existing paved surface, clean and patch the surface. Remove irregularities to provide a reasonably smooth and uniform surface. Remove and replace unstable areas with HMA. Clean the edges of existing pavements, which are to be adjacent to new pavement, to permit the adhesion of asphalt materials. Clean loose material from cracks. Fill the cleaned cracks, wider than 1 inch, with HMA tamped in place. Wash and/or sweep the paved surface clean and free of loose materials.

Preparation of a milled surface:

1. Prelevel remaining ruts, pavement delaminations, and depressions having a depth greater than 1/2 inch with an approved HMA.

2. Notify the Engineer of pavement areas that appear thin or unstable. Where milling operation creates thin or unstable pavement areas, or where it breaks through existing pavement, remove thin and unstable pavement, and 2 inches of existing base material, compact and replace with an approved HMA.

401-3.11 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt binder to the asphalt mixing plant at a uniform temperature, within the recommended mixing temperature range.

401-3.12 PREPARATION OF AGGREGATES. Dry the aggregate so the moisture content of the HMA, sampled at the point of acceptance for asphalt binder content, does not exceed 0.5% (by total weight of mix), as determined by ATM 407.

Heat the aggregate for the HMA to a temperature compatible with the mix requirements specified.

Adjust the burner on the dryer to avoid damage to the aggregate and to prevent the presence of unburned fuel on the aggregate. HMA containing soot or fuel is unacceptable per Subsection 105-1.11.

401-3.13 MIXING. Combine the aggregate, asphalt binder, and additives in the mixer in the amounts required by the JMD. Mix to obtain at least 98% coated particles when tested according to AASHTO T195.

For batch plants, put the dry aggregate in motion before addition of asphalt binder.

Mix the HMA within the temperature range determined by the JMD.

Upon the Engineer's request, provide daily burner charts showing start/stop times and temperatures.

401-3.14 TEMPORARY STORAGE OF HMA. Silo type storage bins may be used, provided the characteristics of the HMA remain unaltered.

Signs of visible segregation, heat loss, changes from the JMD, change in the physical characteristics of asphalt binder, lumpiness, and stiffness of the mixture, are causes for rejection.

Do not store HMA on barges.

401-3.15 PLACING AND SPREADING. Use asphalt pavers to distribute HMA, including leveling course and temporary HMA. Place the HMA upon the approved surface, spread, strike off, and adjust surface irregularities. The maximum compacted lift thickness allowed is 3 inches.

During placement, the Engineer, using an infrared camera, may evaluate the HMA surface immediately behind the paver for temperature uniformity. Contractor, immediately adjust laydown procedure to maintain a temperature differential of 25^{o} F or less. Thermal images and thermal profile data will become part of the project record and shared with the Contractor.

When multiple lifts are specified in the Contract, do not place the final lift until all lower lifts throughout that section, are placed and accepted.

Do not place HMA abutting curb and gutter until curb and gutter are installed, except as approved by the Engineer. Do not pave against new concrete curbing and gutter until the concrete has cured for at least 72 hours.

When practicable, adjust elevation of metal fixtures before paving the final lift, so they will be between 1/4 and 1/2 inch below the top surface of the final lift. Metal fixtures include, but are not limited to manholes, valve boxes, monument cases, hand holes, and drains.

When the section of roadway being paved is open to traffic, pave adjacent traffic lanes to the same elevation within 24 hours. Place approved material against the outside pavement edge when the drop off exceeds 2 inches.

Use hand tools to spread, rake, and lute the HMA in areas where irregularities or unavoidable obstacles make mechanical spreading and finishing equipment impracticable.

Place HMA over bridge deck membranes according to Section 508 and the membrane manufacturer's recommendations.

Do not mix HMA produced from different plants for testing or paving.

401-3.16 COMPACTION. Compact the HMA by rolling thoroughly and uniformly. In areas not accessible to large rollers, compact with mechanical tampers or trench rollers.

Prevent indentation in the mat. Do not leave rollers or other equipment standing on HMA that has not sufficiently cooled.

The Lower Specification Limit for density is 92.0% of the Maximum Specific Gravity (MSG) as determined by ATM 409. A mat area with density lower than 92% MSG is considered segregated and not in conformance with the requirements of the Contract. The work is unacceptable according to Subsection 105-1.11 unless, the Engineer determines that reasonably acceptable work has been produced as permitted in Subsection 105-1.03.

The MSG from the approved JMD is used for the first lot of each type of HMA. The MSG for additional lots is determined from the first sublot of each lot.

401-3.17 JOINTS. Place and compact the HMA to provide a continuous bond, texture, and smoothness between adjacent sections of the HMA.

Minimize the number of joints. Do not construct longitudinal joints in the driving lanes unless approved by the Engineer in writing at the pre-paving meeting. Offset the longitudinal joints in one layer from the joint in the layer immediately below by at least 6 inches. Align the joints of the top layer at the centerline or lane lines. Where preformed marking tape striping is required, offset the longitudinal joint in the top layer not more than 6 inches from the edge of the stripe.

Form transverse joints by saw-cutting back on the previous run to expose the full depth of the layer or by using a removable bulkhead, or other approved method. Skew transverse joints 15 to 25 degrees.

For all joints below the top lift, uniformly coat joint surfaces with tack coat material meeting Section 402.

Uniformly coat the joint face of all top lift joints with a joint adhesive. Follow joint adhesive manufacturer's recommendations for temperatures and application method. Remove joint adhesive applied to the top of pavement surface. If infrared joint heaters are used and passing joint densities are achieved in each of the first three joint densities taken, then joint adhesive is not required.

The Lower Specification Limit for top lift longitudinal joint density is 91.0% of the MSG of the panel completing the joint. MSG will be determined according to ATM 409.

For top lift panels that have a longitudinal joint density less than 91.0% of the MSG in a sublot, seal the surface of the longitudinal joints with joint sealant within that sublot, or as directed. Apply joint sealant according to the manufacturer’s recommendations while the HMA is clean, free of moisture and prior to final traffic marking. Place the sealant at a maximum application rate of 0.15 gallons per square yard, and at least 12 inches wide centered on the longitudinal joint. After surface sealing, inlay by grinding pavement striping into the sealed HMA. Use grooving equipment that grinds a dry cut to groove the width, length, and thickness of the striping within the specified striping tolerances.

Correct improperly formed joints that result in surface irregularities according to a corrective action plan.

Complete all hot lapped joints while the mat temperature is over 230°F as measured by the Engineer, within 3 inches of the joint. Tack coat and joint adhesive are not required for hot lapped joints. Hot lapped joints will receive the full Longitudinal Joint Density Price Adjustment incentive without testing for joint density.

Top lift longitudinal joints will be evaluated for acceptance according to Subsection 401-4.03

401-3.18 SURFACE REQUIREMENTS AND TOLERANCE. The finished surface of all HMA paving must match dimensions shown in the contract for horizontal alignment and width, profile grade and elevation, crown slope, and pavement thickness. Water must drain across the pavement surface without ponding. The surface must have a uniform texture, without ridges, puddles, humps, depressions, and roller marks. The surface must not exhibit raveling, cracking, tearing, asphalt bleeding, or aggregate segregation. Leave no foreign material, uncoated aggregate, or oversize aggregate on the HMA surface.

The Engineer will test the finished surface after final rolling at selected locations using a 10-foot straightedge. The Engineer will identify pavement areas that deviate more than 3/16 inch from the straightedge, including joints, as defective work. Perform corrective work by removing and replacing, grinding, cold milling or infrared heating such areas as required. Do not surface patch. After the Contractor performs corrective work, the Engineer will retest the area.

The Engineer will use an inertial profiler to measure the top lift HMA surface in the driving lanes for surface smoothness within 21 days after paving is complete and driving lanes are delineated.

Profiler measurements will not be taken in turn lanes, ramps, lane transitions, or within 25 feet of bridge abutments and transverse joints with pre-existing pavement.

The Engineer will measure the pavement smoothness in both wheel paths of each lane. The smoothness is measured as International Roughness Index (IRI), reported as inches/mile, at 0.1-mile increments. Pavement smoothness is the average of all IRI measurements for the project.

The Engineer will identify areas requiring corrective action in accordance with Table 401-4. Perform full-width corrective action in those areas. The Engineer may waive corrective work for localized roughness for deficiencies resulting from manholes or other similar appurtenances near the wheel path.

Perform Corrective Actions according to one of the following or by a method approved by the Engineer:

1. Diamond Grinding. If the required pavement thickness is not decreased by more than 1/4-inch, grind to the required surface tolerance and cross section. Remove and dispose of all waste materials. Apply joint sealant and sand to exposed aggregates per the manufacturer's recommendations.

2. Overlaying. Mill or sawcut the existing pavement to provide a vertical transverse joint face to match the overlay to the existing pavement. Apply tack coat on the milled surface and joint adhesive to all vertical joints and overlay the full width of the underlying pavement surface. Use the same approved HMA for overlays. Place a minimum overlay thickness of 2.0 inches.

3. Mill and Fill. Mill the existing pavement to provide a vertical transverse joint face. Apply tack coat to the milled surface and joint adhesive to all vertical joints prior to inlaying new HMA to match the existing pavement. Use the same approved HMA. Place a minimum thickness of 2.0 inches.

After completion of corrective work, the Engineer will measure the pavement surface with an inertial profiler for a smoothness price adjustment.

Price adjustments for pavement smoothness will be calculated according to Subsection 401-4.03.3.

401-3.18 SURFACE REQUIREMENTS AND TOLERANCE. The finished surface of all HMA paving must match dimensions shown in the Contract for horizontal alignment and width, profile grade and elevation, crown slope, and pavement thickness. Water must drain across the pavement surface without ponding. The surface must have a uniform texture, without ridges, puddles, humps, depressions, and roller marks. The surface must not exhibit raveling, cracking, tearing, asphalt bleeding, or aggregate segregation. Leave no foreign material, uncoated aggregate, or oversize aggregate on the HMA surface.

The Engineer will test the finished surface after final rolling at selected locations using a 10-foot straightedge. The Engineer will identify pavement areas that deviate more than 3/16-inch from the straightedge, including joints, as defective work. Perform corrective work by removing and replacing, grinding, cold milling or infrared heating such areas as required. Do not surface patch. After the Contractor performs corrective work, the Engineer will retest the area.

Perform corrective Actions according to one of the following or by a method approved by the Engineer:

1. Diamond Grinding. If the required pavement thickness is not decreased by more the 1/4-inch grind to the required surface tolerance and cross section. Remove and dispose of all waste materials. Apply joint sealant and sand to exposed aggregates per the manufacturer's recommendations.

2. Overlaying. Mill or sawcut the existing pavement to provide a vertical transverse joint face to match the overlay to the existing pavement. Apply tack coat on the mill surface and joint adhesive to all vertical joints and overlay the full width of the underlying pavement surface. Use the same approved HMA for overlays. Place a minimum overlay thickness of 2.0-inches.

3. Mill and Fill. Mill the existing pavement to provide a vertical transverse joint face. Apply tack coat to the milled surface and joint adhesive to all vertical joints prior to inlaying new HMA to match the existing pavement. Use the same approved HMA. Place a minimum thickness of 2.0-inches.

401-3.19 REPAIRING DEFECTIVE AREAS. Remove HMA that is contaminated with foreign material, is segregated (determined visually or by testing), flushing, or bleeding asphalt. Remove and dispose defective HMA for the full thickness of the course. Cut the pavement so that edges are vertical and the sides are parallel to the direction of traffic. Coat edges with a tack coat according to Section 402. Place and compact fresh HMA so that compaction, grade, and smoothness requirements are met.

401-3.20 ROADWAY MAINTENANCE. Inspect daily according to pavement inspection plan. Remove, and dispose of project materials incorrectly deposited on existing and new pavement surfaces(s) inside and outside the project area including haul routes.

The Contractor is responsible for damage caused by not removing these materials and any damage to the roadway from the removal method(s).

Repair damage to the existing roadway that results from fugitive materials or their removal.

401-4.01 METHOD OF MEASUREMENT. Section 109 and the following:

1. Hot Mix Asphalt.

   a. By weight. No deduction is made for the weight of asphalt binder or anti stripping additive or cutting back joints. When the Engineer approves the use of WMA, WMA additives will not be measured and are considered subsidiary to the HMA pay item.

   b. By the final HMA surface area.

2. Asphalt Binder. By weight, as follows:

   Method 1 will be used to determine asphalt binder quantity unless otherwise directed in writing. The procedure initially used will be the one used for the duration of the project. No payment is made for any asphalt binder more than 0.4% above the optimum asphalt binder content specified in the JMD.

   Method 1: Percent of asphalt binder for each sublot multiplied by the total HMA weight represented by that sublot. The Engineer will use either ATM 405 or ATM 406 to determine the percent of asphalt binder. The same test method used for the acceptance testing of the sublot will be used for computation of the asphalt binder quantity. In the absence of testing, the percent of asphalt binder is the target value for asphalt binder in the JMD.

   Method 2: Supplier's invoices minus waste, diversion, and remnant. This procedure is an Engineer’s option for projects where deliveries are made in tankers and the asphalt plant is producing HMA for one project only.

   The Engineer may direct, at any time that tankers are weighed in the Engineer’s presence before and after unloading. If the weight determined at the project varies more than 1% from the invoice amount, payment is based on the weight determined at the project.

Any remnant or diversion will be calculated based on tank stickings or weighing the remaining asphalt binder. The Engineer will determine the method. The weight of asphalt binder in waste HMA is calculated using the target value for asphalt binder as specified in the JMD.

3. Job Mix Design. When specified, a Contractor furnished JMD is measured as one according to the HMA class and type.

4. Temporary Pavement. By weight, without deduction for the weight of asphalt binder or anti-strip additive.

5. Leveling Course. By Lane-Station (12 foot width) or by weighing without deduction for the weight of asphalt binder or anti-strip additive.

6. HMA Price Adjustment. Calculated by quality level analysis under Subsection 401-4.03.1.

7. Longitudinal Joint Density Price Adjustment. By the linear foot of top lift longitudinal joint under Subsection 401-4.03.2.

8. Joint Adhesive. By the linear foot of longitudinal and transverse joint.

9. Pavement Smoothness Price Adjustment. Calculated from inertial profiler data using FHWA's ProVAL software under Subsection 401-4.03.3.

10. Asphalt Material Price Adjustment. Determined under Subsection 401-4.04.

11. Liquid Anti-Strip Additive. Based on the number of tons of asphalt binder containing required additive.

12. Crack Repair. From end to end of the crack repaired according to 401-3.10, measured horizontally along the centerline of the crack.

13. Prelevel for Ruts, Delaminations, and Depressions. By the surface area where prelevel is placed according to 401-3.10(1), measured according to Section 109.

14. Repair Unstable Pavement. By the surface area of pavement repaired according to 401-3.10(2), measured according to Section 109.

15. Asphalt Binder Price Adjustment. Determined under Subsection 401-4.03.4.

401-4.02 ACCEPTANCE SAMPLING AND TESTING.

1. Hot Mix Asphalt

The bid quantity of each type of HMA produced and placed is divided into lots and the lots evaluated individually for acceptance.

A lot is normally 5,000 tons. The lot is divided into sublots of 500 tons, each randomly sampled and tested for asphalt binder content, density, and gradation according to this Subsection. The lot is evaluated for price adjustment according to Subsection 401-4.03.1. Seasonal startup or a new JMD requires starting a new lot.

If less than 8 sublots have been placed at the time a lot is terminated, the material in the shortened lot will be included as part of the prior lot. The price adjustment computed for the prior lot will include the samples from the shortened lot. Density test results from material in the shortened lot will be based on the MSG of the first sublot of the shortened lot. If there is no prior lot, and there are at least 3 sublots, the material in the shortened lot will be considered as a lot and the price adjustment will be based on the actual number of test results in the shortened lot. If there are less than 3 sublots, the HMA will be accepted for payment based on the Engineer's approval of the JMD, and placement and compaction of the HMA to the specified depth, finished surface requirements, and tolerances.

If 8 or 9 sublots have been placed at the time a lot is terminated, they will be considered as a lot and the price adjustment will be based on the actual number of test results in the shortened lot.

If the bid quantity is between 1,500 to 5,000 tons, the quantity is considered one lot. The lot is divided into sublots of 500 tons, each randomly sampled and tested for asphalt binder content, density, and gradation according to this Subsection.

For bid quantity less than 1,500 tons, HMA will be accepted for payment based on the Engineer's approval of the JMD, and placement and compaction of the HMA to the specified depth, finished surface requirements, and tolerances.

The Engineer reserves the right to perform any testing required in order to determine acceptance.

a. Asphalt Binder Content. HMA samples shall be taken randomly by the Contractor in the presence of the Engineer from behind the paver screed before initial compaction, or will be taken randomly by the Engineer from the windrow, according to ATM 402 or ATM 403, at the discretion of the Engineer. The location (behind the paver screed or windrow) will be determined at the pre-paving meeting. The Engineer will determine random sampling locations.

   Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. At the discretion of the Engineer, Asphalt binder content will be determined according to ATM 405 or ATM 406.

b. Aggregate Gradation. Aggregates tested for gradation acceptance will have the full tolerances from Table 401-2 applied.

   (1). Drum Mix Plants. Samples will be taken from the combined aggregate cold feed conveyor via a diverter device, from the stopped conveyor belt or from the same location as samples for determination of asphalt binder content, at the discretion of the Engineer. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. The aggregate gradation for samples from the conveyer system will be determined according to ATM 304. For HMA samples, the gradation will be determined according to ATM 408 from the aggregate remaining after the ignition oven (ATM 406) has burned off the asphalt binder. Locate diverter devices for obtaining aggregate samples from drum mix plants on the conveyor system delivering combined aggregates into the drum. Divert aggregate from the full width of the conveyor system and maintain the diverter device to provide a representative sample of aggregate incorporated into the HMA.

   (2) Batch Plants. Samples will be taken from dry batched aggregates according to ATM 301 or from the same location as samples for determination of asphalt binder content, at the discretion of the Engineer. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. The aggregate gradation for dry batch samples will be determined according to ATM 304. For HMA samples, the gradation will be determined according to ATM 408 from the aggregate remaining after the ignition oven (ATM 406) has burned off the asphalt binder.

c. Density. The Engineer will determine and mark the location(s) where the Contractor takes each core sample.

   (1) Mat Cores: The location(s) for taking core samples is determined using a set of random numbers (independent of asphalt binder and aggregate sampling set of random numbers) and the Engineer's judgment. Take no mat cores within 1 foot of a joint or edge. Core samples are not taken on bridge decks.

   (2) Longitudinal Joint Cores: The Engineer will mark the location(s) to take the core sample, centered on the visible surface joint, and adjacent to the mat core sample taken in the panel completing the joint.

Take core samples according to ATM 413 in the presence of the Engineer. Cut full depth core samples, centered on the marks and as noted above, from the finished HMA within 24 hours after final rolling. Neatly core drill one six-inch diameter sample at each marked location. Use a core extractor to remove the core - do not damage the core. The Engineer will immediately take possession of the samples. Backfill and compact voids left by coring with new HMA within 24 hours, and according to ATM 413. The Engineer will determine density of samples according to ATM 410.

d. Asphalt binder Content, Aggregate Gradation, and Density - Retest. When test results have failed to meet specifications, retest of acceptance test results for asphalt binder content, gradation, and density may be requested provided the quality control requirements of Subsection 401-3.02 Contractor Quality Control are met. Deliver this request in writing to the Engineer within 7 days of receipt of the final test of the lot. The Engineer will mark the sample location for the density retest within a 2-foot radius of the original core. The original test results are discarded and the retest result is used in the price adjustment calculation regardless of whether the retest result gives a higher or lower pay factor. Only one retest per sample is allowed. When gradation and asphalt binder content are determined from the same sample, a request for a retest of either gradation or asphalt binder content results in a retest of both. Both gradation and asphalt binder content retest results are used in the price adjustment calculation. Except for the first lot, retesting for gradation or asphalt binder from the first sublot of a lot will include retesting for the MSG. Retesting will be performed by a Department laboratory.

2. Asphalt Binder

The bid quantity of asphalt binder produced and placed is divided into lots and the lots evaluated individually for binder grade acceptance.

Testing will be by AASHTO accredited independent laboratories. When retesting is requested, the assigned value (ATV) will be determined using ASTM D3244. Each test will be completed by a different laboratory.

a. Acceptance Test. The lot size for asphalt binder is 200 tons. If a project has more than one lot and the remaining asphalt binder quantity is less than 150 tons, it is added to the previous lot and that total quantity will be evaluated as one lot. If the remaining asphalt binder quantity is 150 tons or greater, it is sampled, tested and evaluated as a separate lot.

If the bid quantity of asphalt binder is between 85 to 200 tons, the quantity is considered as one lot and sampled, tested, and evaluated according to this subsection. Quantities of asphalt binder less than 85 tons will be accepted based on manufacturer’s certified test reports and certification of compliance.

Sample asphalt binder at the plant from the supply line in the presence of the Engineer according to ATM 401. The Engineer will take immediate possession of the samples. Take three samples from each lot, one for acceptance testing, one for Contractor requested retesting, and one held in reserve for referee testing if requested. Meet Subsection 702-2.01 requirements for asphalt binder quality.

b. Retest. Submit a written request, for a retest, no more than 7 days from receiving notice of the failed acceptance test. In the request, identify the retest laboratory. The Engineer will send the second sample (retest sample) to the laboratory. Provide the retest results to the Engineer. Contractor pays for the retest costs.

If the average of the combined test results ([acceptance + retest]/2) passes the specification requirement, the average value becomes the ATV. If this ATV fails the specification requirement, the Engineer or Contractor may request the third sample (referee sample) be tested.

c. Referee Test. The Engineer will send the third sample (referee sample) to an agreed upon laboratory. The average of the combined test results ([acceptance + retest + referee]/3) equals the ATV. If the ATV fails to meet specifications, the Contractor pays for the referee test.

401-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. The Engineer may reject material which appears to be defective based on visual inspection. If a test of rejected material is requested, a minimum of two samples are collected from the rejected material and tested. If all test results are within specification limits, payment for the material is made.

The following methods are applied to each type of HMA with Price Adjustment Pay Items in the Contract. These methods describe how price adjustments are determined based on the quality of the HMA binder longitudinal joint density and pavement smoothness.

1. HMA Price Adjustment. Acceptance test results for HMA asphalt binder content, gradation and mat density are used in HMA price adjustment. These test results for a lot are analyzed collectively and statistically by the Quality Level Analysis (QLA) method as specified in Subsection 106-1.03.3 to determine the total estimated percentage of the lot that is within specification limits. The values for percent passing the #200 sieve, asphalt binder content and density test results are reported to the nearest 0.1 percent. All other sieves used in QLA are reported to the nearest whole number.

   The HMA price adjustment is based on the lower of two pay factors. The first factor is a composite pay factor (CPF) for HMA that includes gradation and asphalt binder content. The second is the density pay factor (DPF).

   A lot containing material with less than a 1.000 pay factor is accepted at an adjusted price, provided that pay factor is at least 0.800 and there are no isolated defects identified by the Engineer. A lot containing material that fails to obtain the minimum pay factor is considered unacceptable and rejected under Subsection 105-1.11.

   HMA pay factors are computed as follows:

   a. All statistical Quality Level Analysis (QLA) is computed using the Engineer's Price Adjustment programs.

   b. The USL and LSL are equal to the Target Value (TV) plus and minus the allowable tolerances in Table 401-2, or as shown below. The TV is the specification value shown in the approved Job Mix Design.

TABLE 401-2
HMA LOWER SPECIFICATION LIMIT (LSL) & UPPER SPECIFICATION LIMIT (USL)

Measured Characteristics	LSL	USL
3/4-inch or largest sieve size	99	100
1/2-inch sieve or first sieve retaining aggregate	TV -6	TV +6
3/8-inch sieve	TV -6	TV +6
No. 4 sieve	TV -6	TV +6
No. 8 sieve	TV -6	TV +6
No. 16 sieve	TV -5	TV +5
No. 30 sieve	TV -4	TV +4
No. 50 sieve	TV -4	TV +4
No. 100 sieve	TV -3	TV +3
No. 200 sieve*	TV -2.0	TV +2.0
Asphalt Binder Content, %	TV -0.4	TV +0.4
Mat Density, %	92.0	100.0

*LSL for the No. 200 sieve is restricted by the broadband limits in Table 703-4.

c. The percent within limits (PWL), Quality Levels and characteristic pay factors (PFs) are determined by the Engineer for each Lot in accordance with Subsection 106-1.03.3. The Composite Pay Factor (CPF) for the lot is determined from gradation and asphalt binder content (ac) acceptance test results using the following example formula:

$$CPF = \frac{[f_{3/4\ inch}\ (PF_{3/4\ inch}) + f_{1/2\ inch}\ (PF_{1/2\ inch}) + \ldots f_{ac}\ (PF_{ac})]}{\Sigma f}$$

Table 401-3 gives the weight factor (f) for each test property considered.

TABLE 401-3
WEIGHT FACTORS

Property	Type I Factor "f"	Type II Factor "f"	Type III Factor "f"
1-inch sieve	4	-	-
3/4-inch sieve	4	4	-
1/2-inch sieve	4	5	4
3/8-inch sieve	4	5	5
No. 4 sieve	4	4	5
No. 8 sieve	4	4	5
No. 16 sieve	4	4	5
No. 30 sieve	4	5	6
No. 50 sieve	4	5	6
No. 100 sieve	4	4	4
No. 200 sieve*	20	20	20
Asphalt Content, %	40	40	40

The Density Pay Factor (DPF) is computed using HMA mat core compaction acceptance test results.

The CPF and DPF are rounded to the nearest 0.001. The price adjustment for each individual lot is calculated as follows:

HMA Price Adjustment = [(Lowest Pay Factor)* -1.000] x (tons in lot) x (PAB)

* Lowest Pay Factor, CPF or DPF

PAB = Price Adjustment Base = $110.00 per ton.

2. Longitudinal Joint Density Price Adjustment. Longitudinal joint density price adjustment will be based on the project average of all top lift cold joint densities and determined as follows:

a. Disincentive. Project average top lift joint density less than 91.0% MSG:
Deduct $3.00 per lineal foot.

b. Incentive. Project average top lift joint density greater than:

92.0% MSG. Add $0.50 per lineal foot
93.0% MSG. Add $1.00 per lineal foot
94.0% MSG. Add $1.50 per lineal foot

3. Pavement Smoothness Price Adjustment. Pavement smoothness will be measured by the Engineer and reported as IRI (inches/mile), according to Subsection 401-3.18. Incentive for pavement smoothness shall apply only if both the project average CPF and DPF are greater than or equal to 1.000. Disincentive for pavement smoothness shall apply regardless of the project average CPF or DPF.

   The Engineer will calculate the pavement smoothness price adjustment according to Method 1 (pavement placed over graded subgrade), or Method 2 (pavement placed over existing pavement), whichever applies to the majority of the project. The SF is rounded to the nearest 0.001.

   Method 1: SPA = PAB x PQ x SF,
   where:

   SPA = Pavement Smoothness Price Adjustment

   PAB = $110.00 per ton,

   PQ = Top layer HMA quantity, tons

   SF = Smoothness Factor (Table 401-4)

TABLE 401-4
SMOOTHNESS FACTOR (SF)

IRI (in./mile)	SF
Less than 40.0	0.050
40.0 to 70.0	0.050 – (IRI – 40.0)/600.0
70.0 to 90.0	0.000
90.0 to 120.0	(90.0 – IRI)/120.0
Greater than 120.0*	-

* Corrective Work required, see Subsection 401-3.18

   Method 2: SPA = PAB x PQ x SF,

   where:

   SPA = Pavement Smoothness Price Adjustment

   PAB = $110.00 per ton,

   PQ = Top layer HMA quantity, tons

   SF = Smoothness Factor = 0.120 x RR – 0.020; SF not to exceed 0.050

   RR = Roughness Reduction = (Initial IRI – Final IRI) / Initial IRI

   Initial IRI = Pre-project average IRI as measured and reported by the Engineer. The Initial IRI will either be included in the bid documents or the timeline for when the Initial IRI will be measured will be identified in the bid documents.

   Final IRI = Top layer HMA average IRI as measured and reported by the Engineer according to Subsection 401-3.18.

3. Pavement Smoothness Price Adjustment. Not applicable to this project.

4. Asphalt Binder Price Adjustment. A lot quantity of asphalt binder, with a pay factor less than 1.00, is accepted or rejected per Table 401-4.03-1 Asphalt Binder Pay Factors.

TABLE 401-4.03-1
ASPHALT BINDER PAY FACTORS

Pay Factor			1.01	1.00	0.95	0.90	0.75	Reject
RTFO (Rolling Thin Film Oven)								
DSR[a.1]	All Grades	G*/Sinδ, kPa^{-1}	≥ 2.69	2.68–2.20	2.19–1.96	1.95–1.43	1.42–1.10	< 1.10
MSCR[a.2]	PG 52-40 E	$J_{NR\ 3.2}$	≤ 0.39	0.40–0.50	0.51–0.59	0.60–0.69	0.70–1.00	> 1.00
		% $Rec_{3.2}$	≥ 86.0	85.9–75.0	74.9–68.0	67.9–60.0	59.9–55.0	< 55.0
	PG 58-34 E	$J_{NR\ 3.2}$	≤ 0.19	0.20–0.25	0.26–0.29	0.30–0.39	0.40–0.50	> 0.50
		% $Rec_{3.2}$	≥ 90.0	89.9–85.0	84.9–80.0	79.9–75.0	74.9–70.0	< 70.0
	PG 64-40 E	$J_{NR\ 3.2}$	< 0.05	0.05–0.10	0.11–0.15	0.16–0.20	0.21–0.25	> 0.25
		% $Rec_{3.2}$	≥ 97.0	96.9–95.0	94.9–91.0	90.9–85.0	84.9 – 80.0	< 80.0
PAV (Pressurized Aging Vessel)								
DS[a.3]	PG 64-40 E & All Other Grades	G*Sinδ, kPa	≤ 4711	4712–5000	5001–5289	5290–5578	5579–5867	> 5867
	PG 52-40 E, PG 58-34 E	G*Sinδ, kPa	≤ 5700	5701–6000	6001–6300	6301–6600	6601 – 7000	> 7000
CS[a.4 & 5]	All Grades[a.4]	BBR, *S*, MPa	≤ 247	248–300	301–338	339–388	389–449	≥ 450
	All Grades[a.5]	BBR, *m*	≥ 0.320	0.319–0.300	0.299–0.294	0.293–0.278	0.277–0.261	< 0.261

Creep Stiffness (CS) Dynamic Shear (DS) Multiple Stress Creep Recovery (MSCR)

a. Asphalt Binder Pay Adjustment = (Lowest Pay Factor – 1.00)* x (tons in lot) x PAB x 5

*Select the lowest pay factor from:

RTFO (test the binder residue at the performance grade temperature)
(1) DS, All Grades, G*/Sinδ, kPa^{-1}
(2) MSCR: PG, Select the highest pay factor corresponding to, either $J_{NR\ 3.2}$ or % $Rec_{3.2}$ values

PAV
(3) DS, PG, G*Sinδ, kPa
(4) CS, All Grades, BBR, *S* MPa
(5) CS, All Grades, BBR, *m*

b. If three consecutive acceptance samples are out of specification, stop HMA production immediately and submit a corrective action plan to the Engineer for approval.

401-4.04 ASPHALT MATERIAL PRICE ADJUSTMENT. This subsection provides a price adjustment for asphalt material by: (1) additional compensation to the contractor or (2) a deduction from the contract amount.

1. This provision shall apply:

a. To asphalt material meeting the criteria of Subsection 702-2.01 Asphalt Binder, and is included in items listed in the bid schedule of Sections 306, 307, 308, 318, 401 thru 405, 408, 520, 608 and 609.

b. To cost changes in asphalt material that occur between the date of bid opening and the date on the certified bill of lading from the asphalt material refiner/producer.

c. When there is more than a seven and one half percent (7.5%) increase or decrease in the Alaska Asphalt Material Price Index, AAMPI, from the date of bid opening to the date on the certified bill of lading from the asphalt refiner/producer.

2. Provide the certified bill of lading from the asphalt material refiner/producer.

3. The AAMPI is calculated bimonthly on the first and third Friday of each month, and will remain in effect from the day of calculation until the next bimonthly calculation. The AAMPI is posted on the Department's Statewide Materials website at and calculated according to the formula posted there. http://www.dot.state.ak.us/stwddes/desmaterials/aprice_index.shtml

4. Price adjustment will be cumulative and calculated with each progress payment. Use the AAMPI in effect on the date of the certified bill of lading from the asphalt material refiner/producer, to calculate the price adjustment for asphalt material. The Department will increase or decrease payment under this contract by the amount determined with the following asphalt material price adjustment formula:

   For an increase exceeding 7.5%, additional compensation = [(IPP – IB) – (0.075 x IB)] x Q

   For a decrease exceeding 7.5%, deduction from contract = [(IB – IPP) – (0.075 x IB)] x Q

   Where:

   Q = Quantity of Asphalt Material incorporated into project, in tons as measured by the Engineer

   IB = Index at Bid: the Bi-monthly AAMPI in effect on date of bid, in dollars per ton

   IPP = Index at Pay Period: The bi-monthly AAMPI in effect on the date shown on the certified bill of lading from the asphalt refiner/producer, in dollars per ton

5. Method of measurement for determining Q (quantity) is the weight of asphalt material that meets the criteria of this subsection and is incorporated into the project. The quantity does not include aggregate, mineral filler, blotter material, thinning agents added after material qualification, or water for emulsified asphalt. The quantity for emulsified asphalts will be based on the asphalt residue material only and will be calculated using the percent residue from testing, or if not tested, from the manufacturer's certificate of compliance.

401-5.01 BASIS OF PAYMENT. The following items, unless included as individual Pay Items, are subsidiary to the Section 401 Hot Mix Asphalt Pavement related Pay Items as included in the bid schedule:

- Asphalt binder
- Liquid anti-strip additives
- Tack coat
- Crack sealing
- Crack repair
- Joint adhesive
- Surface sealing of longitudinal joints
- Surface tolerance corrections
- Repairing defective areas
- Prelevel for ruts, delaminations, and depressions
- Repair unstable pavement
- Job mix design
- Density profiles, Subsection 401-2.10 Process Quality Control
- Repair work and materials when planing equipment breaks through existing pavement – Subsection 401-3.10 Preparation of Existing Surface
- Work and materials associated with Subsection 401-3.06 Hauling Equipment
- Work and materials associated with Subsection 401-3.20 Roadway Maintenance

Test Strips: Subsection 401-2.10 Process Quality Control.

1. Approved. Test strip construction and material, approved by the Engineer in writing, as meeting the specification requirements will be paid for at the Contract unit prices for HMA and asphalt binder as included in the Bid Schedule. Price adjustments 401.0008.____, 401.0009.____, 401.0010.____ and 401.2021.____ do not apply.

2. Failed. The materials, construction of, removal and disposal of a failed test strip is at the Contractor's expense.

Pay Item 401.0005.____. HMA, Temporary, Type __; Class __. Removal and disposal of temporary HMA is subsidiary.

Pay Item 401.0008.____. HMA Price Adjustment, Type __; Class__. The sum of the price adjustments for each material lot, and for deductions and fees assessed. Deductions and fees assessed include:

- A fee of $6,000 is assessed for each mix design evaluation subsequent to the approved Job Mix Design for each type and class of HMA specified. A failed retest will result in a fee of $2,500.
- Failure to cut core samples within the specified period will result in a deduction of $100 per sample per day.
- Failure to backfill voids left by sampling within the specified period will result in a deduction of $100 per hole per day.
- If an asphalt binder referee test is requested and the ATV confirms the asphalt binder does not meet Contract requirements, a fee of $500 is assessed each test.

Pay Item 401.0008.____. HMA Price Adjustment, Type __; Class __, does not apply to the following:

- HMA contract quantity is less than 1500 tons.
- HMA leveling course and rut repair.
- Temporary HMA.
- Driveway and approach HMA.

Pay Item 401.0009.____. Longitudinal Joint Density Price Adjustment. The total price adjustment.

Pay Item 401.0010.____. Pavement Smoothness Price Adjustment. The total price adjustment.

Pay Item 401.0015.____. Asphalt Material Price Adjustment.

For each Section as included in Subsection 401-4.04 Asphalt Material Price Adjustment, item 1.a, the "Asphalt Material Price Adjustment" is paid under the asphalt material Pay Item for the Section with the greatest quantity as determined by the estimate of quantities included in the Plans at the time of the bid opening.

- When more than one "Asphalt Material Price Adjustment" Pay Item is included in the Plans or bid schedule the asphalt material price adjustment, for each Section's asphalt material, is paid under the Pay Item with the greatest quantity.

- When more than one asphalt material is included in the project and only one "Asphalt Material Price Adjustment" Pay Item is included in the Plans or bid schedule, the asphalt material price adjustment, for each Section's asphalt material, is paid under the one Pay Item regardless of the quantity.

- When the Pay Item "Asphalt Material Price Adjustment," is not included, for any section, no payment will be made.

Pay Item 401.0016.____. Crack Repair. Cleaning loose material from cracks, and asphalt binder and HMA to fill cracks are subsidiary.

Pay Item 401.0017.____. Prelevel for Ruts, Delaminations, and Depressions. Cleaning loose material, and asphalt binder and HMA are subsidiary.

Pay Item 401.0018.____. Repair Unstable Pavement. Removal of pavement and base course, asphalt binder, and HMA are subsidiary.

Pay Item 401.2021.____. Asphalt Binder Price Adjustment. The sum of the price adjustments for each material lot.

PAY ITEM		
Item Number	**Item Description**	**Unit**
401.0001.____	HMA, Type __; Class _	Ton
401.0002.____	HMA, Leveling Course, Type IV; Class B	LnSt
401.0003.____	HMA, Leveling Course, Type IV; Class B	Ton
401.0004.____	Asphalt Binder, Grade PG ##-## X	Ton
401.0005.____	HMA, Temporary, Type II, Class B	Ton
401.0006.____	HMA, Type __, Class __	SY
401.0007.____	Liquid Anti-Strip Additives	CS
401.0008.____	HMA Price Adjustment, Type __; Class __	CS
401.0009.____	Longitudinal Joint Density Price Adjustment	CS
401.0010.____	Pavement Smoothness Price Adjustment, Method _	CS
401.0013.____	Job Mix Design	Each
401.0014.____	Joint Adhesive	LF
401.0015.____	Asphalt Material Price Adjustment	CS
401.0016.____	Crack Repair	LF
401.0017.____	Prelevel for Ruts, Delaminations, and Depressions	SY
401.0018.____	Repair Unstable Pavements	SY
401.2021.____	Asphalt Binder Price Adjustment	CS

C401-25.0101

SECTION 402
TACK COAT

Standard Modification

Replace Subsection 402-3.02 with the following:

402-3.02 EQUIPMENT. Furnish, maintain, and operate asphalt distributor to apply asphalt material uniformly at even heat on variable widths of surface up to 15 feet at readily determined and controlled flow rates. Provide an asphalt distributor capable of application rates from 0.01 to 0.11 gallon per square yard. Equip with a heater, tachometer, flow rate gauge, operable mechanical tank gauge, thermometer for measuring temperatures of tank contents, power unit for the pump and full circulation spray bars adjustable laterally and vertically.

402-3.04 APPLICATION OF ASPHALT MATERIAL.

Add the following at the end of the first paragraph:

Control deviation from any specified application rate to within 0.02 gallon per square yard.

Add the following after the second paragraph:

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. If necessary, the Engineer will determine when the tack has cured.

HSM20.6-20.1130-2

SECTION 406
RUMBLE STRIPS

406-1.01 DESCRIPTION. Form a series of indentations (rumble strips) into the roadway pavement. Place rumble strips in each shoulder and the roadway centerline to the width, depth, and length as indicated in the Contract documents and/or as directed by the Engineer.

406-1.02 RUMBLE STRIP. A single uniform circular concave (cross section) indentation/depression milled into the pavement surface having a length measured perpendicular to the direction of travel, a width measured in the direction of travel and a depth measured from the surface of the pavement to the bottom of the indentation.

406-2.01 MATERIALS. None.

406-2.02 MILLING EQUIPMENT. Use equipment designed specifically for milling rumble strips into asphalt pavement. Equip milling machine with a rotary type cutting head with a maximum outside diameter of 24-inches and a minimum length of 16-inches capable of producing a depression both 12-inches and 16-inches in length by 7 1/2-inches in width to a depth shown in the Plans. Arrange the cutting tips to provide a smooth cut (approximately 1/16-inch between peaks and valleys).

Furnish the milling equipment with a guidance system, including a guide, clearly visible to the operator, to provide for consistent alignment of each rumble strip cut at the offsets from traveled way indicated on the Plans and to provide uniformity and consistency throughout the project. The equipment shall incorporate water into the cutting head to minimize dust caused by the milling operation.

Equipment Manufacture: provide training for the operators and a representative onsite during installation of the rumble strip test section(s) (Subsection 406-3.03). Representative: remain onsite until test specimen(s) satisfy the Plans and Specifications as determined by the Engineer.

CONSTRUCTION REQUIREMENTS

406-3.01 PAVEMENT SURFACE PREPARATION. Inspect roadway to receive rumble strips for acceptable pavement condition and stake locations to receive rumble strips prior to installation. Prepare the roadway for the milling operation by providing a smooth clean surface. Sweep all loose material from the roadway surface in line with the planned rumble strips and to each side of the strips for the width of the milling machine plus an additional 12” minimum per side or edge of pavement whichever is smaller, and as directed by the Engineer.

Sweep and broom as noted and with the equipment indicated in Subsection 643-3.04, No. 6, Sweeping and Power Brooming.

406-3.02 TOLERANCES FOR RUMBLE STRIPS.

1. Length: ± 1/2-inch.
2. Width: ± 1/2-inch.
3. Depth: ± 1/16-inch.
4. Spacing: ± 1/2-inch.
5. Alignment: ± 1-inch from the striping layout in the Plans; existing striping and re-established striping.

If it is determined that the rumble strips are not being placed to specification, make immediate adjustments to correct the problem.

Rumble strips are unacceptable if:

1. The strips are not straight.
2. The length or width does not meet tolerance.
3. The depth of the depression does not meet tolerance.
4. The depression/indentation concave surface is not smooth, does not meet tolerance.
5. The edge of the indentation/depression is not straight, smooth, and free of spalling.
6. Pavement surface is damaged as a result of improper rumble strip installation.

Unacceptable rumble strip installation, dimensional, alignment, surface irregularities, and surface damage shall be ground, resurfaced and the rumble strip reinstalled to the satisfaction of the Engineer and at the Contractor's expense. Perform repairs using equipment similar to the equipment initially used to mill the rumble strip. Do not perform repairs in a "patch work" manner. If more than one repair is required; in a group of rumble strips repair the entire group. Where a repair is required in a continuous run, repair the unacceptable rumble strip(s) and repair or replace the rumble strip to each side of the unacceptable rumble strip as required to provide continuity between rumble strips as originally intended. The Engineer will confirm the extent of the repair(s) required.

If during production the work becomes unacceptable the Engineer may require resumption of testing, Subsection 406-3.03. Testing in addition to the initial test for each rumble strip type will be at the Contractor's expense.

406-3.03 RUMBLE STRIP TEST SECTION. Install an initial 1/4 mile test section for each of the following rumble strip type(s):

1. Shoulder.
2. Centerline.

Demonstrate for each type of rumble strip that the equipment and method will provide the desired milled-in rumble strip, including the surface inside each depression, without damaging the surrounding asphalt pavement. If any of the initial test sections do not meet tolerances, provide new equipment, new method, or make necessary adjustments and retest. These additional test sections will be required before production runs will be allowed to begin.

Testing in addition to the initial test sections, one for the shoulder type and one for the centerline type, will be at the Contractor's expense.

Additionally, demonstrate the means and methods, including the equipment, for containing dust and waste material.

406-3.04 TRAFFIC STRIPING RE-ESTABLISHMENT. Traffic striping is required to provide guidance for the rumble strip installation operation. Contractor, where shoulder and/or centerline striping is missing to the extent that rumble strip location cannot be determined by the Engineer, re-establish the striping location prior to the milling operation. Re-establish missing striping location by measuring laterally across the roadway from adjacent visible striping. Maintain the same lane widths that exist at each end of the missing striping. Provide sufficient location marking or "rabbit tracks" to ensure an accurate milling operation. Shoulder re-striping is not required. Re-establishing roadway striping location will not be measured or paid for separately but will be subsidiary to the respective rumble strip pay items.

406-3.05 RUMBLE STRIP INSTALLATION. Install the following types of rumble strip at the locations shown in the Plans:

1. Shoulder. Do not disturb existing shoulder striping.

2. Centerline. Place along the roadway centerline according to the patterns shown in the Plans. Replace existing centerline stripe(s) after milling the pavement. Payment for replacement striping is paid under Section 670, Traffic Markings.

In compacted pavement with a temperature below 80˚ F, mill each type of rumble strip to the dimensions shown in the Plans. Locate the inside edge of the rumble strip as shown in the Plans. The Engineer will randomly check the edge alignment of the milled pattern.

406-3.06 CLEAN UP OF MILLINGS. Handle, transport, and store, or dispose of material according to the Alaska Department of Environmental Conservation (DEC) regulations. Remove off the project, on a daily basis, waste material (millings) resulting from the operation.

Disposal: Dispose waste material outside the project limits, unless directed otherwise, in writing, by the Engineer. Obtain written consent from the property owner. Milled material not being spread on the roadway side slopes requires a Solid Waste Disposal Permit from the DEC. Obtain a permit for disposal of milled material or dispose the material in a site previously approved.

Remove millings immediately following rumble strip installation. Maintain the removal operation within 50 feet of the milling machine. Dry power brooming and power brooming without direct immediate means of collection/pickup is not permitted.

During milling operations keep the travel lanes free of milling debris. Do not berm the millings at the shoulder edge, do not allow milling debris to impede roadway drainage or enter waterways. Use a sweeper, sweeper/vacuum, (Subsection 643-3.04 No. 6, Street Sweeping, and Power Brooming), continuously removing waste material, including dust from the operation. Keep millings damp to help control airborne dust. Millings shall not enter adjacent lanes open to traffic.

Remove the waste material from the roadway surface and any adjacent pathway beyond the shoulder. Shoulder millings may be placed off of the road or pathway beyond the shoulder on the side slopes, except in areas where guardrail is present. Uniformly spread shoulder millings on the roadway side slopes; alternatively, it may become property of the Contractor and disposed of off the project as indicated above.

Milled roadway segments shall be returned to debris-free state prior to re-opening for traffic.

406-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Measure pay units by station, foot, or mile parallel to the centerline of the highway.

Station. A single lineal measurement for every measured station for each shoulder rumble strip and centerline rumble strip installed.

Linear Foot. A single lineal measurement for every measured foot of rumble strip installed.

Mile. A single lineal measurement for every measured mile for each shoulder rumble strip and centerline rumble strip installed.

Shoulder rumble strip measurement includes gaps (provided for bicycles or other as shown in the Plans) between groups of rumble strips.

406-5.01 BASIS OF PAYMENT. Section 109.

All work, including test strips and materials, is subsidiary to 406 Pay Items, except where specified as individual Pay Items.

PAY ITEM		
Item Number	**Item Description**	**Unit**
406.0001.____	Rumble Strips	LS
406.0002.____	Rumble Strips	STA
406.0003.____	Rumble Strips	LF
406.0008.____	Rumble Strips, Shoulders	Mile
406.0012.____	Rumble Strips, Centerline	Mile
406.2001.____	Sweeping and Disposal of Millings, Shoulders	LS
406.2002.____	Sweeping and Disposal of Millings, Centerline	LS

C406-12.1108_2

Special Provision

Add the following Section:

DIVISION 500 — STRUCTURES

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SECTION 501
CONCRETE FOR STRUCTURES

Standard Modification

501-2.02 COMPOSITION OF MIXTURE – JOB MIX DESIGN.

Replace Table 501-4 with the following:

TABLE 501-4
AIR CONTENT REQUIREMENTS

Class of Concrete	Air Content
A	6.0% ±0.5%
A-A	6.0% ±0.5%
P	3.50% minimum[1] and Super Air Meter (SAM) number ≤0.20[1]
DS	Not required

[1]Not required for web and bottom flange of precast, prestressed decked bulb-tee girders.

HSM20.23-21.1231

SECTION 503
REINFORCING STEEL

503-3.02 PROTECTION OF MATERIALS. *Replace the 2nd sentence of the 1st paragraph with the following:* Before placing reinforcing steel in the work, ensure that the reinforcing steel is free of salt, rust, and foreign substances that may affect the performance of the reinforcing steel.

503-3.05 SPLICING. *Replace "c. Testing/Inspection" under Item 2. Electric Resistance Butt Welded Joints with the following:*

c. Testing/Inspection.

Perform job control tests using a testing laboratory with experience with ASTM A370 and California Test Method 670. A job control test consists of the fabrication, under the same conditions used to produce the splice, and the physical testing of 4 sample splices for each lot of splices. An authorized Department representative will designate when samples for job control tests are to be fabricated and will determine the limits of the lot represented by each job control test.

A lot of shop produced resistance welded butt joints is defined as no more than 150 splices of the same type of welds used for each combination of bar size and bar deformation pattern that is used in the work.

The Engineer or the Engineer's authorized representative shall witness the job control tests performed by the testing laboratory. Give the Engineer at least 7 working days' notice before beginning control tests.

Identify sample splices with tamper proof and weatherproof markings prior to shipment to the testing laboratory.

The sample shall consist of a resistance welded butt splice bar and a control bar that are identified and marked as a set. The same reinforcing bar (hoop) may be used to provide the test weld and control bar.

Test each sample to failure in accordance with ASTM A706, ASTM A370 and California Test Method 670. Determine the ultimate tensile strength for all control bars by testing the bars to failure.

The production lot will be rejected if:

(1) a sample fails within one bar diameter of the splice at less than 95 percent of the ultimate tensile strength of the associated control bar

(2) necking of the bar prior to rupture, as defined in California Test Method 670, is not observed

(3) a sample does not meet the mechanical requirements of ASTM A706 Grade 60

Replace "c. Qualifications and Submittals." and "d. Testing/Inspection." under Item 4. Mechanical Butt Splices with the following:

c. Qualifications and Submittals. A splice will be considered qualified if the splice can develop a minimum tensile strength of 80000 psi, based on the nominal bar area, and the bars within the splice do not exceed a total slip shown in Table 503-3, when tested according to the relevant material ASTM, ASTM A370 and California Test Method 670.

TABLE 503-3
ALLOWABLE TOTAL SLIP LENGTH

Reinforcing Bar No.	Total Slip (inch)
4	0.020
5	0.020
6	0.020
7	0.028
8	0.028
9	0.028
10	0.036
11	0.036
14	0.048
18	0.060

Submit the following information:

(1) the manufacturer's name;

(2) the name of the product or assembly;

(3) the lot, heat, or batch number that identifies the splice;

(4) the bar grade and size number to be spliced by the material;

(5) a complete description of the splice and installation procedure; and,

(6) Tensile Test results including:

(a) bar nominal area;

(b) ultimate load at failure;

(c) ultimate tensile strength;

(d) necking results (either visually or through strain values); and,

(e) failure mechanism and location.

(7) Slip Test results including:

(f) initial length measurements;

(g) final length measurements; and,

(h) calculated slip.

d. Testing/Inspection. Perform job control tests consisting of the fabrication, under conditions used to produce the splice. For each lot of splices perform 6 slip tests and 6 tensile tests using different sample splices for each test. The Engineer will designate when samples for job control tests are to be fabricated and will determine the limits of the lot represented by each job control test.

A lot of mechanical butt joints is defined as no more than 150 splices of the same type of mechanical butt splice used for each combination of bar size and bar deformation pattern that is used in the work.

Make splice samples using the same splice materials, position, equipment, and following the same procedures as used to make splices in the work. Make splice samples at least 5 feet long with the splice at mid-length. Shorter sample splice bars may be used if approved by the Engineer.

Perform job control tests in the presence of the Engineer. Splices tested in the absence of the Engineer may be rejected. Notify the Engineer, in writing, at least 7 working days prior to performing testing.

Identify sample splices with weatherproof markings prior to shipment to the testing laboratory.

Test each sample according to the relevant material ASTM, ASTM A370 and California Test Method 670. Perform tensile testing until partial or total fracture of the parent bar material, mechanical splice material, or bar-to-splice connection.

The production lot will be rejected if:

(1) the minimum individual tensile strength of the sampled splices is less than 80000 psi based on the nominal bar area

(2) the maximum individual slip length of the sampled splices is greater than the limits in Table 503-3

Replace "b. Qualifications" and "c. Testing/Inspection." under Item 5. Mechanical Lap Splices. with the following:

b. Qualifications. A splice will be considered qualified if the splice can develop a minimum tensile strength of 75000 psi, based on the nominal bar area, when tested according to the relevant material ASTM, ASTM A370 and California Test Method 670.

Submit the following information:

(1) the manufacturer's name;

(2) the name of the product or assembly;

(3) the lot, heat, or batch number that identifies the splice;

(4) the bar grade and size number to be spliced by the material;

(5) a complete description of the splice and installation procedure; and,

(6) test results indicating the splice, used according to the manufacturer's procedures, complies with the minimum tensile strength requirements.

c. Testing/Inspection. Perform job control tests consisting of the fabrication, under conditions used to produce the splice, and tensile testing of 6 sample splices for each lot of splices. The Engineer will designate when samples for job control tests are to be fabricated and will determine the limits of the lot represented by each job control test.

A lot of mechanical butt joints is defined as no more than 150 splices of the same type of mechanical butt splice used for each combination of bar size and bar deformation pattern that is used in the work.

Make splice samples using the same splice materials, position, equipment, and following the same procedures as used to make splices in the work. Make splice samples at least 5 feet long with the splice at mid-length. Shorter sample splice bars may be used if approved by the Engineer.

Perform job control tests in the presence of the Engineer. Splices tested in the absence of the Engineer may be rejected. Notify the Engineer, in writing, at least 7 working days prior to performing testing.

Identify sample splices with weatherproof markings prior to shipment to the testing laboratory.

Test each sample according to the relevant material ASTM, ASTM A370 and California Test Method 670. Tensile test each sample until partial or total fracture of the parent bar material, mechanical splice material, or bar-to-splice connection.

All splices in the lot represented by a test will be considered to meet the tensile strength requirements when the minimum individual tensile strength of the sampled splices is not less than 75000 psi, based on the nominal bar area.

SECTION 505
PILING

Special Provisions

505-3.03 DRIVING PILES.

Replace the 1st sentence in the 1st paragraph with the following:

Drive all piles, except piles for lighting standards, to the driving resistance and minimum penetration specified in the Contract documents using the pile driving criteria provided by the Engineer.

Add No. 5:

5. Piles for Lighting Standards. For lighting standards, install piles of sufficient length to cut the pile at the required cut-off elevation and to provide the minimum installed length shown on the Plans.

   Sites for lighting standard foundations can contain subsurface soils that consist of very dense sandy gravel with cobbles and boulders.

   When the minimum pile length, shown on the Plans, for a lighting standard foundation cannot be achieved, install the pile tip to an elevation established by the Engineer.

C505.2-18.1001-1

505-3.04 SPLICES, EXTENSIONS, AND BUILD-UPS.

Add the following:

High Tower Piling.

Field splices shall be located a minimum of 10 ft. from either end of the pile and limited to one per 40 ft. of pile length. Make the splice with a complete-joint-penetration groove weld with backing ring.

1. Joint Preparation.

   Cut off pile perpendicular to the pile centerline, "freehand" cutting is prohibited. Before welding, prepare pile top establishing the proper groove angle with a pipe beveller. Touch up and repair surfaces to be welded by grinding. Clean pile ends inside and out for a width of 4 inches perpendicular to the groove, for the length of the groove, each side of the groove removing all moisture, grease, rust, mill scale, and other material that might negatively influence the weld quality.

2. Weld Inspection.

   a. Visual Inspection (VT) 100%
   b. Ultrasonic Testing (UT) 100%

   Inspection and testing by a third party American Welding Society (AWS) Certified Weld Inspector (CWI) qualified to perform Nondestructive Examination (NDE) of welds.

505-5.01 BASIS OF PAYMENT.

Add the following:

Pay Item 505.2003.____ High Tower Lighting Piles, Furnish and Install, includes the costs for both furnishing and installing piles for high tower lighting in Pay Item 668.2000.____ High Tower Lighting System Complete.

PAY ITEM		
Item Number	**Item Description**	**Unit**
505.2003.____	High Tower Lighting Piles, Furnish and Install	Each

C505.1-18.1001-1

Add the following:

Pay Item 505.2004.____ Lighting Standard Piles, Furnish, and Install, includes the costs for both furnishing and installing piles for lighting standards for Pay Item 660.0003.____ Highway Lighting System Complete.

PAY ITEM		
Item Number	**Item Description**	**Unit**
505.2004.____	Lighting Standard Piles, Furnish and Install	Each

C505.2-18.1001-1

Standard Modification

Replace the Pay Item table with the following:

Payment will be made under:

PAY ITEM		
Item Number	**Item Description**	**Unit**
505.0005.0000	Furnish Structural Steel Pipe Piles, ____	LF
505.0005.0001	Furnish Structural Steel H-Piles, ____	LF
505.0006.0000	Drive Structural Steel Pipe Piles, ___	Each
505.0006.0001	Drive Structural Steel H-Piles, ____	Each
505.0009.____	Structural Steel Piles	SF
505.0014.____	Special Pile Excavation	CS

HSM20.54-25.0303f

SECTION 507
BRIDGE BARRIERS AND RAILING

507-1.01 DESCRIPTION. *Delete this Subsection and substitute the following:*
Construct concrete barrier, timber railing, steel bridge railing, pedestrian railing, and safety railing as shown on the Plans. Furnish and install bridge number plates as shown on the Plans.

507-2.01 Materials. *Delete this Subsection and substitute the following:*

Steel Railing	Section 722
Timber Railing	Section 506
Cable Safety Railing	Section 722
Concrete	Section 501
Epoxy-Coated Reinforcing Bars	Subsection 709-2.01
Grout	Subsection 701-2.03
Bronze Bridge Number Plate	Section 722

507-3.01 CONSTRUCTION REQUIREMENTS.

2. Steel. *Add the following:*

   Submit shop drawings for final approval. Do not fabricate or install steel bridge railing until the Engineer approves the shop drawing submittal.

507-5.01 BASIS OF PAYMENT. *Delete paragraph 1 and substitute the following:*
The contract price includes all rail elements, rail posts, brackets, spacers, fastenings and anchors required to attach the railing to the structure; concrete and associated reinforcing steel included or partially contained within the limits of the concrete barrier section or within the limits of the concrete curb for the steel bridge rail section; and bridge number plates.

SECTION 508
WATERPROOFING MEMBRANE

508-1.01 DESCRIPTION. *Replace the first paragraph with the following*: Furnish and install waterproofing membrane systems on concrete bridge decks and approach slabs. The spray-applied waterproofing membrane system consists of a primer, a membrane and a tack coat.

508-3.01 CONSTRUCTION. *Replace the first paragraph in 1. General with the following*: Install the waterproofing membrane system in accordance with the manufacturer's installation procedure and the approved submittal. Use the primer and tack coat listed in the approved submittal. Do not apply primers or membranes until the end of the curing period and until concrete and grout has reached at least 80 percent of the specified 28-day compressive strength (f'c). Apply the membrane system vertically at curb faces up to the pavement thickness shown on the Plans. Protect adjacent surfaces not to be covered with the membrane from splatter or coating. Ensure the surface of the membrane is dry when applying tack coat. Use pavement overlay material within the membrane manufacturer's temperature limitations.

Replace the first paragraph in 2. Deck Preparation with the following: Remove existing pavement and membrane systems by methods that do not damage the concrete deck. Do not use a mechanical milling machine such as a reclaimer or planer. Meet the requirements of Subsection 105-1.12. Prepare the concrete surfaces that are to receive the waterproofing membrane system as required by the manufacturer.

508-3.02 QUALITY CONTROL. *Replace the first paragraph in 2. Spray-Applied Waterproofing Membrane with the following*: Perform tensile adhesion bond testing of the waterproofing membrane system, at locations determined by the Engineer, in accordance with ASTM D7234 at least once every 2000 square feet of coated area.

508-3.03 ACCEPTANCE TESTING. *Replace the first paragraph in 1. Flood Testing with the following*: Perform flood testing of spray-applied waterproofing membrane prior to placement of tack coat or asphalt. With the written approval of the manufacturer's on-site representative, perform flood testing of sheet waterproofing membrane prior to asphalt overlay, otherwise perform flood testing after asphalt overlay.

508-3.04 MEMBRANE REPAIRS. *Replace the first paragraph in 3. Sheet Waterproofing Membrane with the following*: If flood test acceptance testing is used after placement of asphalt and breaches in the membrane system are found, repairs may be attempted with the written approval of the manufacturer's on-site representative. Patch areas where asphalt overlay is removed to the satisfaction of the Engineer.

508-5.01 BASIS OF PAYMENT. *Replace the first paragraph with the following:* The contract price includes removal and disposal of existing membrane(s) where present, furnishment and installation of waterproofing membrane system(s), quality control, and acceptance testing.

SECTION 511
MECHANICALLY STABILIZED EARTH (MSE) WALL

511-1.01 DESCRIPTION. Furnish and install a mechanically stabilized earth wall system with precast concrete facing panels and metallic, strip or grid, soil reinforcement. Provide one system; multiple systems are not permitted.

511-1.02 SUBMITTAL. All manufacturers are required to submit documentation for the Engineer's review and approval.

Submit complete working drawings and calculations, in accordance with Subsection 105-1.02 and 511-2.01.4, sealed and signed by a Civil Engineer registered in the State of Alaska. Allow 21 days for review.

511-2.01 MATERIALS. Furnish materials in accordance with Subsection 105-1.03 and Section 106. Substitutions require the Engineer's written approval, before the working drawings are approved.

Meet the following:

Class A Concrete	Section 501
Precast Concrete Panels	Section 501
Reinforcing Steel	Section 503
Structural Steel	AASHTO M 270
Pipe and Perforated Pipe	Section 706
Geotextile for Drainage	Subsection 729-2.01
Geogrid	Subsection 729-2.04
Geocomposite Drainage System	As Specified
Porous Backfill Material	Subsection 703-2.10

1. Structure Backfill and Foundation Fill. Provide backfill materials used in the structure volume free from organic or otherwise deleterious materials (less than 1 percent as determined by ATM 203) and conform to the gradation requirements of Selected Material, Type A (Section 703-2.07) with a maximum size of 6-inches or less as determined by ATM 304. Do not exceed a plasticity Index (P.I.) of 6 as determined by ATM 204 and ATM 205. Provide material with a sodium sulfate soundness loss of less than 10 percent after four cycles, determined in accordance with AASHTO T 104 and free of shale or other particles of low durability.

   When using backfill material with 80 percent passing the 3/4-inch sieve, the minimum angle of internal friction, on the portion of the material finer than the No. 10 sieve, must be 34 degrees, as tested by AASHTO T 236.

   Electrochemical Requirements. Steel soil reinforcement, use backfill material meeting the following:

ELECTROCHEMICAL REQUIREMENTS

REQUIREMENTS	VALUE	TEST METHOD
Resistivity	1200 ohm inches min.	AASHTO T 288
pH	5 - 10	AASHTO T 289
Chlorides	50 ppm max.	AASHTO T 291
Sulfates	100 ppm max.	AASHTO T 290

   The state will perform corrosion tests. Notify the Engineer of the backfill source not less than 30 days before wall construction.

2. Wall Members. Provide facing consisting of precast concrete panels.

   Manufacture concrete panels with a minimum concrete compressive strength of 4,000 psi. Finish the exposed face with ordinary finish. Locate soil reinforcement connection hardware during concrete placement to avoid contact with the panel reinforcing steel.

   a. Concrete Face Panels. Fabricate panels conforming to Section 501, with the following exceptions and additions.

      (1) Forms. Do not strip the forms from the units until the concrete reaches a minimum compressive strength of 1000 psi.

      (2) Angle Points. Changes in the wall alignment shall be accomplished using prefabricated angled corner panels or special columns of the same texture and size as the flat panels, such that a continuous panel is traversing the angle point without a break in the normal horizontal and vertical joint pattern, unless directed otherwise by the Engineer. Bevel panels, or field outs that disrupt the normal joint pattern, and/or result in a single vertical line, are not permitted.

      (3) Marking. Clearly scribe the date of manufacture, the production lot number, and the piece mark, in the unexposed face of each panel.

      (4) Handling, Storage, and Shipping. Handle, store, and ship all panels in such a manner as to protect them from chipping, discoloration, cracks, and fractures. Support panels in storage on firm blocking to protect the panel connection devices, and the exposed exterior finish. Ship the units after reaching a minimum compressive strength of 3300 psi.

      (5) Tolerances. Manufacture all panels within the following tolerances.

         (a) Panel Dimensions. Position panel strap connection devices within 1-inch, all other dimensions within 3/16-inch.

         (b) Panel Squareness. Squareness as determined by the difference between the two diagonals, not to exceed 1/2-inch.

         (c) Panel Exposed Surface Finish. Surface defects on smooth formed surfaces measured on a length of 5-feet, not to exceed 1/8-inch. Surface defects on the textured-finished surfaces measured over a length of 5-feet, not to exceed 3/16-inch.

         (d) Panel Hidden Surface Finish. Provide a uniform surface finish free of open pockets of aggregate or surface distortions in excess of 1/4-inch.

      (6) Testing.

         (a) Compressive Strength. Production lots shall determine the acceptance of concrete panels with respect to compressive strength. A single compressive strength sample will represent a production lot of a group of panels. A production lot will consist of either ten panels or a single day's production, whichever is less.

            During the production of the concrete panels, the manufacturer will randomly sample the concrete in accordance with ATM 501. A single compressive strength sample, consisting of a minimum of four cylinders, will be randomly selected for every production lot.

            Perform compression tests on a standard 4-inch by 8-inch test specimen cured according to ATM 506 and tested according to AASHTO T 22.

            For every compressive strength sample, cure a minimum of three cylinders in accordance with ATM 506 and test at twenty-eight days. The average compressive strength, when tested in accordance with AASHTO T 22, will provide a compressive strength test result that will determine the compressive strength of the production lot.

Compressive strength test result greater than or equal to 4000 psi will be accepted by the Engineer for the production lot. If the compressive test result is less than 4000 psi, then the acceptance of the production lot will be based on the following acceptance criteria.

Meet each of the requirements:

I. Ninety percent of the compressive strength test results for the overall production shall exceed 4060 psi.
II. The average of any six consecutive compressive test results shall exceed 4200 psi.
III. No individual compressive strength test result shall fall below 3600 psi.

(b) Air Content. Perform air content tests in accordance with ATM 505. Take air content samples at the beginning of each day's production and take compressive samples at the same time to insure compliance.

(c) Slump Test. Perform the slump test in accordance with ATM 503. Determine the slump at the beginning of each day's production and take the compressive samples at the same time.

(d) Rejection. Failure to meet any of the requirements (6)(a) thru (6)(c) will result in rejection of units. In addition, the Engineer will reject the panel(s) if any of the following conditions exist.

I. Faulty casting
II. Honeycombed or open texture concrete
III. Cracked, including hairline cracks, or severely chipped panels
IV. Unreasonable color variation on front face of panels

b. Joint Materials. Bearing pads, joint filler, and joint cover materials according to the MSE wall supplier's recommendations.

c. Concrete Leveling Pad. Class A concrete.

3. Soil Reinforcement. Carefully inspect reinforcing and attachment devices to ensure that devices are true to size and free from defects that may impair strength and durability. The metallic strip or grid shall meet the design requirements of AASHTO Standard Specifications for Highway Bridges, latest Edition, and the wall suppliers design recommendations.

Galvanize all steel soil reinforcement and any steel connection hardware to meet AASHTO M 111. Manufacture steel strip reinforcement by hot rolling to meet ASTM A572, Grade 450, or approved alternate.

4. Working Drawings. Prepare working drawings as noted in 105-1.02 and as noted here. Include:

a. Earthwork requirements including specifications for material and compaction of backfill.

b. Details of revisions or additions to drainage systems or other facilities required to accommodate the system.

c. Existing ground elevations verified by the Contractor for each location, involving construction wholly or partially in original ground, before preparing the final working drawings.

d. Complete design calculations substantiating that all proposed designs satisfy the design parameters in the Contract documents. Include all design assumptions. Demonstrate the internal and external stability of the wall system. Include, in the external stability analysis, sliding, eccentricity, bearing capacity, and global stability analysis for static and seismic conditions. Comply with the design parameters shown on the Plans, the Specifications and the latest AASHTO LRFD Bridge Design Specifications including interims.

(1) Use the minimum height and length for any system that will effectively retain the earth behind the structure for the loading conditions, contours, profile, slope lines, or other limiting parameters shown in the Plans or in the approved working drawings. The wall system dimensions may be slightly greater, not less, than shown on the Plans and approved working drawings.

(2) Include design soils information:

(a) Foundation soil unit density and angle of internal friction
(b) Retained soil unit density and soil angle of internal friction
(c) Reinforced soil unit density and angle of internal friction

e. Complete details of all elements required for the proper construction of the wall system, including complete material specifications.

Wall system work, requiring working drawings, is prohibited until the required working drawings are approved.

5. Acceptance of Material. Furnish the Engineer with a Certificate of Compliance certifying that all materials, excluding backfill, comply with the applicable contract specifications. Furnish the Engineer with a copy of all test results performed by the Contractor necessary to assure Contract compliance.

Acceptance will be based on the Certificate of Compliance, accompanying test reports, and visual inspection by the Engineer. The Engineer may require additional testing.

511-3.01 CONSTRUCTION REQUIREMENTS.

1. Excavation and Backfill. Excavate and backfill earth retaining systems to meet Section 205. Replace excavated material with structure backfill material meeting Section 205. Compact the material as specified under Subsection 203-3.04 and herein.

a. Foundation Preparation. Grade the foundation for the structure level for a width equal to or exceeding the length of reinforcement elements plus 1-foot or as shown in the Plans. Before wall construction, compact the foundation with two passes of a vibratory drum compactor, except where constructed on rock. Remove foundation soils found to be unsuitable and replace with backfill according to Section 205.

2. Drainage. Provide outlet works at sags in the profile and at the low ends of the gutter.

a. Weep Holes. Place a minimum of 2-cubic feet of porous backfill material encapsulated with geotextile at each weep hole. Cover joints between retaining wall panels, which function as weep holes, with geotextile. Dry and thoroughly clean the face panels that are to receive the geotextile.

b. Drainage Blankets. Construct drainage blankets consisting of porous backfill material encapsulated in geotextile, collector pipes, outlet pipes, and cleanout pipes. Construct and compact the subgrade to receive the geotextile so it is free of loose or extraneous material and sharp objects that may damage the geotextile. Stretch, align, and place the fabric in a wrinkle-free manner. Overlap adjacent borders of the fabric from 12-inches to 18-inches. Repair torn or punctured fabric by covering the damaged area with a piece of fabric large enough to cover the damaged area and meet the overlap requirement.

Place the porous backfill material in horizontal layers and thoroughly consolidate by the same methods specified for structure backfill. Prohibit ponding or jetting of porous backfill material or structure backfill material. Maintain a minimum of 6-inches of porous backfill material, structure backfill, or embankment material between the fabric and the equipment during spreading and compaction of the porous backfill material.

Place perforated collector pipe, when required, within the porous backfill material to the flow line elevations shown. Place outlet pipes at sags in the flow line and at the low end of the collector pipe. Construct rock slope protection, when required, at the end of outlet pipes, as shown on the Plans. Place cleanout pipes at the high ends of collector pipes.

c. Geocomposite Drainage Systems. Place and secure the geocomposite drainage material tightly against the excavated face, lagging or back of wall. Protect the drainage material against physical damage and grout leakage when concrete is to be placed against geocomposite drainage material.

3. Retaining Wall Construction. Construct mechanically stabilized earth walls consisting of a facing system (precast concrete panels) to which steel soil reinforcement is connected.

Provide a field representative from the proprietary wall system on-site and available during the erection of the wall.

Provide a cast-in-place concrete leveling pad, of the type shown in the Plans or approved working drawings, at each panel foundation level. Cure the concrete a minimum of 24 hours before placement of wall panels. Place panels and support to achieve the final position.

a. Installation Tolerances. Handle panels for erection as the MSE wall supplier recommends. Panels shall be placed in successive horizontal lifts in the sequence shown on the working drawings as backfill placement proceeds. As backfill material is placed behind the panels, maintain the panels in the final position by means the wall supplier recommends. Concrete panels vertical and horizontal alignment tolerances shall not exceed 3/4-inch when measured with a 10-foot straight edge. During construction, the maximum allowable offset in any panel joint shall be 3/4-inch. The overall vertical tolerance of the wall (top to bottom) shall not exceed 1/2-inch per 10-foot of wall height. The plumb and tolerances of each panel row at the face shall be checked before erection of the next panel row. Should panels be out of tolerance, remove the fill, and reset panels to proper tolerances. Make joint openings between panels uniform and no larger than 1 1/4-inch and no smaller than 1/2-inch.

Place reinforcement elements normal to the face of the wall, unless otherwise shown on the Plans. Before placement of the reinforcing elements, compact backfill according to Section 205 and below.

b. Backfill Placement. Place and compact backfill material following erection of each course of panels. Place backfill in such a manner as to avoid distortion, damage, or displacement of the wall materials. Backfill to an elevation approximately 1 1/4-inch above the facing connection level before placing the next level of soil reinforcement. Roughly level the backfill material before placing the soil reinforcement. Uniformly tension all soil reinforcement to remove any slack in the connection or material. Correct misalignment or distortion of the facing panels and soil reinforcement. Remove and replace wall materials that become damaged during backfill placement.

Compact backfill to 95-percent of the maximum density as determined by ATM 207, or ATM 212. Where spread footings support bridge or other structural loads, compact the top 5-feet below the bottom of the footing elevation to 98-percent as determined by ATM 207, or ATM 212. Do not exceed 8-inches maximum lift thickness after compaction. Decrease this lift thickness, if necessary to obtain the specified density. The Engineer will determine field density using ATM 213.

Use a lightweight mechanical tamper, roller, or vibratory system with at least three passes to achieve compaction within 3-feet of the back face of the wall facing.

The Engineer will take a minimum of one density test at each level of soil reinforcement material.

Slope the last level of backfill away from the wall facing to permit rapid water runoff away from the wall face at the end of operations each day. Do not allow surface runoff from adjacent areas to enter the wall construction site.

Install joint filler, bearing pads, and joint-covering material concurrently with face panel placement. Furnish and install instrumentation for monitoring corrosion, where specified.

511-4.01 METHOD OF MEASUREMENT. Section 109, and the following:

Pay Item 511.0001.____ Mechanically Stabilized Earth Wall: by the square foot of wall face. The vertical height of each section is measured on the outer face from the top of the leveling pad, to top of wall prior to installation of coping. Measure tapered wall sections using the average height resulting from the height measured at each end of the tapered section.

Pay Item 511.0002.____ Wall Cap Coping: by the linear foot measured horizontally along the top of the wall.

511-5.01 BASIS OF PAYMENT. The contract price includes full compensation for the earth retaining structure including incidentals required to complete the work; including but not limited to: facing panels, soil reinforcement, MSE and random backfill soil, bar reinforcing steel, excavation, leveling pad, coping, and all parts of or appurtenances to the earth reinforcement system, complete-in-place.

The field representative, replacing damaged face panels and other corrective work are subsidiary.

PAY ITEM		
Item Number	**Item Description**	**Unit**
511.0001.____	Mechanically Stabilized Earth Wall	SF
511.0002.____	Wall Cap Coping	LF

C511-24.0515

Add the following Section:

SECTION 521
SOLDIER PILE RETAINING WALLS

Special Provision

521-1.01 DESCRIPTION. Construct soldier pile retaining walls to the location shown on the Plans. Soldier pile retaining walls consist of steel H piles with timber lagging placed between the piles.
Furnish, fabricate, and install the components of the wall system according to the Plans.

521-2.01 MATERIALS. Use materials that conform to the following:
Steel for Piles Section 715
Structural Timber, Lumber, and Piling Section 713
Preservatives for Timber Section 714
Piling Section 505

521-2.02 SUBMITTALS. Provide project specific installation information, including a detailed construction sequence. Submit details of excavations and temporary support of excavations.

521-2.03 PRECONSTRUCTION MEETING. Prior to starting soldier pile wall construction, conduct a preconstruction meeting to discuss the construction and inspection of the of the soldier pile walls. Schedule this meeting after all soldier pile wall submittals have been accepted by the Department. At a minimum, the Contractor's Superintendent will attend this meeting.

CONSTRUCTION REQUIREMENTS

521-3.01 GENERAL CONSTRUCTION. Control drainage during construction in the vicinity of soldier pile walls. Direct runoff away from soldier pile walls and areas above and behind walls. Use equipment and methods reviewed and accepted in the construction plan. Any deviations from the accepted plan must be approved by the Engineer.

1. Pile installation. Install piles in accordance with accepted submittals and Section 505. Steel H piles are not permitted to be spliced. Install piles with batter shown on plans and vertically on other axis.

2. Excavation. If a temporary slope is shown in the accepted submittals, construct soldier pile walls by excavating the slope in accordance with the accepted submittals. Install temporary support within 24 hours of excavating each lift unless approved otherwise by the Project Engineer. The installation may be delayed if it can be demonstrated that the delay will not adversely affect the excavation face stability. If the excavation face will be exposed for more than 24 hours, use polyethylene sheets anchored at the top and bottom of the lift to protect the face from changes in moisture content. If the excavation face becomes unstable at any time, suspend soldier pile wall construction and temporarily stabilize the face. Soldier pile wall construction may not proceed until remedial measures are proposed by the Contractor and accepted by the Project Engineer. A revised soldier pile wall construction plan submittal may be required. Excavate in accordance with Section 203.

3. Lagging Installation. Place timber lagging horizontally with no vertical gap between lagging. Ensure a minimum of 3 inches of contact in the horizontal direction between the lagging and pile flanges.

4. Backfill. Backfill voids behind lagging and piles with material as shown on the plans. Ensure all voids between piles, lagging, and the excavation face are filled. Backfill and compact in accordance with Section 203.

521-4.01 METHOD OF MEASUREMENT. See Section 109, measured by the square foot of wall face. Wall height is defined as the difference between the top horizontal timber lagging and the bottom horizontal timber lagging. No payment will be made for portions of piles below the bottom horizontal timber lagging.

521-5.01 BASIS OF PAYMENT. Payment includes all work to provide and install steel H piles and timber lagging as shown on the plans.

Installation and removal of templates or any temporary structures to support wall construction is subsidiary.

Removal of the existing timber retaining wall is subsidiary.

Excavation required to install timber lagging and backfill in front of wall face after embedded timbers are installed is subsidiary.

Controlling drainage and directing runoff away from soldier pile walls and the areas above and behind walls during construction is subsidiary.

Payment will be made under:

PAY ITEM

Item Number	Item Description	Unit
521.2000.____	Soldier Pile Retaining Wall	SF

SECTION 550
COMMERCIAL CONCRETE

Special Provisions

Replace Subsection 550-1.01 with the following:

550-1.01 DESCRIPTION. Furnish, place, finish, and cure Portland cement concrete for minor structures and incidental construction.

C550.1-21.0601

Standard Modification

550-2.02 COMPOSITION OF MIXTURE – JOB MIX DESIGN.

Replace Table 550-1 with the following:

TABLE 550-1
COMMERCIAL CONCRETE DESIGN REQUIREMENTS

Class	B-B	B	W
Water-Cement Ratio, lbs/lbs, maximum	0.40	0.45	0.50
Total Air Content, %	5.5 – 6.5	5.5 – 6.5	4.0 – 6.5
Coarse Aggregate Gradation, AASHTO M43[a.]	No. 57 or 67	No. 57 or 67	No. 7, 8, 57, or 67
Compressive Strength, psi, minimum	5,000	4,000	3,000

a. Alternative sizes of coarse aggregate, as shown in AASHTO M 43, may be used when approved in writing.

HSM20.8-20.1130-1

Add the following to the first paragraph of 1. Submittals.

Submit the JMD on Form 25D-203.

HSM20.25-21.1231

Add the following Subsection 550-2.03 Precast Concrete Products:

550-2.03 PRECAST CONCRETE PRODUCTS. Provide precast concrete products from an ATM 520 certified plant. Submit certification for each product.

Minor and Incidental Structure Products

1. Curb and gutter
2. Manhole sections
3. Headwall
4. Modular retaining wall units
5. Noise wall panels and posts
6. Portable barriers
7. Utility structures
   a. Cabinet base
      (1) Load center base/foundation
      (2) Controller base/foundation
   b. Junction box
   c. Similar structures

8. Water and waste water structures
   a. Catch basin
   b. Inlet box
   c. Outlet box
   d. Similar structures

Major Structure Products Section 501 Concrete for Structures

Major structure products include box culvert, mechanically stabilized earth, retaining walls, three-sided flat-topped culvert, three-sided arch culvert, and similar structures.

C550.1-21.0601

Standard Modification

550-5.01 BASIS OF PAYMENT.

Replace the first sentence with the following:

If items 550.0001.____, 550.0002.____, 550.0003.____, 550.0004.____, 550.0005.____, or 550.0006.____ do not appear in the Bid Schedule concrete is subsidiary to other items.

Add the following pay items:

PAY ITEM		
Item Number	**Item Description**	**Unit**
550.0005.____	Class B-B Concrete	LS
550.0006.____	Class B-B Concrete	CY

HSM20.8-20.1130-1

DIVISION 600 — MISCELLANEOUS CONSTRUCTION

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SECTION 602
STRUCTURAL PLATE PIPE

Special Provisions

Replace Subsection 602-2.01 with the following:

602-2.01 MATERIALS. Use materials that conform to the following:

Bedding and Backfill	Subsection 204-2.01
Flexible Watertight Gaskets	Subsection 705-2.05
Corrugated Steel Pipe, Pipe Arches, and Underdrains	Subsection 707-2.01
Corrugated Aluminum Alloy Culvert Pipe and Underdrains	Subsection 707-2.03
Structural Plate Culverts	Subsection 707-2.04

Replace Subsection 602-3.01 with the following:

602-3.01 CONSTRUCTION REQUIREMENTS. Lay field-assembled plate pipes in conformance to the lines and grades approved by the Engineer. Excavation, grading, shaping, and backfill must conform to Subsection 204-3.01.

Dewater ground water from work areas; construct and maintain temporary water diversion when working in waterways, and for facilities or structures with active drainage according to Section 204.

Repair damage to the zinc coating according to AASHTO M 36.

Comply with the manufacturer's recommendations and instructions. Provide the Engineer with a copy of the documentation.

C602.1-22.0101

Special Provision

Replace Section 603 with the following:

SECTION 603
CULVERTS AND STORM DRAINS

603-1.01 DESCRIPTION. Construct or reconstruct culvert and storm drain pipe. Install culvert marker posts, and strap plastic culvert ends.

603-1.02 REFERENCES.

ASTM D3953 Standard Specification for Strapping, Flat Steel and Seals
ASTM D4675 Standard Guide for Selection and Use of Flat Strapping Materials

603-2.01 MATERIALS. Use materials that conform to the following:

Bedding and Backfill	Subsection 204-2.01
Joint Mortar	Subsection 705-2.04
Flexible Watertight Gaskets	Subsection 705-2.05
Non-reinforced Concrete Pipe	Subsection 706-2.01
Reinforced Concrete Pipe	Subsection 706-2.02
Corrugated High Density Polyethylene (HDPE) Pipe	Subsection 706-2.07
Corrugated Steel Pipe and Pipe Arches	Subsection 707-2.01
Corrugated Aluminum Pipe	Subsection 707-2.03
Galvanize	Subsection 716-2.07
Culvert Marker Posts (Flexible Delineator Posts)	Subsection 730-2.05

Item 603.0017.____, Pipe, listed in the bid schedule, furnish either Corrugated Steel Pipe (CSP), Corrugated Aluminum Pipe, Reinforced Concrete Pipe, or Corrugated Dual Wall HDPE (plastic) Pipe. Select pipe for each installation that meets or exceeds the requirements shown on the Plans for height of cover.

Steel and Plastic Pipe: match the coupling band material and end section material to the pipe material.

Separate dissimilar materials with an electrical insulating material. The insulating material must be at least 1/16 inch thick and approved by the Engineer.

Culvert marker post is 6-foot tall by 2.5 inches wide with reinforcing ribs, capable of a 9-inch minimum bending radius, and blue with no marking.

Culvert marker Strap and Seals according to ASTM D3953. .625 inch x .02 inch, dry Type 1 regular-duty (magnetic, ferritic), galvanized Finish B (hot-dipped Grade 2 moderate coating, .18 oz./ft^2 surface or .0002 inch thick minimum. Push type seals, Style III (overlap), regular duty, galvanized Finish B (hot-dipped coating) by 1.75-inch minimum length and matched to strapping width.

CONSTRUCTION REQUIREMENTS

603-3.01. GENERAL. Excavate, bed, and backfill according to the requirements of Subsections 204-2.01 and 204-3.01, and the Plans.

Dewater ground water from work areas; construct and maintain temporary water diversion when working in waterways, and for facilities or structures with active drainage according to Section 204.

603-3.02. LAYING PIPE. Begin the pipe laying at the downstream end of the pipe. Keep the lower segment of the pipe in contact with the bedding throughout its full length. Place bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe facing upstream.

Lay paved or partially lined pipe so that the longitudinal centerline of the paved segment coincides with the flow line. Install elliptical conduit and circular conduit reinforced with other than a full circular cage or cages so the orientation of a vertical plane through the longitudinal axis of the conduit does not vary more than 5 degrees from the design orientation.

Repair damaged metallic coating on metal pipe according to AASHTO M36.

603-3.03 JOINING PIPE. Joints shall provide circumferential and longitudinal strength to preserve the pipe alignment, prevent separation of pipe sections, and provide a watertight joint between new sections of pipe and joints between new and existing sections of pipe of similar and dissimilar materials. Include a continuous gasket (seal) in all joints. Construct the watertight joint capable of passing a laboratory hydrostatic pressure and vacuum test of at least 4 psi for 10 minutes.

1. Rigid Pipe. Use either bell and spigot or tongue and groove joints. Join pipe sections with the ends fully entered and the inner surfaces reasonably flush and even.

   Use one or more of the following joint materials, or any other if approved:

   a. Portland cement mortar

   b. Portland cement grout

   c. Rubber gaskets

   d. Coupling bands

   e. Preformed plastic sealing compound

   Make mortar joints using an excess of mortar to form a bead around the outside of the pipe.

   For grouted joints, use molds or runners to retain the poured grout. Install rubber ring gaskets to form a flexible, watertight seal.

   When using portland cement mixtures, protect the completed joints against rapid drying using suitable covering material.

2. Metal Pipe. Join metal pipe firmly using one of the types of coupling bands shown on the Plans and as described below. Provide coupling bands that are no more than two nominal sheet thickness lighter than pipe being joined and in no case thinner than the minimum sheet thickness of the material. The minimum sheet thickness is 0.048 inches for aluminum and 0.052 inches for steel. Include a gasket each side of the gap.

   a. Annular, Spiral, Semi-Corrugated, and Rod and Lug Bands. Provide standard bands as described by ASTM A760 and ASTM B745. Join the pipe so the gap between the pipes is in the center of the band and is no wider than one corrugation width.

   b. Dimple and Bias Bands. Use these bands only where it is not possible to use other bands, such as on field-cut pipe ends or joining new pipe to existing pipe. Join the pipe so the gap between the pipes is in the center of the band and is not wider than 2 inches.

3. Plastic Pipe. Use push-on or mechanical joints. Ensure that the plastic pipe couplings' corrugation matches the pipe corrugation and that their width is not less than one-half the nominal pipe diameter.

Furnish all bolted connections on coupling bands with cut washers placed between the nut and the angle bracket or use nuts with integral washers.

Take up any pipe that is out of alignment, unduly settled, or damaged and re-lay or replace it.

603-3.04 CULVERT MARKER.

1. Marker Post. Install a culvert marker on the approach side of storm drain outfalls 30 inches and smaller, field inlets not in paved parking lots, all end sections to cross culverts, or as directed. Drive to maintain forty-two inches of post above the ground after driving, and

2. Marker Strap. In addition to marker posts, install marker strap around the plastic pipe ends.

   Position the strap in the valley of the first annular ring from the top end of the culvert. From the vertical centerline of the culvert, at the top, overlap the strap and extend the ends to approximately 30 degrees each side of the centerline. Place the strap loosely without twists in the valley, without compressing the pipe, and tight enough to keep the strap from moving out of the valley without deforming the pipe or pipe corrugation. Seal the strap at three locations, one at each of the ends, and one at the top of the culvert. Extend the strap ends beyond the end seals approximately 1/2-inch. Double crimp the seal, two pairs of crimps minimum each seal.

   Repair the strap galvanizing where abraded and at cut ends according to ASTM A780. Prepare the surface with power tools per SSPC-SP11, hand tools per SSPC-SP2, and as required by the paint manufacturer. Apply paint, Type – paint containing zinc dust, to the prepared surfaces and allow enough time for curing as required by the manufacturer's printed instructions.

603-4.01 METHOD OF MEASUREMENT. Section 109, and as follows:

1. Culvert Pipe. The length of pipe, measured in place, along the invert.

2. Pipes for Storm Drains. The length of pipe, measured in place, along the invert, from center to center of structures. The length through the inlets, catch basins, and manholes is included in the measured length.

603-5.01 BASIS OF PAYMENT. Branch connections and elbows are subsidiary to the pipe unless included as a separate Pay Item.

Coupling bands, seals (gaskets), and other items necessary for the proper joining of the sections are subsidiary.

Culvert markers are subsidiary to the pipe.

Excavation, bedding, and backfill paid under Section 204.

PAY ITEM		
Item Number	**Item Description**	**Unit**
603.0001.____	CSP ___ Inch	LF
603.0002.____	___ Inch CSP Arch	LF
603.0003.____	End Section for CSP ___ Inch	Each
603.0004.____	End Section for ___ Inch CSP Arch	Each
603.0009.____	Corrugated Aluminum Pipe ___ Inch	LF
603.0010.____	___ Inch Corrugated Aluminum Pipe Arch	LF
603.0011.____	End Section for Corrugated Aluminum Pipe ___ Inch	Each
603.0012.____	End Section for ___ Inch Corrugated Aluminum Pipe Arch	Each
603.0013.____	Reinforced Concrete Pipe, ___ Inch, Class ___	LF
603.0014.____	Reinforced Concrete End Section, ___ Inch	Each
603.0015.____	Elbow, (Type & Size)	Each
603.0016.____	Branch Connection, (Type & Size)	Each
603.0017.____	Pipe ___ Inch	LF
603.0019.____	___ Inch Pipe Arch	LF
603.0020.____	End Section for Pipe ___ Inch	Each
603.2032.____	Corrugated HDPE Pipe ___	LF
603.2033.____	End Section for Corrugated HDPE Pipe ___	Each

C603-25.0201

SECTION 606
GUARDRAIL

606-1.01 DESCRIPTION. Construct new guardrail, terminal sections, transition rail, and permanent crash cushions.

The permanent crash cushion, hereafter referred to as, "crash cushion," includes the complete assembly (crash cushion, foundation, backstop or transition) represented in the FHWA eligibility letter(s).

Remove and reconstruct or remove and dispose of existing guardrail, terminal sections, transition rail, and crash cushions.
C606-21.1231_1

Furnish and store new highway safety appurtenance essential replacement parts (replacement parts) listed in Table 606-1. Repair damage, from highway crashes, with the replacement parts.

C606.13-20.0721_1

606-1.02 SUBMITTALS.

1. Submit the following at the preconstruction conference and receive approval before installation.

    a. Permanent Crash Cushions.

        (1) FHWA Eligibility Letter(s). Eligibility letters demonstrating each crash cushion assembly is MASH 2016 compliant with the AASHTO 2016 Manual for Assessing Safety Hardware (MASH-16) Test Level 3. Demonstrate the eligibility letter shielding widths cover the hazard widths and travel directions shown in the plans.

        (2) AASHTO Listing Category. AASHTO listing or documented updates for the crash cushion classification as listed in the 2011 AASHTO Roadside Design Guide, Section 8.4.

        (3) Manufacturers' Shop Drawings, Assembly, and Installation Instructions. Submit shop drawings and detailed assembly and installation instructions for the crash cushion as included in the FHWA Eligibility Letters.

        (4) Manufacturer Certification Letter. Certify the crash cushion(s) meet the requirements of the FHWA eligibility letter(s), are suited to the Contract requirements including the environmental conditions at the installation site.

        (5) Manufacturers' Installer Certification Letter. Certify the installation contractor is familiar with and trained to install the crash cushion.

        (6) Manufacturers' Installation Checklist. Submit a crash cushion installation checklist.

    b. Parallel Terminals.

        Manufacturer Installation Checklist. Submit an Assembly Installation Checklist.

2. Submit the following after installation.

   a. Permanent Crash Cushions.

      (1) Manufacturer Certification Letter. Certify the installed crash cushion(s) meet the requirements of the FHWA eligibility letters. Submit the certification letters(s) signed and dated no more than 14 days after installation.

      (2) Manufacturers' Installation Checklist. Submit the completed installation checklist signed by the Installer and Manufacturer no more than 14 days after installation. Complete the checklist after each assembly.

   b. Parallel Terminals.

      Manufacturer Installation Checklist. Submit the completed installation checklist signed by the Installer and Manufacturer no more than 14 days after installation. Complete the checklist after each assembly.

606-2.01 MATERIALS. Use materials that conform to the following:

Concrete, Class B	Section 550
Flexible Delineator Posts	Subsection 730-2.05
Guardrail Connection Plate	Subsection 710-2.12
Thrie-Beam Terminal Connector	Subsection 710-2.12
Guardrail Hardware	Subsection 710-2.07
Guardrail Posts and Blockouts	Subsection 710-2.06
High Strength Bolts	Subsection 716-2.03
Metal Beam Rail	Subsection 710-2.04
Terminals	Subsection 710-2.11
Terminal Markers	Subsection 730-2.05
Wire Cable	Subsection 709-2.02

Guardrail Reflector Assembly Brackets, Side-Mounted. Aluminum alloy.

Retroreflective Sheeting.

1. Post-Mounted Flexible Delineators and Guardrail Reflectors. ASTM D4956 Type IX or XI.

2. Terminal Markers. ASTM D4956 Type VIII, IX or XI.

Permanent Crash Cushion Assembly.

Crash cushions include the complete assembly as included in the Eligibility Letter, the crash cushion, the foundation, and rigid backup anchorage, or transition connection. Install an added Terminal Marker or other flexible delineator to the front of the crash cushions as recommended by the Manufacturer.

Design the crash cushion for the installation location environment. Snow combined with frequent freeze-thaw cycles creates significant ice buildup that may impair the performance of the crash cushion. Design to mitigate the effects from snow and ice. Crash cushions using supports that interlock and travel within fixed tracks at or below the first six inches from ground level, and crash cushions not designed to mitigate snow and Ice buildup are not acceptable for permanent use. Crash cushion covers, when available from the manufacturer, are required as part of the crash cushion installation.

Crash Cushion Classifications. 2011 AASHTO Roadside Design Guide, 4th Edition. The Engineer will determine the final classification of each materials submittal. Provide redirective and non-gating crash cushions of the type specified in the plans and matching the description noted below.

1. Sacrificial: Demonstrated designed for a single impact.

2. Reusable Crash Cushion. Demonstrated to have major components survive most impacts intact and salvageable. Some components require replacement after a crash.

3. Low-maintenance and Self-restoring Crash Cushion. Demonstrated to suffer very little, if any damage, upon impact and easily pulled back into their full operating condition. They may partially rebound after an impact and may only need an inspection to ensure that no parts have been damaged or misaligned.

C606-21.1231_1

CONSTRUCTION REQUIREMENTS

606-3.01 GENERAL. Install guardrail and terminals at the locations shown on the Plans. Conform to the Alaska Standard Plans and these Specifications.

At locations where public traffic is adjacent to guardrail work, have all materials on site, including crashworthy terminals, that are required to completely install a segment of guardrail before beginning work on that segment.

Start guardrail installation at the "upstream" end (the end adjacent traffic encounters first) by either installing a crashworthy terminal, connecting to an existing barrier or shielding the end with a crash cushion or truck mounted attenuator (TMA) meeting NCHRP 350, Test Level 3. Continue installation in the direction of traffic. Exception: if the guardrail run connects to existing barrier, buried in the backslope terminal, existing or new bridge railing, or other existing structure at the "downstream" end, guardrail installation may start at the point of connection.

Do not leave posts installed for guardrail within the clear zone for more than 48 hours before installing the rail. At the end of each work shift, install drums or Type II barricades with flashing warning lights to delineate incomplete sections of guardrail and terminal sections.

If guardrail runs are not completed within 10 calendar days after beginning installation, install temporary crash cushions meeting NCHRP 350 or MASH test level 3 at all non-crashworthy guardrail ends within the construction clear zone. Apply Traffic Price Adjustment if the Contractor does not comply with the crash cushion requirement.

When possible, proceed with construction of guardrails with the direction of traffic.

Where necessary, adjust the height of existing guardrail to provide a smooth transition to new guardrail. Use 25 linear feet of guardrail or two 12’ 6” pieces of guardrail to transition to match the existing or new guardrail elements and/or end treatments.

After shaping the slopes and staking proposed guardrail terminal section locations, request the Engineer to field verify their locations. Receive approval of the staked locations before installing terminal sections.

Treat field cuts to timber posts and blockouts according to AWPA standard M 4.

Install blockouts according to manufacturer's recommendations and as shown on the plans.

Install side-mounted guardrail reflectors and post-mounted flexible delineators as follows:

1. at intervals noted on the plans or Alaska Standard Plans, starting with the first guardrail post beyond terminal sections

2. with the retroreflective sheeting facing approaching traffic

3. with retroreflective sheeting on both sides, on two-way roadways

4. not on the terminal sections, except as shown on the plans

5. at or below 500 feet in elevation, except as noted otherwise in the Plans.

Attach terminal markers, in a vertical position, to the P.T. post of Short Radius Guardrail sections and to the post where the flare begins for parallel guardrail terminals. Coordinate terminal marker locations with the Engineer.

At the end of each work shift, install drums or Type II barricades with flashing warning lights to delineate incomplete sections of guardrail and terminal sections.

C606-21.1231_1

Do not remove existing highway safety appurtenances, guardrail and similar, before mobilization of the replacement parts to the project storage location.

C606.13-20.0721_1

606-3.02 POSTS. Set posts to accommodate the line, grade, and curvature shown on the Plans.
Use either wood or steel posts when allowed by the type of guardrail specified, subject to the following:

1. Exclusive of end treatments, use one type of post in each run of guardrail.

Set posts as follows:

1. Set posts plumb, in the location and to the depth shown on the Plans or Alaska Standard Plans.

2. Choose an installation method that does not damage the post, adjacent pavement, structures, utility conduits, and final slopes. Repair all damage to the satisfaction of the Engineer, or replace the damaged item, as per subsection 105-1.11.

3. Set wood or steel posts in dug, drilled, or pre-punched holes. Steel posts may also be set by ramming or driving if:

    a. The underlying material is no larger than six inch; and

    b. The posts are not damaged during installation.

4. Backfill and compact around posts with material as specified in the typical section to firmly support the post laterally and vertically. Compact under and around posts to the Engineer's satisfaction.

5. For placement in solid rock or broken rock embankment greater than six inch, set wood or steel posts in pre-dug, pre-drilled, or pre-punched holes.

6. In new roads, install posts before final shoulder or median compaction, surfacing, and paving.

606-3.03 BEAM RAIL. Fabricate metal work in the fabricator's shop. Bend curved guardrail elements with radii less than or equal to 100 feet in the fabricator's shop or with an approved bending apparatus.

Receive approval before field punching, cutting, or welding. Repair damaged spelter coat areas on galvanized rail elements according to AASHTO M 36 (ASTM A760).

Lap rail elements so that the exposed ends face away from approaching traffic in the adjacent lane.

Use bolts long enough to extend at least 1/4 inch beyond the nuts. Except where required for adjustments, do not extend bolts more than 1 inch beyond the nuts.

Locate bolts at expansion joints at the center of the slotted holes.

Tighten bolts at expansion joints to snug-tight. Make all other bolts fully-tight.

606-3.04 CABLE RAIL. Install cable guardrail according to the Plans and Specifications. Install at the locations shown on the Plans.

606-3.05 TERMINAL SECTIONS.

Parallel Terminals.

Install terminal sections according to the manufacturer's recommendations for the entire length of the terminal then, if required, transition rail height over 25' to match guardrail height and splice location.

Install ASTM D4956 Type III, IV, or V retroreflective sheeting on the end section of parallel terminals consisting of yellow and black bars sloping 45 degrees downward toward the traffic side of the terminal according to guidance for Object Markers for Obstructions Adjacent to the Roadway in Chapter 2C of the ATM.

Submit the manufacturers' complete Assembly Installation Checklist signed and dated after completing installation to support acceptance for each installation, see Subsection 606-1.02 for further information.

606-3.06 REMOVAL AND RECONSTRUCTION OF GUARDRAIL. Remove and reconstruct guardrail as specified. Replace lost or damaged materials without extra compensation.

When replacing existing guardrail complete the replacement run installed within 14 calendar days after removal.

For guardrail located within 50 feet of bridge ends, remove and replace the existing guardrail in the same work shift.

606-3.07 REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL. Remove the existing guardrail, including the rail, cable elements, terminal sections, hardware, posts, concrete bases, and steel tubes. Backfill resulting holes with material in 6-inch layers that is similar to the existing embankment and compact to the same approximate density.

Guardrail.

Notify the Engineer a minimum of 5 days before removing guardrail. The Engineer will notify the DOT&PF, M & O, and have an M & O representative designate portions of guardrail for salvage. Deliver salvaged guardrail and associated hardware to the M & O station located at Crown Point, 30049 Seward Hwy. Remaining items removed become the Contractor's property.

Permanent Crash Cushion.

Notify the Engineer a minimum of 5 days before removing permanent crash cushions. The Engineer will notify the DOT&PF, M & O, and have an M & O representative designate portions of the crash cushion for salvage. Deliver salvaged crash cushion and associated hardware to the M & O station located at _____ NA _____. Remaining items removed become the Contractor's property.

606-3.08 ADJUST EXISTING GUARDRAIL. When called for on the Plans, reset existing guardrail to the height shown on the applicable Alaska Standard Plan, measured from the top of the rail to the finished shoulder surface below the rail. Raise and lower the posts several times to prevent settlement and then re-drive them to the height shown on the Plans. Use other methods if approved.

606-3.09 INSTALL NEW GUARDRAIL. Install guardrail as shown on the Plans.

606-3.10 TERMINAL MARKERS. For each parallel rail terminal, attach a terminal marker to the extreme piece of rail.

Attach flexible markers, in a vertical position, to the terminal end directly to the backside of the rail face, the face away from the traveled way, or the first post of each parallel guardrail terminal. Provide an additional marker where the flare begins for guardrail terminal widening. Provide two markers at the end of each run of guardrail; coordinate the locations with the Engineer.

Attach the flexible markers using hardware and attachment methods recommended by the manufacturer. The connection shall not negatively influence the performance of the guardrail as noted in 606-2.01.

606-3.11 LENGTH OF NEED VERIFICATION. After shaping the slopes and staking the proposed guardrail locations, notify the Engineer to field verify the beginning and ends. The Engineer will approve the staked location of the guardrail before installation. When the Engineer determines additional guardrail is required, complete the installation immediately.

606-3.12 PERMANENT CRASH CUSHION. Install crash cushions according to the manufacturer's instructions.

Construct crash cushions to shield the hazard width and travel direction shown in the plans.

Manufacturer's Crash Cushion Installation Certification. Submit the Manufacturer's Crash Cushion Installation Certification letter signed and dated after completing installation, see Subsection 606-1.02 for further information.

Manufacturer Certified Installers. Install crash cushions using installers certified by the crash cushion manufacturer. Install Crash cushions as follows:

1. Parallel to the approach traveled way or as shown on the plans.

2. Follow Section 203 for the excavation and embankment requirements of the concrete base component of the crash cushion.

3. Follow Section 501 for a concrete pad, sized according to the manufacturer's recommendations, constructed on a minimum of 12 inches of Selected Material, Type B.

4. Cut or fill to the top of the concrete pad with Selected Material, Type B at 12:1 or shallower on installations in grass median.

5. Install top elevation of concrete pad flush to pavement edge when adjacent to or within asphalt pavement.

6. Bolt crash cushion to median barrier with manufacturer approved barrier to crash cushion connector when attached to median barrier.

7. Install a terminal marker or other flexible delineator on the nose of each crash cushion as recommended by the manufacturer. The terminal marker is in addition to, not a substitute for, the retroreflective delineation installed on the crash cushion nose.

8. Manufacturers' Crash Cushion Installation Checklist. Submit the installation checklist signed and dated after completing installation, see Subsection 606-1.02 for further information.

The crash cushion installation is not complete until the Crash Cushion Manufacturers' Installation Checklist and Installation Certification letter are submitted and the Engineer accepts the installation.

Excess excavated material is the property of the Contractor.

C606-21.1231_1

606-3.14 HIGHWAY SAFETY APPURTENANCE – ESSENTIAL REPLACEMENT PARTS. Install replacement parts as directed.
Deliver the remaining new replacement parts, at time of substantial completion, to the State Maintenance and Operations Station, located at:
30049 Seward Highway, Crown Point.

Notify the Engineer no less than 7 days before delivery.

C606.13-20.0721_1

606-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

1. Guardrail. Measured along the face of the rail or cable, from the center of the end posts.

   Short Radius Guardrail. Per each, installed in place.

   When the guardrail is connected to a terminal section, the pay limit for the rail ends where the specified terminal section begins.

2. Terminals. Per each, installed in place.

3. Transition Rail. Per each accepted connection.

4. Permanent Crash Cushion. Each installed and accepted.

606-5.01 BASIS OF PAYMENT.

Payment for temporary crash cushions or TMA installed to protect motorists when guardrail installations are not completed within 10 calendar days of beginning installation is subsidiary to other items.

1. Guardrail. Side-mounted guardrail reflectors, post-mounted flexible delineators, terminal markers, guardrail beam, posts, blockouts, and associated hardware are subsidiary. Installation of downstream anchors, transitions for rail height and splice locations, long span guardrail sections, and guardrail stiffening sections are subsidiary to guardrail installation.

2. Short Radius Guardrail Sections. The contract price includes all materials from the terminal anchor to and including the first wood or steel post of standard guardrail or guardrail end terminal, and including the terminal anchor assembly, in-line anchor, terminal posts, short radius guardrail posts, rail elements, terminal markers, and associated hardware required for a complete installation.

3. Terminal Sections.

   a. Parallel Guardrail Terminal. The contract price includes rail elements, posts, blockouts, pipe sleeves, cable assemblies, guardrail extruders, terminal markers, and all associated hardware required for a complete installation.

4. Transition Rail. The contract price includes all brackets, beam sections, transition pieces, and all posts and associated hardware required for a complete connection of the guardrail section to a bridge rail or barrier.

5. Permanent Crash Cushion. The contract price includes all work and materials required to install each permanent crash cushion, foundations, and connections along with the manufacturer's field support, recommendations, and shop drawings. Removal and salvage of existing crash cushions is subsidiary to Pay Item 606.2007.____ Pay Item(s).

All material required for embankment widening for guardrail and terminal sections is paid for under the appropriate pay items shown in the bid schedule.

Guardrail salvage is subsidiary to Pay Item 606.0006.____ Removing and Disposing of Guardrail.

PAY ITEM		
Item Number	**Item Description**	**Unit**
606.0001.____	W-Beam Guardrail	LF
606.0002.____	Thrie Beam Guardrail	LF
606.0003.____	Box Beam Guardrail	LF
606.0004.____	Cable Guardrail	LF
606.0005.____	Removing and Reconstructing Guardrail	LF
606.0006.____	Removing and Disposing of Guardrail	LF
606.0008.____	Double-faced, W-Beam Guardrail	LF
606.0009.____	Short Radius Guardrail	Each
606.0013.____	Parallel Guardrail Terminal	Each
606.0015.____	Adjust Existing Guardrail	LF
606.0016.____	Transition Rail	Each
606.2007.____	Crash Cushion, Permanent _____	Each

C606-21.1231-1

TABLE 606-1
HIGHWAY SAFETY APPURTENANCES – ESSENTIAL REPLACEMENT PARTS

Essential Replacement Parts	Material Specification	Unit	Quantity
W-Beam Guardrail	Subsection 710-2.04	LF	
Thrie Beam Guardrail	Subsection 710-2.04	LF	
Cable Guardrail	Subsection 709-2.02	LF	
Box Beam Guardrail	Subsection 710-2.04	LF	
Wood Guardrail Post and Blockout	Subsection 710-2.06	Each	
Steel Guardrail Post and Blockout	Subsection 710-2.06	Each	
Short Radius Guardrail	Alaska Standard Plan G-26.00	Each	
Parallel Guardrail Terminal	Subsection 710-2.11	Each	
Transition Rail	Subsection 710-2.04	Each	
Crash Cushion, Permanent _____	Subsection 606-2.01	Each	
Precast Concrete Barrier	Subsection 501-3.01 & 709-2.01	LF	
Rigid Delineator	Subsection 730-2.05	Each	
Flexible Delineator	Subsection 730-2.05	Each	

Replace damaged replacement parts at no additional cost to the Department.

6. 606.2006.____ Essential Replacement Parts – Installation. Installation of the replacement parts according to the directive authorizing the work.

PAY ITEM		
Item Number	**Item Description**	**Unit**
606.2005.____	Essential Replacement Parts	LS
606.2006.____	Essential Replacement Parts – Installation	CS

C606.13-20.0721_1

SECTION 610
DITCH LINING

610-1.01 DESCRIPTION. Construct ditch lining at the locations on the Plans or as staked.

610-2.01. MATERIALS. Use crushed stones that are angular, hard, sound, and durable with at least one face resulting from fracture.

1. Angular—stones, the particles of which possess well-defined edges formed at the intersection of roughly planar faces.

2. Hardness—resistance of a material to indentation or scratching. AASHTO T96, not more than 50% wear at 500 revolutions.

3. Soundness—measure of aggregates durability when exposed to the elements, AASHTO T104.

4. Gradation—ATM 304:

    a. Maximum of 6 inches in greatest dimension
    b. Not more than 50% by weight passing a 3-inch sieve
    c. Not more than 5% passing a 1-inch sieve

5. Breadth and Width—at least 1/3 of the length

610-3.01 CONSTRUCTION REQUIREMENTS. Place and spread ditch lining materials so that the finished face is uniform. Place stones on slopes 1.5:1 and flatter.

610-4.01 METHOD OF MEASUREMENT. Section 109.

610-5.01 BASIS OF PAYMENT. Excavation required below normal ditch grade is subsidiary.

PAY ITEM		
Item Number	**Item Description**	**Unit**
610.0001.____	Ditch Lining	CY
610.0002.____	Ditch Lining	Ton
610.0003.____	Ditch Lining	STA

C610-17.0601-1

SECTION 611
RIPRAP

Special Provision

611-2.01 MATERIALS.

Replace the first paragraph with the following:

Evenly graded stones that are hard, angular, and have no more than 50 percent wear at 500 revolutions as determined by AASHTO T 96. Apparent specific gravity will be determined by ATM 308. Use stones with breadth and thickness at least 1/3 of its length. Do not use round boulders or cobbles on slopes steeper than 3:1.

C611.1-19.0201

SECTION 615
STANDARD SIGNS

615-1.01 DESCRIPTION. Furnish and install standard signs and delineators. Remove and relocate or remove and dispose of existing signs and markers, as specified.

615-2.01 MATERIALS. Use materials that conform to the following Subsections:

Sheet Aluminum	730-2.01
High Density Overlaid Plywood	730-2.02
Retroreflective Sheeting, ASTM D4956	730-2.03
Sign Posts	730-2.04
Delineator Posts	730-2.05
Acrylic Prismatic Reflectors	730-2.06
Sign Support Fasteners	730-2.07

1. Shop Drawings. Submit shop drawings, for all signs that must meet the ASDS letter width and spacing charts for variable width legends (such as D-series and I-3 signs), and which require custom shop drawings specific to the project. Submit 4 sets of collated shop drawings prepared according to Subsection 105-1.02. Show the following on each sign drawing:

    a. Dimensions of all horizontal and vertical characters and spaces
    b. Overall dimensions
    c. Sign material and sheeting material type
    d. Panel thickness
    e. Legend and letter series
    f. Whether the sign will be framed

2. Sign Fabrication. Use ASTM D4956 Type IV retroreflective sheeting (for lettering, symbols, borders, and background) on sheet aluminum panels for all signs except the following:

    a. Orange Background Signs. Use Type IX or XI fluorescent orange reflective sheeting placed on sheet aluminum panels, except:

        (1) For temporary installations, the reflective sheeting place on aluminum, plastic, or plywood sheet panels.

        (2) For flexible signs, (Roll-Up Signs) use fluorescent reflective sheeting Type VI or better (based on durability and reflectivity, as determined by the Engineer). Roll-Up Sign – 3M Series RS 24, Reflexite Marathon Orange, or approved equal.

    b. Railroad Crossbucks and Vertical Crossbuck Supports: Use white ASTM D4956 Type VIII or Type IX or XI retroreflective sheeting for background of sign and all strips.

    c. Non-Illuminated Overhead Signs with White Legends on Green Backgrounds: Use ASTM D4956 Type IX or XI retroreflective sheeting for legends and background. Create the legend in one of the following ways:

        (1) Cut border and legend from white ASTM D4956 Type IX or XI retroreflective sheeting and adhere them to a green ASTM D4956 Type IX background, or

        (2) Cut stencil of border and legend out of green transparent acrylic film and use transparent adhesive to overlay the film on a white ASTM D4956 Type IX or XI retroreflective background.

d. Fluorescent Yellow-Green School Area Signs: Use ASTM D4956 Type VIII, Type IX or XI retroreflective sheeting for background.

Use a manufacturer-recommended clear coat on all screened signs.

Use sign layouts (including characters, symbols, corner radii, and borders) that conform to the ASDS.

3. Sign Posts and Bases. Use sign posts and bases of the types specified. The structural aspects of design and materials for sign supports must comply with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. Do not splice sign posts.

   Foundation Concrete:

   a. Non-structural and Non-steel-reinforced Sign Foundations. Use Class W concrete, or commercially available pre-mixed sacked concrete with a minimum compressive strength of 3,000 psi. When sacked concrete is used, acceptance will be based on manufacturer Certificates of Compliance and the compressive strength test results of the specimens prepared according to ATM 506.

   b. Steel-reinforced Roadside Sign Foundations. Use Class B concrete meeting the requirements of Section 550, except:

      Overhead Sign Support Foundations. Use Class A concrete meeting the requirements of Section 501.

4. Delineators. Use delineator assemblies that conform to the requirements shown on the Plans. Fabricate flexible delineators using ASTM 4956 Type III, IV, V, IX or XI retroreflective sheeting.

5. Reflective Sheeting Warranty. Supply manufacturer's warranty for reflective sheeting, including retention of fluorescent yellow-green (measured in accordance with ASTM E2301) for ten years according to the following criteria:

   a. Minimum Fluorescent Luminance Factor Y_F: 20%
   b. Minimum Total Luminance Factor Y_T: 35%

   The warranty shall stipulate that: If the sheeting fails to meet the minimum fluorescence values within the first 7 years from the date of fabrication of the sign, the manufacturer shall, at the manufacturer's expense, restore the sign surface to its original effectiveness. If the reflective sheeting fails to meet the minimum fluorescence values within the 8th through 10th year from the date of fabrication, the manufacturer shall, at the manufacturer's expense, provide enough new replacement sign sheeting to the Department to restore the sign surface to its original effectiveness.

CONSTRUCTION REQUIREMENTS.

615-3.01 GENERAL.

1. Place posts in excavated holes to the depth shown on the Alaska Standard Plans.

2. Backfill the space around the posts and foundations placed in holes to finish ground with selected earth or sand, free of rocks or deleterious material. Place backfill in layers approximately 6 to 12 inches thick and thoroughly compact it.

3. Dispose of surplus excavated material neatly along the adjacent roadway as directed.

4. Install flexible delineator posts according to the manufacturer's recommendations.

5. Attach sign panels to posts, electroliers, traffic signal standards, bridge rails, piers, and abutments using the types and sizes of fastening hardware shown on the Plans.

6. If using existing signs and mileposts that are removed and relocated, ensure they conform to the details shown on the Plans or as directed.

7. Sign Salvage:

   Notify the Engineer 5 working days prior to beginning sign salvage activities. The Engineer will physically identify those signs to salvage.

   Sign(s) identified for salvage in the Plans Sign Summary table, the sign is the property of the Agency identified, and if not identified is the property of the Contractor.

   Salvage sign includes the sign panels, posts, foundation sleeves, and hardware.

   Deliver salvaged sign(s) to the Agency maintenance facility(s) identified in the Plans Sign Summary table at the address identified herein.

   Agency Salvaged Signs.

      Protect all items from damage during salvaging and delivery. For each sign so designated, disconnect sign post from panel and group the panels together. Group posts together with the foundation sleeves and their hardware. Do not deliver salvaged materials until approved by the Engineer. Replace any items damaged by you at no additional cost to the Department.

      N/A

   Dispose of foundations from salvaged existing signs in a manner approved of by the Engineer (remove and dispose, abandoned in place, or otherwise). If abandoned in place, remove the tops of the foundations, reinforcing steel, anchor bolts, and conduits to a depth of not less than 12 inches below roadway subgrade or unimproved ground, whichever applies.

   Dispose of sign salvage not wanted by the Contractor, not used in the project, and not accepted by the Local Maintenance and Operations Station, off sight and as required by Federal, State, and Municipal environmental regulations.

   All signs, the sign panels, posts, hardware, foundation sleeves, and foundations at a single installation are considered as one unit.

8. All materials and finished signs are subject to inspection and acceptance in place.

    a. Surfaces exposed to weathering must be free of defects in the coating that impair serviceability or detract from general appearance or color match.

    b. Finished signs must be clean and have no chatter marks, burrs, sharp edges, loose rivets, delaminated reflective sheeting, or aluminum marks. Do not make repairs to the face sheet.

9. Install the various breakaway assemblies according to the manufacturer's written instructions. Meet MASH crashworthiness requirement for breakaway hardware, unless approved otherwise by the Engineer.

10. Secure the anchors in templates and install them according to the manufacturer's written instructions.

11. Finish the foundation according to these tolerances:

    a. Do not use more than two shims per coupling.

    b. Do not use more than three shims to plumb each post.

    Remove and replace all foundations requiring more than three shims to plumb a post without extra compensation.

12. Construct the top of any foundation located on a slope so that the finished slope passes through the top center of the foundation. Grade the area 24 inches up and down slope of the foundation edge so that no portion of the foundation projects above the surrounding slope and water will drain away from the foundation.

13. Attach a label to the back of all standard signs in the lower right corner. Make the label at least 15 square inches and show the year the sign was purchased from the manufacturer. Show the last two digits of the year in clear and bold numbers. Make the label from ASTM D4956 Type I or brighter retroreflective sheeting. Use background and legend colors meeting Table 615-1.

TABLE 615-1
DECAL COLORS

YEAR	BACKGROUND COLOR	LEGEND COLOR
XXX1	Yellow	Black
XXX2	Red	White
XXX3	Blue	White
XXX4	Green	White
XXX5	Brown	White
XXX6	Orange	Black
XXX7	Black	White
XXX8	White	Black
XXX9	Purple	White
XXX0	Strong Yellow-Green	Black
Central values and tolerance limits for each color, as referenced in the MUTCD, are available from the Federal Highway Administration, (HHS-30), 400 7th St. SW, Washington, D.C. 20590		

615-3.02 SIGN PLACEMENT AND INSTALLATION. The location and type of installation will be as shown on the Plans. Sign locations are approximate and subject to field adjustment by the Engineer.

Do not allow the top of the embedded steel tube to extend more than 2 inches above the surrounding ground and concrete foundation.

On all signs, install 2-inch diameter wind washers, colored to match the sign face, between the fastener head and the sign. Use rust-resistant washers fabricated from a material equal in strength to the sign blank.

Mount signs on mast arms level.

Bring existing signs that are to remain, into conformance with Standard Drawing S-05. Keep existing signs in service until they are no longer needed.

615-4.01 METHOD OF MEASUREMENT.

Standard Signs and Object Markers. By the total area of legend-bearing sign panel erected in place. No deductions in quantity for corner rounding will be made. Nominal dimensions for sign sizes indicated on the Plans will be used to calculate sign pay quantities. Octagons and round signs will be measured as rectangles. Only one side of each double-faced sign will be measured for payment.

Removal and Relocation. By each, complete in place.

Delineators. By each, complete in place. A single delineator consists of one post equipped with three reflectors.

Salvage Sign. By each complete sign delivered in acceptable condition.

615-5.01 BASIS OF PAYMENT. Sign posts, bases, and mounting hardware are subsidiary.

Salvage Sign. Each complete sign includes the sign panels, posts, hardware, and foundations sleeves at a single installation.

When Items 615.0002.____, 615.0003.____, or 615.0006.____ do not appear on the bid schedule, this work is subsidiary.

PAY ITEM		
Item Number	**Item Description**	**Unit**
615.0001.____	Standard Sign	SF
615.0002.____	Remove and Relocate Sign	Each
615.0003.____	Remove and Relocate Milepost	Each
615.0004.____	Delineator, Rigid	Each
615.0005.____	Delineator, Flexible	Each
615.0006.____	Salvage Sign	Each
615.0007.____	Salvage and Dispose Sign	Each

C615-24.1001

SECTION 618
SEEDING

618-1.01 DESCRIPTION. Establish a healthy living perennial stand of grass or other vegetative living groundcover by seeding. Maintain the living cover for the term of the Contract.

618-2.01 MATERIALS. Use materials that conform to the following:

Water	Subsection 712-2.01
Seed	Section 724 (Grass Seed)
Fertilizer	Section 725
Topsoil	Section 726
Soil Stabilization	Section 619
Soil Stabilization Material	Section 727

TABLE 618-1
GRASS SEED MIX, SOIL STABILIZER, AND FERTILIZER APPLICATION RATES

Materials	Ingredients	Application Rate (per MSF[c])
Grass Seed Mix [a, b]	Nortran – Tufted Hairgrass Arctared – Red Fescue Wainwright - Slender Wheatgrass Annual Ryegrass	0.60 lbs. 0.45 lbs. 0.37 lbs. 0.08 lbs. Total = 1.50 lbs.
Soil Stabilizer·		
Slope ≤ 3:1	Mulch	46 lbs.
Slope >3:1	Mulch with tackifier	45-58 lbs.
Fertilizer	20-20-10	12 lbs.

a. Do not remove the tags from seed bags.
b. Submit an alternate seed mix when the specified seed is not commercially available. Provide a letter confirming the specified seed is not available. Include an agronomist certified seed mix design, including application rate, suited to the project site.
c. MSF = 1000 ft^2.

CONSTRUCTION REQUIREMENTS

618-3.01 SURFACE PREPARATION. Remove ruts, holes, humps and other irregularities from the surface. Clear stones four inches in diameter and larger, weeds, plant growth, sticks, stumps, and other debris that will interfere with the application of stabilization material, topsoil, the seeding operation, growth of vegetative groundcover, and subsequent maintenance of the cover.

Smooth the slopes for a uniform appearance and round the top and bottom of the slopes to facilitate tracking or raking. Do not disrupt drainage flow lines.

Evenly place stabilization material and or topsoil when specified.

Prepare the surface material by grooving the material in a uniform pattern that is perpendicular to the fall of the slope. Use one or more of the following grooving methods with associated equipment before the application of seed:

1. Manual raking with landscaping rake;

2. Mechanical track walking with track equipment; or

3. Mechanical raking with a scarifying slope board. Form one-inch wide grooves spaced no more than six inches apart.

618-3.02 SEEDING SEASON. Seed disturbed areas after permanent cessation of ground disturbing activities in that area, within the period specified in the Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP) for Alaska, Section 4.5 Soil Stabilization, and Section 641 Erosion, Sediment, and Pollution Control.

Do not seed during windy conditions, when climatic conditions or ground conditions would hinder placement or proper growth.

Seed between May 15 and August 15.

618-3.03 APPLICATION. Seed, seeding, reseeding includes the application of seed, fertilizer, and stabilization material.

If the seed mix, fertilizer and stabilization material are not included in the Plans or Specifications, including their application rates, use the recommendations of the ADNR and the Revegetation Manual for Alaska.

Do not seed areas of bedrock and plant beds.

Use any of the following methods:

1. Hydraulic Method

   Apply seed and stabilization material in one application when using the hydraulic method. Apply fertilizer with the hydraulic method. Include the fertilizer with the seed and stabilization material or apply separately.

   a. Furnish and place a slurry made of seed, fertilizer, water, and other materials.

   b. Use hydraulic seeding equipment that will maintain a continuous agitation and apply a homogeneous mixture through a spray nozzle. The pump must produce enough pressure to maintain a continuous, nonfluctuating spray that will reach the extremities of the seeding area with the pump unit located on the roadbed. Provide enough hose to reach areas not practical to seed from the nozzle unit situated on the roadbed.

   c. If mulch material is required, it may be added to the water slurry in the hydraulic seeder after adding the proportionate amounts of seed and fertilizer. Add seed to the slurry mixture no more than 30 minutes before application.

   d. Mix the slurry and apply it evenly.

2. Dry Methods

   a. Use mechanical spreaders, seed drills, landscape seeders, aircraft, cultipacker seeders, fertilizer spreaders, or other approved mechanical spreading equipment.

   b. Spread fertilizer separately at the specified rate.

618-3.04 MAINTENANCE. Maintenance includes but is not limited to the following:

1. Protecting seeded areas against traffic by approved warning signs or barricades and against erosion.

2. Repairing surfaces gullied or otherwise damaged following seeding. Fill erosion gullies 4 inches deep and greater filling the gully to surrounding grade including the portions less than 4 inches deep. Apply and prepare the stabilization material and or topsoil for seeding. Seed repaired area. Refer to Subsections 618-3.01 & 3.03.

3. Reseeding areas not showing evidence of satisfactory growth within 3 weeks of seeding and after repairs are complete. Reseed bare patches of soil more than 10 square feet in area. Contact ADNR for advice or corrective measures, when seeded areas are not showing evidence of satisfactory growth.

4. Watering seeded areas for healthy growth of vegetative cover. Adjust the amount of water when directed.

618-3.05 ACCEPTANCE. The vegetative ground cover will be inspected considering each station and each side of the road a separate area. Acceptance of the ground cover requires a minimum of 75% cover density in the inspection area, gullies repaired and reseeded, and no bare patches of soil more than 10 square feet in area.

Repair/reseed areas that are not accepted.

618-3.06 PERIOD OF ESTABLISHMENT. Establishment period, for each seeded area, extends one complete growing season (May 1 to August 15) after the planting year, acceptance, and final inspection beginning from the date of Project completion, Subsection 105-1.15.

Employ all possible means to preserve/maintain the new vegetative groundcover in a healthy and vigorous condition to ensure successful establishment. Maintain the vegetative cover, according to Subsection 618-3.04, to not less than the requirements for acceptance, Subsection 618-3.05.

618-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Seeding by the Acre. By the area of ground surface acceptably seeded and maintained.

Seeding by the Pound. By the weight of dry seed acceptably seeded and maintained.

Water for Seeding. If weighed, a conversion factor of 8.34 pounds per gallon will be used to convert weights to gallons.

MGAL equals 1000 gallons.

618-5.01 BASIS OF PAYMENT.

1. Pay Items 618.0001.____ and .0002.____ Seeding. Payment is for healthy established vegetative groundcover through the establishment period.

   a. The initial surface preparation, seed, fertilizer, mulch when applied hydraulically, their application, and the water for hydraulic application are subsidiary.

   b. Maintenance fill, stabilization material, topsoil, surface preparation, seed, fertilizer, mulch when applied hydraulically, and the water required for hydraulic application are subsidiary.

2. Pay Item 618.0003.____ Water for Seeding. Payment is for water applied for growth of vegetative groundcover through the establishment period.

   If Pay Item 618.0003.____ Water for Seeding, is not included in the bid schedule, water applied for growth of vegetative groundcover through the establishment period is subsidiary.

Except for maintenance, stabilization material is paid under Section 619 and topsoil under Section 620.

PAY ITEM		
Item Number	**Item Description**	**Unit**
618.0001.____	Seeding	Acre
618.0002.____	Seeding	LB
618.0003.____	Water for Seeding	MGAL

C618-23.0601

Special Provision

Replace Section 619 with the following:

SECTION 619
SOIL STABILIZATION

619-1.01 DESCRIPTION. Furnish, install, and maintain materials to stabilize the soil. Control erosion, sediment, and pollution.

619-1.02 RELATED SECTIONS, REFERENCE ORGANIZATIONS, AND STANDARD DOCUMENTS.

1. Alaska Department of Transportation and Public Facilities (Alaska DOT&PF):

   Standard Specifications for Highway Construction
   - Seeding ..... Section 618
   - Topsoil ..... Section 620
   - Planting Trees and Shrubs ..... Section 621
   - Silt Fence ..... Section 633
   - Erosion, Sediment, and Pollution Control ..... Section 641
   - Soil Stabilization Material ..... Section 727

2. American Association of State Highway and Transportation Officials (AASHTO)

   Standard Practice for:
   a. Compost for Erosion/Sediment Control (Filter Berms and Filter Socks) ..... R 51
   b. Compost for Erosion/Sediment Control (Compost Blankets) ..... R 52

3. United States Composting Council (USCC)
   a. Testing Methods for the Examination of Compost and Composting (TMECC)
   b. Seal of Testing Assurance Program (STA) documents

4. Erosion Control Technology Council (ECTC)
   a. Hydraulic Erosion Control Products (HECPs) Specification Chart
      Table 1, Performance Chart for Standard HECPs
   b. Rolled Erosion Control Products (RECPs) Specification Chart
      Table 1, Rolled Erosion Control - Temporary
      Table 2, Rolled Erosion Control - Permanent

5. National Transportation Product Evaluation Program (NTPEP)
   a. Testing and Evaluation of Products Materials and/or Devices

6. Texas DOT/Texas Transportation Institute (TTI) Hydraulics and Erosion Control Laboratory

619-1.03 SUBMITTALS. Submit stabilization and erosion, sediment and pollution control performance testing results with certifications for each material, Section 619-2.01 Materials. Submit a sample of each material to the Engineer 7 days before the scheduled installation.

1. Test compost, all applications, no more than 90 days before installation.

2. At a minimum, certificate will include the name of the manufacturer, product name, style number, or similar, chemical composition of the material, the fibers, netting, yarn and similar and the weed free status of the material.

3. Organic materials shall be accompanied with all applicable health certificates and permits.

4. Furnish a Material Safety Data Sheet (MSDS) that demonstrates the product is not harmful to plants, animals, and aquatic life.

619-2.01 MATERIALS. Select stabilization materials, individually or a combination of, matched to the project applications/conditions (sheet flow, concentrated flow, slope, length of slope, access, etc.) providing performance and functional longevity meeting the most restrictive requirements of the Construction General Permit (CGP), the approved Storm Water Pollution Prevention Plan (SWPPP) and Section 641 Erosion, Sediment and Pollution Control.

1. Mulch ..... Subsection 727-2.01
   a. Dry Erosion Control, Stabilization Products
   b. Hydraulic Erosion Control Products (HECPs)
2. Matting Subsection727-2.02
   a. Rolled Erosion Control Products (RECPs)
3. Sediment Retention Fiber Rolls (SRFRs)..... Subsection 727-2.03
   a. Filter Socks
   b. Compost Socks
   c. Coir Logs
4. Compost ..... Subsection 727-2.04
5. Tackifier ..... Subsection 727-2.05
6. Soil Binders (Polyacrylamide (PAM)) ..... Subsection 727-2.06
7. Geotextile-Encased Check Dams and Sediment Barriers ..... Subsection 727-2.07
8. Sandbag ..... Subsection 727-2.08
9. Manufactured Inlet Protection System ..... Subsection 727-2.09
10. Clear Plastic Covering ..... Subsection 727-2.10
11. Staples ..... Subsection 727-2.11
12. Other stabilization materials submitted to and approved by the Engineer.

Include on the packaging the manufacturer's name, the content, the air dry-weight and the guaranteed chemical analysis of the contents. Ship and deliver to the site in the original, unopened containers.

CONSTRUCTION REQUIREMENTS

619-3.01 GENERAL. Stabilization may include individual or a combination of materials, including but not limited to temporary seeding, mulch, tackifier, staples, matting, stabilizing emulsions, soil binders, dustless sweeping, dust palliatives, and others.

1. Material Storage and Protection. Store materials elevated off the ground and covered protecting them from construction and or damage from the environment including but not limited to:
   a. Precipitation
   b. Extended ultraviolet radiant including sunlight
   c. Chemicals that are strong acids or other
   d. Flames and welding sparks
   e. Excess temperatures
   f. Other environmental conditions that may damage the materials

2. Fabrication.
   a. Sandbags. Sand bags shall measure 15 inches by 30 inches. Place approximately 1.0 cubic foot of select Material, Type B, in each sandbag sack. Close the open end of the sandbag as recommended by the fabric manufacturer.

619-3.02 SURFACE PREPARATION. Clear all areas to be stabilized of stones 4 inches in diameter and larger and of weeds, plant growth, sticks, stumps, and other debris or irregularities that might interfere with the stabilization operation, growth of cover (where vegetative cover is part of the stabilization operation) or subsequent maintenance of the vegetative-covered area(s).

Smooth the surface of the area(s) to be stabilized; make the areas reasonably free of ruts, holes, and humps; trackwalk if required by the manufacturer; apply the stabilization material to each area.

If specified, apply topsoil to the area to be stabilized before application of the stabilizing material. Section 618 and 620.

619-3.03 APPLICATION. Apply stabilization material, including rate of application, according to the specifications. If not specified, apply according to the manufacturer's requirements. Where manufacturer requirements conflict with the specification, except where the Engineer directs otherwise, apply the material according to the requirements of the manufacturer.

If seeding is specified, except where seed is included in the stabilization material, complete the application of stabilization materials within 24 hours after seed is placed.

Do not use vehicles or equipment which cause rutting or displacement of the subgrade or topsoil.

1. Temporary Seeding. Annual Ryegrass per Subsection 724-2.02, Table 724-1. Apply at a rate of 1/2 lb/1000 sq. ft., minimum, on level ground to a maximum of 1 1/2 lb/1000 sq. ft., maximum, on sloping ground and highly erodible soils. Prepare surface and place seed as noted under Subsection 619-3.02 Surface Preparation and Section 618 Seeding. Confirm application of temporary seeding with the Engineer.

2. Tacking Agents - Tackifiers. Apply tacking agents according to the manufacturer's installation instructions matched to the application providing functional longevity, erosion control effectiveness, and vegetative establishment.

3. Soil Binders. Apply soil binders according to the manufacturer's installation instructions.

    a. Using Polyacrylamide (PAM) and PAM with Short-Term Mulch:
    Apply PAM on bare soils.

    Apply PAM and PAM with short-term mulch only where sediment control is in place and complete.

    Do not apply PAM and PAM with short-term mulch on saturated ground during rainfall.

    b. Using Moderate-Term Mulch:
    Apply moderate-term mulch according to manufacturer's installation instructions. If the curing period to achieve maximum performance is greater than the time period before precipitation is predicted, or the soil is saturated, do not apply the moderate-term mulch except as approved by the Engineer.

    c. Using Long-Term Mulch:
    Apply long-term mulch according to the manufactures installation instructions.

4. Erosion Control Blankets (ECBs). Select blankets, as specified by the manufacturer, to match the slope; and installed according to the manufacturer's instructions rolled out on well prepared soils to assure intimate contact and anchored with staples, stakes and or anchor trenches. Temporary erosion control blankets with 60 percent or greater open area may be installed prior to seeding. Place blankets with less than 60 percent open area immediately after the seeding operation.

    Staple matting/ECBs as recommended by the manufacturer for the application.

5. Compost Blankets. Construct compost blankets according to latest AASHTO R 52 and as specified. Use coarse compost and place over bare soil a blanket of 2 inch minimum thickness, except as otherwise specified. Apply material either by hand spreading and or pneumatically. Compost will have no free water visible or produce dust when handled. Place compost before seeding or mix seed with compost.

6. Check Dams. Place check dams as soon as possible and practicable or when and where if directed by the Engineer. Place the check dams perpendicular to channels and construct of a height sufficient to maximize detention while keeping the water in the channel. Place and install check dams according to the Plans and anchor to maintain in effective position.

    a. Sandbag. Place the initial row in tight contact with the ditchline for the length of the dam. Place each following row centered across the joint between the bags of the lift/row below.

7. Stabilized Construction Entrance.
   Temporary stabilized construction entrance shall be constructed according to the Plans, prior to beginning any clearing, grubbing, earthwork, or excavation.

   When the stabilized entrance no longer prevents track out of sediment or debris, the Contractor shall either rehabilitate the existing entrance to original condition, or construct a new entrance.

   When the Plans require a tire wash in conjunction with the stabilized entrance, the Contractor shall include details for the tire wash and the method for containing and treating the sediment-laden runoff as part of the SWPPP. All vehicles leaving the site shall stop and wash sediment from their tires.

8. Sediment Control Barriers. Sediment control barriers shall be installed according to the Plans or manufacturer's recommendations in the areas of clearing, grubbing, earthwork, or drainage prior to starting those activities.

   a. Sandbag. Place the initial row in tight contact with the surface perpendicular to the slope. Place each following row centered across the joint between the bags of the lift/row below.

   b. Sediment Retention Fiber Rolls.

   c. Silt Fence.

   d. Compost Berm. Construct compost berms according to latest AASHTO R 51. Use coarse compost.

9. Turf Reinforcement Mats. According to manufacturer's installation instructions.

619-3.04 MAINTENANCE. Maintain stabilized areas in a satisfactory condition for the term of the Contract. Inspect as required by the CGP, approved SWPPP, and Section 641 Erosion, Sediment and Pollution Control and correct any deficiencies immediately. Remove and dispose of temporary measures, including trapped sediment and contaminants, off project at approved locations. Materials manufactured as degradable may be left in place when approved by the Engineer.

Maintenance includes but is not limited to:

1. Protecting stabilized areas against traffic by approved warning signs or barricades.

2. Repairing surfaces gullied or otherwise damaged following application of stabilization material(s).

Where seeding is included as a part of the soil stabilization:

1. Reseeding, as required by Section 618 Seeding. Reapply the stabilization materials correcting the problems of the initial application.

2. Watering, where vegetative growth is part of the soil stabilization, according to Section 618 Seeding.

The Engineer will perform inspection of the stabilization as required in the CGP, Section 641, and the SWPPP. Make repairs as required by same and as directed.

619-4.01 METHOD OF MEASUREMENT. Section 109, measured on the slope of the ground surface.

619-5.01 BASIS OF PAYMENT. Water, maintenance, repair, removal, and disposal of temporary stabilization materials are subsidiary.

Seeding is paid under Section 618 Pay Items, topsoil under Section 620 Pay Items, silt fence under Section 633 Pay Items and temporary erosion, sediment, and pollution control under 641 Pay Items.

PAY ITEM		
Item Number	**Item Description**	**Unit**
619.0001.____	Mulching	SY
619.0002.____	Matting	SY
619.2001.____	Compost	SY
619.2002.____	Turf Reinforcement Mat	SY
619.2003.____	Sediment Retention Fiber Rolls	LF
619.2004.____	Check Dam and Sediment Barrier (-Geotextile)	LF
619.2005.____	Check Dam	LF
619.2006.____	Sediment Barrier	LF
619.2007.____	Compost Berm	LF
619.2008.____	Sandbags	Each
619.2009.____	Manufactured Inlet Protection System	Each
619.2010.____	Sandbag Inlet Protection System	Each
619.2016.____	Mulch	SY

C619-18.0501-2

SECTION 633
SILT FENCE

Standard Modification

633-2.01 MATERIALS.

Replace "Silt Fence Subsection 729-2.04" with the following:

Silt Fence Subsection 729-2.02

633-3.01 CONSTRUCTION REQUIREMENTS.

Replace the first sentence with the following:

Install silt fence according to the SWPPP, Appendix B.

HSM20.13-20.1130-1

Special Provision

Replace Section 634 with the following:

SECTION 639
DRIVEWAYS

639-1.01 DESCRIPTION. Construct driveways and approaches.

639-2.01 MATERIALS. Reserved.

639-3.01 CONSTRUCTION. Reserved.

639-4.01 METHOD OF MEASUREMENT. By the number of driveways and approaches constructed.

639-5.01 BASIS OF PAYMENT. The Contract unit price for driveways and approaches is for furnishing equipment and labor.

Pavement removal and excavation required constructing driveways and approaches is subsidiary to the driveway and approach pay items.

Materials required to construct driveways and approaches will be paid for separately under the respective items listed in the bid schedule.

PAY ITEM		
Item Number	**Item Description**	**Unit**
639.0001.____	Driveway	Each
639.0002.____	Driveway, Residential	Each
639.0003.____	Driveway, Commercial	Each
639.2000.____	Approach	Each

C639-16.0920-2

SECTION 641
EROSION, SEDIMENT, AND POLLUTION CONTROL

641-1.01 DESCRIPTION.

Provide project administration and Work relating to control of erosion, sedimentation, and discharge of pollutants, according to this Section and applicable local, state, and federal requirements, including the Alaska Pollution Discharge Elimination System (APDES) Construction General Permit (CGP). The state APDES program is administered by the Department of Environmental Conservation (DEC). Section 301(a) of the Clean Water Act (CWA) and 18 AAC 83.015 provide that the discharge of pollutants to water of the U.S. is unlawful except as allowed by the CGP.

641-1.02 DEFINITIONS.

These definitions apply only to Section 641.

ACTIVE TREATMENT SYSTEM (ATS) OPERATOR. CGP Appendix C.

ALASKA CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (AK-CESCL). A person who has completed training, testing, and other requirements of, and is currently certified as, an AK-CESCL from an AK-CESCL Training Program (a program developed under a Memorandum of Understanding between the Department and others). The Department recognizes AK-CESCLs as “qualified personnel” required by the CGP. An AK-CESCL must be recertified every three years. (See Qualified Person)

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC). The state agency authorized by EPA to administer the Clean Water Act’s National Pollutant Discharge Elimination System.

ALASKA GENERAL PERMIT FOR EXCAVATION, DEWATERING (Excavation Dewatering Permit). Permit authorizing excavation dewatering discharges from Construction Activities.

ALASKA MULTI-SECTOR GENERAL PERMIT (MSGP). Permit authorizing storm water discharges associated with Industrial Activity.

ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM (APDES). A system administered by DEC that issues and tracks permits for storm water discharges.

BEST MANAGEMENT PRACTICES (BMPS). CGP Appendix C.

CLEAN WATER ACT (CWA). Federal Water Pollution Control Amendments of 1972, as amended (33 U.S.C. 1251 et seq.).

CONSTRUCTION ACTIVITY. Ground disturbing activity by the Contractor, Subcontractor or utility company; that may result in erosion, sedimentation, or a discharge of pollutants into storm water. CGP Appendix C.

CONSTRUCTION GENERAL PERMIT (CGP). The permit authorizing storm water discharges from Construction Activities, issued and enforced by Alaska DEC. It authorizes storm water discharges providing permit conditions and water quality standards are met.

U.S. ARMY CORPS OF ENGINEERS PERMIT (COE Permit). U.S. Army Corps of Engineers Permit for construction in waters of the U.S. may be issued under Section 10 of the Rivers and Harbors Act of 1899, or Section 404 of the Clean Water Act.

ELECTRONIC NOTICE OF INTENT (ENOI). CGP Appendix C.

ELECTRONIC NOTICE OF TERMINATION (ENOT). CGP Appendix C.

ENVIRONMENTAL PROTECTION AGENCY (EPA). The federal agency charged to protect human health and the environment.

ERODIBLE STOCKPILE. Any material storage area or stockpile consisting of mineral aggregate, organic material, or a combination thereof, with greater than 5 percent passing the #200 sieve, and any material storage where wind or water transports sediments or other pollutants from the stockpile. Erodible Stockpile also includes any material storage area or stockpile where the Engineer determines there is potential for wind or water transport of sediments or other pollutants away from the stockpile.

EROSION AND SEDIMENT CONTROL PLAN (ESCP). The Department's project specific document that illustrates measures to control erosion and sediment on the project. The ESCP provides bidders with the basis for cost estimating and guidance for developing an acceptable Storm Water Pollutant Prevention Plan (SWPPP).

FINAL STABILIZATION. CGP Appendix C, "Stabilization".

HAZARDOUS MATERIAL CONTROL PLAN (HMCP). The Contractor's detailed project specific plan for prevention of pollution from storage, use, transfer, containment, cleanup, and disposal of hazardous material (including, but are not limited to, petroleum products related to construction activities and equipment). The HMCP is included as an appendix to the SWPPP.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT. A DEC storm water discharge permit issued to certain local governments and other public bodies, for operation of storm water conveyances and drainage systems. CGP Appendix C.

OPERATOR(S). The party(s) responsible to obtain CGP permit coverage. CGP Appendix C.

1. Contractor – the Contractor is an Operator inside and outside the Project Zone.
2. Department – the Department is an Operator inside the Project Zone.

POLLUTANT. Any substance or item meeting the definition of pollutant contained in 40 CFR § 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sediment, sewage, garbage, sewage sludge, chemical wastes, biological materials, wrecked or discarded equipment, rock, sand, cellar dirt and industrial or municipal waste.

PROJECT ZONE. The physical area provided by the Department for Construction. The Project Zone includes the area of highway or facility under construction, project staging and equipment areas, and material and disposal sites; when those areas, routes and sites, are provided by the Contract.

Material sites, material processing sites, disposal sites, haul routes, staging and equipment storage areas; that are furnished by the Contractor or a commercial operator, are not included in the Project Zone.

QUALIFIED PERSON. CGP Appendix C and Section 641-1.04.

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN (SPCC PLAN). The Contractor's detailed plan for petroleum spill prevention and control measures that meet the requirements of 40 CFR 112.

SPILL RESPONSE FIELD REPRESENTATIVE. The Contractor's representative with authority and responsibility for managing, implementing, and executing the HMCP and SPCC Plan.

STORM EVENT. CGP Appendix C.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP). The Contractor's plan for compliance with the CGP for construction activities inside the Project zone, CGP Appendix C and Section 641.

STORM WATER POLLUTION PREVENTION PLAN TWO (SWPPP2). The Contractor's plan for compliance with the CGP and MSGP for construction activities outside the Project Zone.

SUPERINTENDENT. The Contractor's duly authorized representative with authority and responsibility for the overall operation of the Project and Contractor furnished sites and facilities.

SWPPP AMENDMENT. A modification to the SWPPP. CGP Part 5.0.

SWPPP MANAGER. The Contractor's Qualified Person with authority and responsibility. CGP Appendix C.

SWPPP PREPARER. The Contractor's Qualified Person with authority and responsibility. CGP Appendix C.

SWPPPTRACK. Software Subscription service version SWPPPTrack DOT AK developed and provided by SWPPPTrack AK LTD, for use on construction projects that require coverage under the APDES CGP.

TEMPORARY STABILIZATION. CGP Appendix C, "Stabilization".

641-1.02.01 REFERENCE.

A list of websites and documents referenced herein, including SWPPP preparation documents and construction forms, are available at the DOT&PF Statewide Design and Engineering Services Storm Water web page and Construction Forms webpage.

DEC Permit information is available at the DEC Division of Water webpage.

641-1.03 PLAN AND PERMIT SUBMITTALS.

For plans listed in Subsection 108-1.03.5 (SWPPP, HMCP, and SPCC), use the Contractor submission and Department review deadlines identified in this subsection.

Partial and incomplete submittals will not be accepted for review. Any submittal that is re-submitted or revised after submission, but before the review is completed, will restart the submittal review timeline. No additional Contract time or additional compensation will be allowed due to delays caused by partial or incomplete submittals, or required re-submittals.

1. Storm Water Pollution Prevention Plan. Submit one electronic copy (single PDF file) of the SWPPP to the Engineer for approval. Deliver these documents to the Engineer at least 21 days before beginning Construction Activity. Organize the SWPPP and related documents for submittal according to the requirements of Subsection 641-2.01.2.

   The Department will review the SWPPP submittals within 14 days after they are received. Submittals will be returned to the Contractor, and marked as either “rejected” with reasons listed or as “approved” by the Department. When the submittal is rejected, the Contractor must revise and resubmit the SWPPP. The 14-day review period will restart when the Contractor submits an electronic copy of the revised SWPPP to the Engineer for approval.

   After the SWPPP is approved and certified by the Department using Form 25D-109, the Contractor must certify the approved SWPPP using Form 25D-111. See Subsection 641-1.03.4 for further SWPPP submittal requirements.

   Submit the final SWPPP. Transmit an electronic copy (single pdf file) of the final SWPPP to the Engineer when the Contractor's eNOT is filed, or within 30 days of the Department's eNOT being filed, whichever is sooner. Include all SWPPP documents.

2. Hazardous Material Control Plan. The HMCP Template is available at the DOT&PF Construction Forms webpage. The HMCP submittal, review timeline, and signature requirements are the same as the SWPPP.

3. Spill Prevention, Control, and Countermeasure Plan. When a SPCC Plan is required under Subsection 641-2.03, submit an electronic copy of the SPCC Plan to the Engineer. Deliver these documents to the Engineer at least 21 days before beginning Construction Activity. The Department reserves the right to review the SPCC Plan and require modifications.

4. CGP Coverage. The Contractor is responsible for permitting of Contractor and subcontractor Construction Activities related to the Project. Do not use the SWPPP for Construction Activities outside the Project Zone where the Department is not an operator. For Construction Activities outside the Project Zone, the Contractor must use a SWPPP2. Department approval is not required for a SWPPP2.

   After the Department certifies the SWPPP and prior to beginning Construction Activity, submit an eNOI with the required fee to DEC for coverage under the CGP. Submit a copy of the signed eNOI and DEC's written acknowledgement (by letter or other document), to the Engineer as soon as practicable and no later than three days after filing eNOI or receiving a written response.

   Do not begin Construction Activity until the conditions listed in Subsection 641-3.01.1 are completed.

   The Department will submit an eNOI to DEC for Construction Activities inside the Project Zone. The Engineer will provide the Contractor with a copy of the Department's eNOI and DEC's written acknowledgment (by letter or other document), for inclusion in the SWPPP.

   Before Construction Activities occur, transmit to the Engineer an electronic copy of the approved and certified SWPPP, with signed Delegations of Signature Authorities on Forms 25D-107 and 25D-108, SWPPP Certifications on Forms 25D-111 and 25D-109, both permittee's signed eNOIs and DEC's written acknowledgement.

5. DEC SWPPP Review. When CGP Part 2.1.3, or 2.1.4 requires DEC SWPPP review:

   a. Transmit a copy of the Department-approved SWPPP to DEC using delivery receipt confirmation;

   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation; and

   c. Retain a copy of delivery receipt confirmation in the SWPPP.

6. Local Government SWPPP Review. When local government or the CGP Part 2.1.4, requires local government review:

   a. Transmit a copy of the Department-approved SWPPP and other information as required to local government, with the required fee. Use delivery receipt confirmation;

   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation;

   c. Transmit a copy of any comments by the local government to the Engineer within seven days of receipt;

   d. Amend the SWPPP as necessary to address local government comments and transmit SWPPP Amendments to the Engineer within seven days of receipt of the comments;

   e. Include a copy of local government SWPPP review letter in the SWPPP; and

   f. File a notification with local government that the project is ending.

7. Modifying Contractor's eNOI. When required by the CGP Part 2.7, modify your eNOI to update or correct information within 30 calendar days of the change. Reasons for modification are in the CGP Part 2.7.1. The Contractor must submit an eNOT instead of an eNOI modification when the operator has changed. The new operator must file an eNOI to obtain permit coverage.

641-1.04 PERSONNEL QUALIFICATIONS.

Provide documentation in the SWPPP that the individuals serving in these positions meet the personnel qualifications. The Department accepts the following certificates as equivalent to AK-CESCL: Certified Professional in Erosion and Sediment Control (CPESC), or Certified Inspector in Sediment, and Erosion Control Certified (CISEC). These equivalent certificates are included in the CGP Appendix C and repeated below.

TABLE 641-1.04 PERSONNEL QUALIFICATIONS

Personnel Title	Required Qualifications
SWPPP Preparer	1. Current certification as a Certified Professional in Erosion and Sediment Control (CPESC); or 2. Current certification as AK-CESCL, and at least two years' experience in erosion and sediment control as a SWPPP Manager or SWPPP writer, or equivalent; or 3. Professional Engineer registered in the State of Alaska with current certification as AK-CESCL.
Superintendent	Current AK-CESCL, or substitute training from CGP Appendix C, Qualified Person Table 4
SWPPP Manager	Current AK-CESCL or substitute training from CGP Appendix C, Qualified Person Table 4.
Active Treatment System Operator	Current AK-CESCL or substitute training from CGP Appendix C, Qualified Person Table 4. ATS operator should possess a recognized certification, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to meet the ATS requirement.

641-1.05 SIGNATURE/CERTIFICATION REQUIREMENTS AND DELEGATIONS.

1. eNOI and eNOT. The eNOI, eNOT, and eNOI Modifications must be signed and certified by a responsible corporate officer according to CGP Appendix A, Part 1.12. Signature and certification authority for the eNOI and eNOT cannot be delegated.

2. Delegation of Signature Authority for Other SWPPP Documents and Reports. Use Form 25D-108 to delegate signature authority and certification authority to the Superintendent position, according to CGP Appendix A, Part 1.12.3, for the SWPPP, Inspection Reports and other reports required by the CGP. The Superintendent position is responsible for signing and certifying the SWPPP, Inspection Reports, and other reports required by the CGP, except the eNOI, eNOI Modifications, and eNOT.

   The Engineer will provide the Department's delegation on Form 25D-107, which the Contractor must include in the SWPPP.

3. Subcontractor Certification. Subcontractors must certify on Form 25D-105, that they have read and will abide by the CGP and the conditions of the project SWPPP.

4. Signatures and Initials. Where documents are completed in SWPPPTrack, utilize SWPPPTrack to sign and initial documents. When documents are not completed in SWPPPTrack (e.g. Form 25D-111 SWPPP Certification for Contractor), upload scanned copies after signing and initialing the documents into SWPPPTrack.

641-1.06 RESPONSIBILITY FOR STORM WATER PERMIT COVERAGE.

107-1.02 includes the requirements to obtain permits, and to provide permit documents to the Engineer.

1. The Department and the Contractor are jointly responsible for permitting and permit compliance within the Project Zone.

2. The Contractor is responsible for permitting and permit compliance for all construction support activity in the Project Zone and outside the Project Zone. The Contractor has sole responsibility for compliance with DEC, COE, and other applicable federal, state, and local requirements, and for securing all necessary clearances, rights, and permits. The Contractor is responsible for protection, care, and upkeep of all work, and all associated off-site zones.

3. The Contractor is responsible for obtaining an Excavation Dewatering Permit (AKG002000) if construction activities are within 1,500 feet of a DEC-identified contaminated site or groundwater plume.

4. An entity that owns or operates, a commercial plant (as defined in Subsection 108-1.01.4) or material source or disposal site outside the Project Zone, is responsible for permitting and permit compliance. The Contractor has sole responsibility to verify that the entity has appropriate permit coverage.

5. The Department is not responsible for permitting or permit compliance, and is not liable for fines resulting from noncompliance with permit conditions:

    a. For areas outside the Project Zone;
    b. For Construction Activity and Support Activities outside the Project Zone; and
    c. For commercial plants, commercial material sources, and commercial disposal sites.

641-1.07 UTILITY.

Relocation Coverage. A Utility company is not an Operator when utility relocation is performed concurrently with the Project, as outlined in Section 105-1.06. The Department maintains operational control over the Utility's plans and specifications for coordination with project construction elements, and the Contractor has day-to-day control over the various utility construction activities that occur in support of the Project. A Utility company is considered a subcontractor for concurrent relocation.

After the Contractor has an active NOI for the Project, a Utility Company performing advance relocation work under a separate SWPPP no longer has Operator status and files the NOT for the Utility Company's SWPPP covering only the completed utility work. Remaining utility relocation work is included in and performed under the Project SWPPP.

641-1.08 USE of SWPPPTRACK. The Contractor is responsible for purchasing and contracting with SWPPPTrack AK LTD for the use of the SWPPPTrack software application and services until final stabilization is achieved and the eNOT has been completed. Contact SWPPPTrack Alaska Support at (888) 401-1993 or AKSupport@SWPPPTrack.com for project fees, setup coordination, device requirements, and training.

Perform and document all inspections required by the CGP and the SWPPP with SWPPPTrack and populate all inspection fields accurately to represent current project conditions. Complete the following forms using SWPPPTrack:

1. SWPPP Construction Site Inspection Report (25D-100)

2. SWPPP Grading & Stabilization Activities Log (25D-110)

3. SWPPP Corrective Action Log (25D-112)

4. SWPPP Amendment Log (25D-114)

5. SWPPP Daily Record of Rainfall (25D-115)

6. SWPPP Training Log (25D-125)

7. SWPPP Project Staff Tracking (25D-127)

641-2.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.

1. SWPPP Preparer and Pre-Construction Site Visit.

   Use a SWPPP Preparer to develop the SWPPP according to the CGP, DEC and Department SWPPP Template. Subsection 641-1.02.01 provides directions to templates.

   The SWPPP Preparer must conduct a pre-construction inspection at the Project site before construction activity begins. If the SWPPP Preparer is not a Contractor employee, the SWPPP Preparer must visit the site accompanied by the Contractor. Give the Department at least seven days advance notice of the site visit, so that the Department may participate.

   Document the SWPPP Preparer's pre-construction inspection in the SWPPP on Form 25D-106, SWPPP Pre-Construction Site Visit, include the names of attendees and the date.

2. Developing the SWPPP.

   a. Meet all CGP requirements.

   b. Use the Department's ESCP, Environmental commitments, and other Contract documents as a starting point for developing the SWPPP.

   c. Develop the SWPPP with sections and appendices according to the DEC CGP SWPPP Template and DOT&PF SWPPP Template. Include the information required by the Contract and described in the CGP Part 5.0. Use the forms available at the DOT&PF Construction Forms website.

   d. Compile the SWPPP in three ring binders with tabbed and labeled dividers for each appendix. Submit the SWPPP according to Subsection 641-1.03.

3. SWPPP Considerations and Contents.

   a. The SWPPP must provide erosion and sediment control measures for all Construction Activity within the Project Zone.

      Construction activity outside the Project Zone must have permit coverage. Document permit compliance according to SWPPP2 requirements.

   b. The SWPPP must consider the activities of the Contractor and all subcontractors and utility companies performing work in the Project Zone. Describe the roles and responsibilities of the Contractor, subcontractors, utility companies, and the Department with regard to implementation of the SWPPP. Include the utility companies and other operators performing Construction Activity.

      Identify areas:

      (1) Over which each operator has operational control; and
      (2) Where the Department and Contractor are co-operators.

   c. For work outside the Project Zone the SWPPP must identify the entity that has storm water permit coverage, the operator, and areas that are:

      (1) Dedicated to the Project and where the Department is not an operator; and
      (2) Not dedicated to the project, but used for the project.

   d. If the project discharges to a Tier III, Outstanding Natural Resource Water, comply with the CGP Part 2.1.6. Submittal deadlines apply prior to filing an eNOI and beginning construction activities. As of the issuance of the CGP 2021, no Tier III, Outstanding Natural Resource Water is designated in the State of Alaska.

e. There are special requirements in the CGP Part 3.2, for storm water discharges into an impaired water body. Monitoring of storm water discharges may be required. The Contractor is responsible for monitoring and reporting inside and outside the project zone.

f. Describe the sequence and timing of activities that disturb soils and BMP implementation and removal. Phase earth-disturbing activities to minimize unstabilized areas, and to achieve temporary or final stabilization. Whenever practicable incorporate final stabilization work into excavation, embankment, and grading activities. Include drawings showing each phase of the project with the BMPs implemented in the Phase.

g. Delineate the site according to the CGP Part 4.2.1.

h. Minimize the amount of soil exposed and preserve natural topsoil on site, unless infeasible according to the CGP Part 4.2.2.

i. Describe methods and time limits, to initiate temporary or final soil stabilization. Comply with stabilization requirements in the CGP Part 4.5.

j. If construction will cease during winter months, describe all requirements for winter shutdown according to the CGP Part 4.12.

k. Plans for ATS must meet with the requirements in the CGP Part 2.1.5 and 4.6.

l. Design all temporary BMPs to accommodate a two year 24-hour storm event. Describe and document all installed control measures in the SWPPP according to the CGP Part 5.3.6. Include a citation from a published BMP Manual, publication, or manufacturers specification used as a source, or include a statement "No BMP Manual was used for this design". If using out of state BMPs, follow the instructions in the DOT&PF SWPPP Guide.

m. Provide a legible site map or set of maps in the SWPPP, showing the entire site and identifying boundaries of the property where construction and earth-disturbing activities will occur. Include all elements described in the CGP Part 5.3.5 and the DEC CGP SWPPP Template Section 5.0.

n. Identify the inspection frequency in the SWPPP according to the CGP Part 6.1; except, inspect once every seven calendar days regardless of the precipitation amount.

o. Linear Project Inspections, described in CGP Part 6.5, are not applicable to this Contract.

p. The SWPPP must cite and incorporate applicable requirements of the Project permits, environmental commitments, COE permit, and commitments related to historic preservation. Make additional consultations or obtain permits as necessary for Contractor specific activities that were not included in the Department’s permitting and consultation.

q. The SWPPP is a dynamic document. Keep the SWPPP current by noting installation, modification, and removal of BMPs, and by using amendments, SWPPP amendment logs, Inspection Reports, corrective action logs, records of land disturbance and stabilization, and any other records necessary to document storm water pollution prevention activities and to satisfy the requirements of the CGP and this specification. See Subsection 641-3.03 for more information.

4. Recording Personnel and Contact Information in the SWPPP.

Identify the SWPPP Manager as the Storm Water Lead and Storm Water Inspector positions in the SWPPP. Document the SWPPP Manager’s responsibilities in Section 2.0 Storm Water Contacts, of the SWPPP Template and:

a. Identify that the SWPPP Manager does not have authority to sign inspection reports (unless the SWPPP Manager is also the designated project Superintendent).

b. Identify that the SWPPP Manager cannot prepare the SWPPP unless the SWPPP Manager meets the Contract requirements for the SWPPP Preparer.

Include in the SWPPP proof of AK-CESCL, or equivalent certifications for the Superintendent and SWPPP Manager, and for any acting Superintendent and acting SWPPP Managers. If the Superintendent or SWPPP Manager is replaced, permanently or temporarily, by an acting Superintendent or acting SWPPP Manager; record in the SWPPP, on Form 25D-127, the names of the replacement personnel, and date of replacement. For temporary personnel, record their beginning and ending dates.

Provide 24-hour contact information for the Superintendent and SWPPP Manager. The Superintendent and SWPPP Manager must have 24-hour contact information for all Subcontractor SWPPP Coordinators and Utility SWPPP Coordinators.

Include in the SWPPP, proof of AK-CESCL or equivalent certifications of ATS operators. Record names of ATS operators and their beginning and ending dates, on Form 25D-127.

The Department will provide proof of AK-CESCL, or equivalent certifications for the Department's Project Engineer, Storm Water Inspectors, and Monitoring Person, and names and dates they are acting in that position. Include Department's staff certifications in SWPPP Appendix E. Include the Department's staff names, dates acting, and assignments in Section 2.0 of the SWPPP and on Form 25D-127.

641-2.02 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS.

Prepare the HMCP using the Department template for the prevention of pollution from storage, use, containment, cleanup, and disposal of all hazardous material, including petroleum products related to construction activities and equipment. Include the HMCP as an appendix to the SWPPP. Compile Material Safety Data Sheets in one location and reference that location in the HMCP.

641-2.03 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN (SPCC Plan) REQUIREMENTS.

Prepare and implement an SPCC Plan, required by 40 CFR 112; when both of the following conditions are present on the project:

1. Oil or petroleum products from a spill may reach navigable waters (defined in 40 CFR 112), and

2. Total above ground storage capacity for oil and any petroleum products is greater than 1,320 gallons (not including onboard tanks for fuel or hydraulic fluid used primarily to power the movement of a motor vehicle or ancillary onboard oil-filled operational equipment, and not including containers with a storage capacity of less than 55 gallons).

Reference the SPCC Plan in the HMCP and SWPPP.

641-2.04 RESPONSIBILITY AND AUTHORITY OF THE SUPERINTENDENT AND SWPPP MANAGER.

The Superintendent shall certify the SWPPP, Inspection Reports, and other reports required by the CGP, except the eNOI and eNOT. The Superintendent may not delegate the task or responsibility of certifying these documents.

The Superintendent may assign certain duties to the SWPPP Manager.

1. Ensuring Contractor's and subcontractor's compliance with the SWPPP and CGP;

2. Ensuring the control of erosion, sedimentation, or discharge of pollutants;

3. Directing and overseeing installation, maintenance, and removal of BMPs;

4. Performing Inspections; and

5. Updating the SWPPP including adding amendments and forms.

When Bid Item 641.0007.____ is part of the Contract, the SWPPP Manager must be a different person than the Superintendent, be available at all times to administer SWPPP requirements, and be physically present within the Project Zone or the project office, when construction activities are occurring.

The Superintendent and SWPPP Manager shall be knowledgeable in the requirements of Section 641, the SWPPP, CGP, BMPs, HMCP, SPCC Plan, environmental permits, and environmental commitments.

The Superintendent and SWPPP Manager shall have the Contractor's complete authority and be responsible for suspending construction activities that do not conform to the SWPPP or CGP.

641-2.05 MATERIALS.

Use materials suitable to withstand hydraulic, wind, and soil forces, and to control erosion and trap sediments according to the requirements of the CGP and the Specifications.

Use the seed mixture specified in the Contract or as directed by the Engineer.

Use soil stabilization material as specified in Section 727.

Use silt fences as specified in Section 729.

Use straw and straw products certified weed free of prohibited and restricted noxious weed seed and quarantined pests, according to Alaska Administrative Code, Title 11, Chapter 34 (11 AAC 34). When straw or straw products certified according to 11 AAC 34 are not available, use non-certified products manufactured within Alaska before certified products manufactured in another state, country, or territory. Non-certified straw or straw products manufactured in another state, country, or territory shall not be used. Grass, legumes, or any other herbaceous plants produced as hay, shall not be substituted for straw, or straw products.

641-3.01 CONSTRUCTION REQUIREMENTS.

Comply with the SWPPP and the requirements of the CGP Part 5.0.

1. Before Construction.

   The following actions must be completed before Construction Activity begins:

   a. The SWPPP Preparer must visit the Project. Document the visit on SWPPP Form 25D-106. The SWPPP must be developed, or amended with the findings from the visit.

   b. The SWPPP must be approved by the Engineer on Form 25D-109.

   c. The Contractor must be authorized to begin work by the Engineer.

   d. The Project must have an eNOI for the Department and for the Contractor.

   e. The Department approved SWPPP must be submitted to DEC and Local Governments per CGP Part 2.1.2, Part 2.1.4, and Part 2.4.1.

   f. The Contractor has transmitted to the Engineer an electronic copy of the approved SWPPP.

   g. The Delegation of Authority, Forms 25D-108 and 25D-107, for both the Contractor and Engineer are signed.

h. Main entrance signage must meet the requirements of CGP Part 5.10.2.

Post notices on the outside wall of the Contractor's project office, and near the main entrances of the construction project. Protect postings from the weather. Locate postings so the public can safely read them without obstructing construction activities or the traveling public (for example, at an existing pullout). Do not use retroreflective signs for the SWPPP posting. Do not locate SWPPP signs in locations where the signs may be confused with traffic control signs or devices. Update the notices if the listed information changes.

i. Track precipitation according to CGP Part 7.3.9. Submit the method to track precipitation to the Engineer for approval.

J. Complete all setup and training required to implement SWPPPTrack.

k. Complete the upload of the BMP inventory into SWPPPTrack.

2. <u>During Construction</u>.

a. Delineate The Site. Comply with the CGP Part 4.2.1.

b. BMPs. Install BMPs according to the SWPPP prior to the initiation of ground disturbance.

c. Document subcontractors. Provide a copy of the SWPPP and the CGP to all subcontractors and utility companies before they begin soil-disturbing activities. Verify they understand and comply with the SWPPP and CGP.

(1) Document all subcontractors and utility companies that may work on the site, according to the CGP Part 5.3.1, and SWPPP Section 1.2.

(2) Require subcontractors and utility companies to sign the SWPPP Subcontractor Certification, Form 25D-105. Include Form 25D-105 in the SWPPP Appendix E.

(3) Inform subcontractors and utility companies, in a timely manner, of SWPPP amendments that affect them. Coordinate with subcontractors and utility companies to protect BMPs, including temporary and final stabilization from damage.

(4) Notify the Engineer immediately if the actions of any utility company or subcontractor do not comply with the SWPPP and the CGP.

d. Provide Training. Provide ongoing training to all employees, subcontractors, and utility companies according to the CGP Part 4.14.

(1) Provide training no less than once a month during construction activity;

(2) Document training in the SWPPP Training Log on Form 25D-125. Include the training record in the SWPPP Appendix I.

e. Protection and Restoration. Comply with Subsection 107-1.11.

f. Good Housekeeping Measures. Comply with the SWPPP and CGP Part 4.8.

g. Control Measures. Comply with the SWPPP and CGP Part 5.3.6.

(1) Maintain BMPs.

(2) Comply with requirements of the HMCP and SPCC Plan, and all local, state, and federal regulations that pertain to the handling, storage, containment, cleanup, and disposal of petroleum products or other hazardous materials.

(3) Keep the SWPPP and HMCP current, Subsection 641-2.01.3, SWPPP Considerations and Contents.

3. Winter Construction.

   If winter construction activity occurs, the project must have BMPs in place, Part 4.12.2. Inspections can be reduced to once per month if the project meets the CGP Part 6.2.4.

4. Storm Water Discharge Pollutant Reporting Requirements.

   If an incident of non-compliance occurs, that may endanger health or the environment, a report must be made, CGP Appendix A, Part 3.4.

   A permit non-compliance is any type of pollutant, such as turbidity or petroleum that enters storm water runoff and flows into a receiving water body, MS4, or wetland that is connected to waters of the U.S.

   a. Report the incident to the Engineer immediately;

   b. Report to DEC orally within 24 hours after the permittee becomes aware of the incident; and

   c. Report to DEC in writing within five days after the permittee becomes aware of the circumstances. To report in writing, complete the written noncompliance report on Form 25D-143, and file the written report with DEC. Coordinate the report with the Engineer. Include in the report:

      (1) A description of the noncompliance and its causes;
      (2) The exact dates and times of noncompliance;
      (3) If not yet corrected the anticipated time the project will be brought back into compliance; and
      (4) The corrective action taken or planned to reduce, eliminate and prevent reoccurrence.

   d. Report an incident of noncompliance with COE Permits to the Engineer immediately. The Engineer will notify the COE.

5. Hazardous Materials Reporting Requirements.

   Report any release of a hazardous substance immediately to the Engineer, as soon as the person has knowledge of the discharge.

   Report spills of petroleum products or other hazardous materials to the Engineer and other agencies as required by law, and according to the CGP Part 9.3.

   a. To water.

      Any amount of hazardous material released must be reported immediately to the Engineer, DEC, and the Coast Guard.

   b. To land.

      Any release of a petroleum product, must be reported as soon as the person has knowledge of the discharge, CGP Part 9.3.2.

      (1) Release in excess of 55 gallons,

      (2) Release in excess of 10 gallons but less than 55 gallons, must be reported to the DEC within 48 hours after the person has knowledge of the discharge, and

      (3) Release in excess of 1 gallon to 10 gallons, must be recorded, logged, and provided to the DEC on a monthly basis.

   c. Use the HMCP and SPCC Plan for contact information to report spills to regulatory agencies.

   d. Implement measures to prevent the reoccurrence of and to respond to the release of hazardous materials.

e. Prior to disposal of contaminated material, submit a Contaminated Media Transport and Treatment Disposal Approval Form to the DEC Division of Spill Prevention and Response. Dispose as approved by the DEC.

6. Maintenance of BMPs and Corrective Action.

Implement maintenance and corrective action as required by the CGP Part 4.13 and Part 8.0, SWPPP, and manufacturer's specifications, whichever is more restrictive.

a. Implement corrective actions. Comply with the CGP Part 8.0 and the SWPPP.

b. Corrective Action deadlines and documentation.

(1) Complete Corrective actions according to the CGP Part 8.2.

(2) Document corrective actions in the Corrective Action Log, Form 25D-112, according to the SWPPP, CGP Part 5.9.2, and Part 8.3.

If a different BMP is installed to correct the condition leading to the corrective action, a SWPPP Amendment must be completed.

(3) Document the conditions, in the Corrective Action Log, for corrective actions not completed according to the CGP 8.2. Notify the Engineer, and implement the corrective action as soon as possible.

The Engineer may assign a new complete-by date using a Delayed Action Item Report, Form 25D-113 (DAIR Form), if the Contractor is unable to complete the corrective action within the required timeframe. The DAIR Form can only be authorized and completed by the Engineer.

7. Stabilization.

a. All Soil stabilization requirements must be met in accordance with CGP Part 4.5 and the SWPPP.

b. When temporary or permanent seeding is required, provide a working hydro seeding equipment located within 100 miles of the project by road; with 1,000 gallon or more tank capacity, paddle agitation of tank, and the capability to reach the seed areas with an uniform mixture of water, seed, mulch and tackifier. If the project is located in an isolated community, the hydro-seeder must be located at the project.

c. Apply temporary seed and stabilization measures after preparing the surface to reduce erosion potential and to facilitate germination and growth of vegetative cover according to Section 618 and 619.

d. Apply permanent seed and other stabilization measures after land-disturbing activity has permanently ceased. Comply with the CGP, SWPPP, and the Contract Sections 618, 619, 724, and 727.

e. Incorporate final or temporary stabilization immediately after installing culverts or other drainage structures to satisfy the CGP Part 4.5, SWPPP and Engineer. Stabilize under any bridge and in areas upstream and downstream of culverts, drainages and areas disturbed by related construction activities after installation, or before deactivating stream bypass or diversion.

f. Stabilization before Fall Freeze-up, and Spring Thaw.

Stabilize Construction Activities within the Project Zone with BMPs prior to the anticipated date of fall freeze-up, according to the SWPPP and CGP Part 4.12.

Exceptions to stabilization prior to anticipated date of fall freeze-up include:

(1) Where temporary stabilization activities are precluded by snow cover or frozen ground conditions prior to the anticipated date of fall freeze-up, stabilization measures must be initiated as soon as practicable following the actual spring thaw.

(2) When winter construction activity is authorized by the Engineer and conducted according to the Contract.

8. Ending CGP Coverage.

a. The Engineer will determine the date that the following conditions for ending CGP coverage have been met within the Project Zone:

(1) Land disturbing activities have ceased;

(2) Final Stabilization has been achieved on all portions of the Project Zone, including Department furnished material sources, disposal sites, staging areas, equipment areas, etc., according to the CGP Part 4.5.2; and

(3) Temporary BMPs have been removed.

b. After the Engineer has determined the conditions for submitting an eNOT have been met according to the CGP Part 10.2, the Department will:

(1) Send written notice to the Contractor with the date that the conditions were met;

(2) Submit an eNOT to DEC within 30 days, and

(3) Provide a copy of the eNOT and DEC's acknowledgement letter to the Contractor.

c. If the Contractor's CGP eNOI acreage includes Support Activities and any other areas where the Department is not an Operator, the Contractor may not be able to file an eNOT at the same time as the Department.

d. The Contractor must submit a copy of each signed eNOT and DEC's acknowledgement letter to the Department within three days of filing the eNOT or receiving a written response. Insert the eNOT and DEC acknowledgement letter in the SWPPP Appendix Q.

e. The Contractor is responsible for coordinating local government inspections of work and ending permit coverage with local governments. See Subsection 641-1.03.6 for more information.

9. Ending Inspections, BMP maintenance, and SWPPP Updates in the Project Zone.

The Contractor is responsible for continuing inspections, BMP maintenance, and SWPPP updates until permit coverage is ended.

10. Transmit final SWPPP.

Collate all documents into a single electronic file before transmittal. Transmit one electronic copy of the final SWPPP to the Engineer according to Subsection 641-1.03.1.

641-3.02 SWPPP DOCUMENTS, LOCATION ON-SITE, AVAILABILITY, AND RECORD RETENTION.

The SWPPP and related documents maintained by the Contractor are the Record for demonstrating compliance with the CGP. Copies of SWPPP documents transmitted to the Engineer under the requirements of this specification are informational and do not relieve the Contractor's responsibility to maintain complete records as required by the CGP and this specification.

Keep the SWPPP, HMCP, and SPCC Plan at the on-site project office. If there is not an on-site project office, keep the documents at a locally available location that meets CGP requirements and is approved by the Engineer. Records may be moved to another office for record retention after the eNOTs are filed.

Records may be moved to another office during winter shutdown. Update on-site postings if records are relocated during winter shutdown. Provide the Department with copies of all Records.

Retain Records including a copy of the SWPPP, for at least three years after the date of eNOT according to the CGP Part 9.4.

The SWPPP and related documents must be made available for review and copy, to the Department and other regulatory agencies that request them. See CGP Parts 5.10, 6.6 and 9.5.

641-3.03 SWPPP INSPECTIONS, AMENDMENTS, REPORTS, AND LOGS.

Perform Inspections, prepare Inspection Reports, and prepare SWPPP Amendments in compliance with the SWPPP and the CGP using Department forms from the DOT&PF Construction Forms website.

1. Inspection during Construction.

   Conduct Inspections according to the schedule and requirements of the SWPPP and CGP Part 6.0, except inspect once every seven calendar days regardless of the precipitation amount, Subsection 641-2.01.3.n.

   Inspections required by the CGP and SWPPP must be performed by the Contractor's SWPPP Manager and the Department's Storm Water Inspector jointly, unless approved by the Engineer, when:

   a. One of the inspectors is not on site, access is only by air, and weather delayed or canceled flights;

   b. One of the inspectors is sick;

   c. The project is on a reduced frequency inspection schedule with no staff on site, the only access to the site is by air, and it is economical to send only one inspector; or

   d. When the Engineer determines a safety concern that makes joint inspection impracticable.

      When this is the case, the Operator who conducts the Inspection must provide a copy of the Inspection Report to the other Operator within three days of the Inspection date and document the date of the report transmittal in Appendix K.

2. Inspection Reports.

   Use only the Department SWPPP Construction Site Inspection Report, Form 25D-100, to record Inspections. Changes or revisions to Form 25D-100 are not permitted, except for adding or deleting data fields that list: Location of Discharge Points and Site Specific BMPs. Complete all fields in the Inspection Report; do not leave any field blank.

   The Superintendent or SWPPP Manager must review and correct all errors within three days of the date of inspection.

   Inspection Reports must be signed by the person described in the CGP Appendix A, Part 1.12 or by a duly authorized representative of that person. Only the Superintendent can certify the Inspection Form.

   Insert a Complete-by-Date for each corrective action listed that complies with the CGP Part 8.2.

   Provide a copy of the completed, unsigned Inspection Report to the Engineer by the end of the next business day following the inspection.

The Engineer may coordinate with the Superintendent to review and correct any errors or omissions before the Superintendent signs the report. Corrections are limited to adding missing information or correcting entries to match field notes and conditions present at the time the Inspection was performed. The signed and certified Inspection Report must be provided to the Engineer on the same day the Superintendent signed the form.

The Engineer will sign and certify the Inspection Report and will return the original to the Contractor within three working days if compliant with the CGP and SWPPP.

If the Inspection Report is not compliant with the CGP or SWPPP, the Engineer may make corrections after the Superintendent has signed and certified the Inspection Report. The Engineer will initial and date each correction. If the Engineer makes corrections, the Superintendent must recertify the Inspection Report by entering a new signature and date in the white space below the original signature and date lines. Send a copy of the recertified Inspection Report to the Engineer on the day it is recertified.

When an Inspection Report, certified by both the Superintendent and Engineer, requires corrections:

a. Document the corrections in an addendum memo addressing only the omitted or erroneous portions.

b. Superintendent and Engineer sign and certify the updated Inspection Report and the addendum memo.

c. File the corrected Inspection Report and addendum memo in Appendix K and update the amendment log.

The issuance of an addendum memo does not relieve the Contractor of liquidated damages that may have been incurred as a result of the error on the original certified inspection report.

3. Items and Areas to Inspect.

Conduct inspections of all areas required by the CGP Part 6.4 and SWPPP.

4. Reduced Inspection Frequencies.

Conduct Inspections according to the inspection schedule indicated in the approved SWPPP. Any change in inspection frequency must be approved by the Engineer, and beginning and ending dates documented as an amendment to the SWPPP.

The frequency of inspections may be reduced according to the CGP Part 6.2.1 if the site is stabilized and the reduced frequency is approved by the Engineer. At actively staffed sites, inspect within two business days of the end of a storm event that results in a discharge from the site.

5. Winter Shutdown Inspections.

Conduct winter shutdown inspection 14 calendar days after the anticipated fall freeze-up date and conditions under the CGP Parts 4.12.and 6.2.3, and the SWPPP are met. The Engineer may approve suspension of inspections and waive requirements for updating the Grading and Stabilization Activities Log and Daily Record of Rainfall, Form 25D-115, during winter shutdown.

Inspections must resume on a regular frequency or reduced inspection frequency identified in the SWPPP, at least 21 days before anticipated spring thaw, CGP Part 6.2.3. Resume updating the Daily Record of Rainfall Form at the start of the 21-day spring thaw inspection.

6. Inspection before Project Completion.

   Conduct Inspection to ensure Final Stabilization is complete throughout the Project, and temporary BMPs that are required to be removed are removed. Temporary BMPs that are biodegradable and are specifically designed and installed with the intent of remaining in place until they degrade, may remain in place after project completion if approved by the Engineer.

7. SWPPP Amendments and SWPPP Amendment Log.

   The SWPPP Amendment Log, Form 25D-114, must be filled out by an individual who holds a current AK-CESCL, or equivalent certification. The Superintendent or the SWPPP Manager must sign and date amendments to the SWPPP and updates to the SWPPP Amendment Log.

   SWPPP Amendments must be approved by the Engineer.

   Amendments must occur:

   a. Whenever there is a change in design, construction operation, or maintenance at the construction site that has or could cause erosion, sedimentation or the discharge of pollutants that has not been previously addressed in the SWPPP;

   b. If an Inspection identifies that any portion of the SWPPP is ineffective in preventing erosion, sedimentation, or the discharge of pollutants;

   c. Whenever an Inspection identifies a problem that requires additional or modified BMPs or a BMP not shown in the original SWPPP is added;

   d. If the Inspection frequency is modified (note beginning and ending dates);

   e. When there is a change in personnel who are named in the SWPPP, according to Subsection 641-2.01;

   f. When an inspection is not conducted jointly;

   g. When an eNOI modification is filed;

   h. When a Noncompliance Report is filed with the DEC.

   Place all correspondence with the DEC, EPA or MS4s in Appendix Q.

   Amend the SWPPP as soon as practicable after any change or modification, but in no case, later than seven days following identification of the need for an amendment. All SWPPP Amendments must have an amendment number, be dated, and signed.

   Keep the SWPPP Amendment Log current. Prior to a scheduled Inspection or submittal of an inspection, submit to the Engineer a copy of the pages of the Amendment Log that contain new entries since the last submittal. Include copies of any documents amending the SWPPP.

   Keep the SWPPP Amendment Log in appendix M.

8. Site Maps.

   Maintain site maps in accordance with CGP Part 5.3.5 and the SWPPP Template 5.0. It is acceptable to have separate site maps for BMPs, grading and stabilization activities.

9. Corrective Action Log.

   The Superintendent and SWPPP Manager are the only persons authorized to make entries on the SWPPP Corrective Action Log, Form 25D-112.

The Corrective Action Log must document corrective actions required by the conditions listed in the CGP Part 8.0. Document the need for corrective action within 24 hours of either:

a. Identification during an inspection, or

b. Discovery by the Department's or Contractor's staff, a subcontractor, or a regulatory agency inspector.

c. If a corrective action is discovered outside of an inspection, update the log with the date of discovery, the proposed corrective action, and the date the corrective action was completed.

Keep the Corrective Action Log current and submit a copy to the Engineer prior to performing each scheduled SWPPP Inspection.

Keep the Corrective Action Log in Appendix J.

10. Grading and Stabilization Activities Log.

The Superintendent and SWPPP Manager are the only persons authorized to date and initial entries on the SWPPP Grading and Stabilization Activities Log, Form 25D-110. Use the SWPPP Grading and Stabilization Activities Log, to record land disturbance and stabilization activities.

Keep the Grading and Stabilization Activities Log current and submit a copy to the Engineer prior to performing each scheduled SWPPP Inspection. Keep the Grading and Stabilization Activities Log organized and completed to demonstrate compliance with the CGP Part 4.5.

Keep the Grading and Stabilization Activities Log in Appendix G.

11. Daily Record of Rainfall.

Use SWPPP Daily Record of Rainfall, Form 25D-115, to comply with CGP Part 7.3.9. Submit a copy to the Engineer with each completed Inspection Report. Keep the Daily Record of Rainfall current in Appendix N.

For projects on a 14-day inspection frequency or reduced inspection frequency, SWPPPTrack will generate a precipitation alert for storm events that produce more than 0.5 inch of rainfall in 24 hours. If a storm event does not produce a discharge from the project zone, submit an explanation in response to the SWPPPTrack precipitation alert.

12. Staff Tracking Log.

Use the SWPPP Project Staff Tracking, Form 25D-127, to identify project staff that are required to be AK-CESCL certified or an equivalent qualification, CGP Appendix C. Complete this form to document the positions of Superintendent, SWPPP Manager, Engineer, DOT&PF Storm Water Inspector, and when these positions have changed personnel, either permanently or temporarily. Update the SWPPP Project Staff Tracking Form within 24 hours of any changes in personnel, qualifications, or other staffing items related to administration of the CGP or Section 641.

641-3.04 FAILURE TO PERFORM WORK.

The Engineer has authority to suspend work and withhold monies for an incident of non-compliance with the CGP, or the SWPPP, that may endanger health or the environment or for failure to perform work related to Section 641.

Non-compliance.

1. **Incidents of Non-compliance.** Failure to:

a. Obtain appropriate permits before Construction Activities occur;

b. Perform SWPPP Administration;

c. Perform timely Inspections;

d. Update the SWPPP;

e. Transmit updated SWPPP, Inspection Reports, and other updated SWPPP forms to the Engineer;

f. Maintain effective BMPs to control erosion, sedimentation, and pollution in accordance with the SWPPP, the CGP, and applicable local, state, and federal requirements;

g. Perform duties according to the requirements of Section 641;

h. Meet requirements of the CGP, SWPPP, or other permits, laws, and regulations related to erosion, sediment, or pollution control; or

i. Any other requirements established or included in the Contract.

2. **Notice of non-compliance**, either oral or written will include:

   a. Reason/defects
   b. Corrective actions required
   c. Time allowed for completing the corrective action

3. **Levels of Non-compliance and Response** correspond with harm to the workers, the public or the environment and whether the harm is:

   a. **Not-imminent**, the Engineer will either orally or in writing, or both, provide notice to the Contractor indicating the incident of non-compliance.

      Contractor's that take corrective action and complete the action to the satisfaction of the Engineer, within the time specified, may return to the status of compliance, and avoid elevating the response to imminent.

   b. **Imminent**, the Engineer will orally provide notice to the Contractor of non-compliance and promptly provide written notice to suspend work until corrective action is completed.

   Additional actions, taken against the Contract whether the level of non-compliance is Not-imminent or Imminent, may include:

   a. Withholding monies until corrective action is completed
   b. Assessing damages or equitable adjustments
   c. Employing others to perform the corrective action and deduct the cost

No additional Contract time or additional compensation is allowed due to delays caused by the Engineer's suspension of work.

641-3.05 ACCESS TO WORK.

The Project, including any related off-site areas or support activities, must be made available for inspection, or sampling and monitoring, by the Department and other regulatory agencies. CGP Part 6.6.

641-4.01 METHOD OF MEASUREMENT.

See Section 109 and as follows:

Item 641.0005.____, measured as specified in the Directive authorizing the work.

Item 641.0006.____, measured as specified in Table 641-2 Version C.

641-5.01 BASIS OF PAYMENT.

1. BMP Values. Table 641-1 BMP Values – Reserved.

2. Erosion, Sediment, and Pollution Control - Liquidated Damages. Liquidated Damages assessed according to Table 641-2 are not an adjustment to the Contract amount. These damages charges are related to Contract performance but are billed by the Department to the Contractor, independent of the Contract amount. An amount equal to the Liquidated Damages may be withheld, for unsatisfactory performance, from payment due under the Contract until the Contractor remits payment for billed Liquidated Damages.

TABLE 641-2- VERSION C
EROSION, SEDIMENT AND POLLUTION CONTROL – LIQUIDATED DAMAGES

Code	Specification Section Number and Description	Deductible Amount in Dollars	Cumulative Deductible Amounts in Dollars
A	641-1.05 Failure to have a qualified (AK-CESCL or equivalent) SWPPP Manager	Calculated in Code B or F	
B	Failure to meet SWPPP requirements of: (1) 641-2.01.1 Name of SWPPP Preparer (2) Not Applicable (3) 641-3.03.8 Sign and Date SWPPP amendments by qualified person. (4) 641-3.02 Records maintained at project and made available for review	$750 per omission	
C	Not Applicable.		
D	641-3.03.5 Failure to stabilize a Project prior to fall freeze-up.	$5,000 per Project per year	
E	641-2.01.1. Failure to conduct pre-construction inspections before Construction Activities on all projects greater than 1 acre.	$2,000 per Project	
F*	641-3.03. Failure to conduct and record CGP Inspections 641-3.03.1 Personnel conducting Inspections and Frequency 641-3.03.2 Inspection Reports, use Form 25D-100, completed with all required information	$750 per Inspection	Additional $750 for every additional 7 day period without completing the required inspection.
G	641-3.01.4 Corrective action, failure to timely accomplish BMP maintenance and/or repairs. In effect until BMP maintenance and/or repairs is completed.	$500 per Project per day	
H	641-3.01.3 Failure to provide to the Engineer and DEC a timely oral noncompliance report of violations or for a deficient oral noncompliance report	$750 for the first day the report is late or deficient	Additional $750 for every 14 day period without the required information
I	641-3.01.3 Failure to provide to the Engineer and DEC a timely written noncompliance report, use Form 25D-143, of violations or for a deficient written noncompliance report	$750 for the first day the report is late or deficient	Additional $750 for every 14 day period without the required information
J	641-3.04 Failure to comply with the requirements of the CGP, approved SWPPP, and Section 641, except as listed above	$750 per occurrence for the first day of noncompliance	Additional $750 for every day the deficiency remains uncorrected

***CODE F**. Liquidated Damages according to Code F will not be billed for typographic errors and minor data entry errors, except the liquidated damages will be assessed for these errors when:

a. the Contractor has previously been notified and subsequent inspection reports repeat the same or similar error,
b. multiple inspection reports are submitted after the submission due date and the same or similar errors are repeated on multiple overdue reports,
c. an error in recording the inspector's AK-CESCL certification date results in an inspector performing the inspection during a period when their certification was lapsed or was otherwise invalid

See Subsection 641-3.04 Failure to Perform Work, for additional work and payment requirements.

Item 641.0001.____ Erosion, Sediment, and Pollution Control Administration. At the Contract lump sum price for administration of all work under this Section. Includes, but is not limited to, SWPPP and HMCP and SPCC Plan preparation, agency fees for SWPPP reviews, SWPPP amendments, pre-construction Inspections, Inspections, monitoring, reporting, and recordkeeping or copying Records related to the SWPPP and required by the CGP, and Record retention.

Item 641.0005.____ Temporary Erosion, Sediment and Pollution Control by Directive. At the contingent sum prices specified in the Directive using time and materials to authorize the work, for all labor, supervision, materials, equipment, and incidentals to install, maintain, remove and dispose of temporary erosion, sedimentation, and pollution control BMPs. Prices for this item will be by time and materials according to Subsection 109-1.05, or by mutual agreement between the Engineer and Contractor. All additional Erosion, Sediment, and Pollution Control Administration necessary due to this item will not be paid for separately but will be subsidiary to other bid items.

Item 641.0006.____ Withholding. The Engineer may withhold an amount equal to Liquidated Damages, assessed according to Section 641, from payment due the Contractor. Liquidated Damages for violations of the Contract, CWA, and CGP are determined by the Engineer according to Table 641-2. The Engineer may withhold payment due the Contractors until the Contractor pays the Liquidated Damages to the Department.

The Department will not release performance bonds until Liquidated Damages assessed according to Section 641 are paid to the Department, and all requirements according to Subsection 103-1.05 are satisfied.

Item 641.0007.____ SWPPP Manager. At the Contract lump sum price for a SWPPP Manager that conforms to this specification. When Item 641.0007.____ appears in the Bid Schedule, the SWPPP Manager must be a different person than the superintendent, and must be physically present during construction activity with duties and authority as described in Subsection 641-2.04. When Item 641.0007.____ does not appear in the Bid Schedule, the SWPPP Manager is subsidiary to Item 641.0001.____.

Item 641.0008.____ SWPPPTrack. Payment for purchasing and contracting with SWPPPTrack AK LTD for the use of the SWPPPTrack software application and services will be based on paid receipts plus a 5 percent markup.

Subsidiary Items. Temporary erosion, sediment, and pollution control measures that are required outside the Project Zone are subsidiary. Work required by the HMCP and SPCC Plan including hazardous material storage, containment, removal, cleanup and disposal, are subsidiary to Item 641.0001.____ Erosion, Sediment and Pollution Control Administration.

Work under other pay items. Work that is paid for directly or indirectly under other pay items will not be measured and paid for under Section 641. This work includes but is not limited to:

1. Dewatering;
2. Shoring;
3. Bailing;
4. Permanent seeding;
5. Installation and removal of temporary work pads;
6. Temporary accesses;
7. Temporary drainage pipes and structures;
8. Diversion channels;
9. Settling impoundment; and
10. Filtration.

Permanent erosion, sediment, and pollution control measures will be measured and paid for under other Contract items, when shown on the bid schedule.

Work at the Contractor's Expense. Temporary erosion, sediment, and pollution control measures that are required due to carelessness, negligence, or failure to install temporary or permanent controls as scheduled or ordered by the Engineer, or for the Contractor's convenience, are at the Contractor's expense.

Payment will be made under:

PAY ITEM		
Item Number	**Item Description**	**Unit**
641.0001.____	Erosion, Sediment and Pollution Control Administration	LS
641.0005.____	Temporary Erosion, Sediment and Pollution Control by Directive	CS
641.0006.____	Withholding	CS
641.0007.____	SWPPP Manager	LS
641.0008.____	SWPPPTrack	CS

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SECTION 642
CONSTRUCTION SURVEYING AND MONUMENTS

Special Provisions

642-2.01 MATERIALS.

Add No. 4:

4. Digital Measuring Instrument: Nu-metrics, Nitestar DMI (www.ae-traffic.com), or approved equal.

642-3.01 GENERAL.

Add No. 11:

11. Before work on the project starts, stake and reference the existing centerline on both sides of the roadway alignment. Stake the existing centerline on tangents at 100 ft, and 50 ft intervals on curves from the beginning and ending of super-elevation changes when the roadway is no longer at normal crown. Stake sign locations at proper offset. Stakes shall be a minimum of 1" x 2" x 2'-0" and be offset 4 to 8 ft from the shoulder on both sides of the roadway. Extend lath stakes a minimum of 2 ft above ground. Show the offset distance to centerline and the station from the beginning of the project. Maintain staking until the final roadway striping is completed. Staking accuracy work requires an electronic distance measuring instrument (DMI) be installed in the Contractor's vehicle. Calibrate the DMI to roadway alignments as stationed in the Plans before beginning work. Record the calibration and staking information in the field book.
    Install a reference sign every 500 ft. These reference signs shall meet the following requirements:

    a. mounted with the base a minimum of 5 ft above the shoulder,
    b. located a minimum of 10 ft from the edge of shoulder,
    c. marked with the station from the beginning of the project, in 6 inch high permanent black lettering with a letter proportion height to width ration of 1:0.6 and a stroke width to height ratio of 1:6, on an orange background.

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Add No. 12:

12. Passing Sight Distance. Record the existing centerline striping and final passing sight distance. A copy of the 8 1/2" x 11" Existing Striping, Passing Sight Distance and Final Striping form is included herein. Document the existing passing and sight distance similar to the example included.
    Using the "Existing Striping, Passing Sight Distance and Final Striping" form:

    a. Document the existing striping. Do not disturb the existing striping until the striping record is accepted by the Engineer.

        1) Project Information: Road Name, Stationing, Surveyor & license, Date surveyed.
        2) Col. 1.: Project Stationing in 100-foot intervals from beginning to end of project.
        3) Col. 2.: Posted operating speed per minimum passing sight distance (Table 642-1).
        4) Col. 3a & 4a: Each direction of travel (NB; SB, EB, WB) record the existing striping: passing (dashes) and no passing zones (continuous line) similar to the example. Maintain the orientation of travel to the form, each road, from the beginning of the project to the end of the project.
        5) Col. 6.: Add comments to help clarify the documentation and significant sight obstructions, as needed. Initial your comments.

        Submit the form to the Engineer and make changes when directed by the Engineer.

b. Document the passing sight distance. Use the form approved in a. for b. Measure and record, after the base course layer is complete, passing sight distance along the roadway in both directions of traveled way at 100-foot maximum intervals and referenced to the project station. Use a 3.5-foot object height or instrument height looking ahead to a 3.5-foot target height which is at the centerline or opposing edge of traveled way.

1) Col. 3 & 4.: Each direction of travel (NB, SB, EB, WB) record the sight distance each station. Record the measurement to the nearest 100-foot up to 1200-foot where the passing sight distance exceeds the minimum passing sight distance. Where the passing sight distance exceeds 1200-foot, record the measurement as "1200+ Feet." Record the measurement to the nearest 10-foot at all stations that fall below the minimum passing sight distance.

2) Col. 6.: Add comments to help clarify the documentation as needed. Initial your comments.

Submit the form to the Engineer and make changes when directed by the Engineer.

c. Final Striping. Using the information approved in a. and b., the existing striping and passing sight distance, the Engineer will evaluate the existing striping and provide the final striping plan 14 days after the Contractor's passing sight distance submittal, 12b above.

1) Col. 3 & 4: Engineer, indicate if the existing striping passes (P) or fails (F).
2) Col. 5a & 5b: Engineer, indicate the final striping.
3) Col. 6.: Engineer, add comments if needed to clarify the final striping. Initial your comments.

Do not begin striping until the Engineer returns the form, signed and dated with the final striping plan.

Engineer, provide the Regional Traffic and Safety Engineer an informational copy of the final striping plan.

TABLE 642-1
PASSING SIGHT DISTANCE REQUIREMENTS [a]

Posted Speed (mph)	Minimum Passing Sight Distance and Minimum Length of Passing Zone (ft)	Minimum No-Passing Zone on Stopped Approaches to Intersections (ft)
30	500	220
35	550	255
40	600	295
45	700	330
50	800	365
55	900	405
60	1000	440
65	1100	480
70	1200	515

a. One- and two-direction no-passing zones for one direction of traffic shall be no shorter than 500 feet

642-4.01 METHOD OF MEASUREMENT.

Add the following:

Pay Item 642.2008.____ Passing Sight Distance Measurement. By the number of stations of the project measured separately along centerline, once for each direction, only after the certified and recorded results (642-3.01 12a & 12b) have been accepted by the Engineer.

642-5.01 BASIS OF PAYMENT.

Add the following Pay Item:

PAY ITEM		
Item Number	**Item Description**	**Unit**
642.2008.____	Passing Sight Distance Measurement	STA

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Existing Striping, Passing Sight Distance and Final Striping

Project Name and Number: *Example Project Striping, X-(XX)/XXXXX*
Road Name: *Traveled Way*
Stationing: From *101+00* To *129+00*
Surveyor & License Number: *Name, License #* Date of Survey: *mmddyy*

1. Station (ft.)	2. Speed/ Req'd Dist. (mph/ft)	SB Travel 3. Sight Dist. (ft)	Existing Striping 3a. C L 4a.	NB Travel 4. Sight Dist. (ft)	SB Travel 5. Final Striping 5a. C L 5b.	NB Travel	6. Comments
101+00	45/700	>500 F		>500 F			
102+00	45/700	>550 F		>400 F			
103+00	45/700	>600 F		>400 F			
104+00	45/700	>600 F		>400 F			
105+00		>600 F		>400 F			
106+00		>500 F		>500 F			
107+00		>400 F		>500 F			
108+00		>400 F		>600 F			
109+00		>400 F		>550 F			
110+00		>500 F		>500 F			
111+00	45/ 700	>500 F		=700 P			
112+00		=700 P		=700 P			
113+00		=700 P		<800 P			
114+00		<800 P		<800 P			
115+00		<800 P		<800 P			
116+00		<800 P		<900 P			
117+00		<900 P		<900 P			
118+00		<1200 P		<1000 P			
119+00		<1200+ P		<1000 P			
120+00	45/700	"		<1000 P			
121+00	30/500	"		<1000 P			
122+00	30/500	"		<1200 P			
123+00	30/500	"		<1200+ P			
124+00	30/500	"		"			
125+00	30/500	"		"			
126+00	30/500	"		"			
127+00	30/500	"		"			
128+00	60/900	"		"			
129+00	60/900	<1200+ P		<1200+ P			

Existing Striping, Passing Sight Distance and Final Striping

Project Name and Number: ______________________________

Road Name: ______________________________

Stationing: From ____________________ To ____________________

Surveyor & License Number: ____________________ Date of Survey: __________

1. Station (ft.)	2. Speed/ Req'd Dist. (mph/ft)	__ Travel		__ Travel		__ Travel	__ Travel	6. Comments
		3. Sight Dist.	Existing Striping		4. Sight Dist.	5. Final Striping		
			3a. ↓ C L	4a. ↑		5a. ↓ C L	5b. ↑	

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Existing Striping 12a. – Date Received: _____

_____ Date Returned: _____
DOT&PF Engineer

Sight Distance 12b. – Date Received: _____

_____ Date Returned: _____
DOT&PF Engineer

Final Striping 12c. – Date Received: _____

_____ Date Returned: _____
DOT&PF Engineer

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Special Provision

Replace Section 643 with the following:

SECTION 643
TRAFFIC MAINTENANCE

643-1.01 DESCRIPTION. Protect and control traffic during the contract. Furnish, erect, maintain, replace, clean, move, and remove the traffic control devices required to ensure the traveling public's safety. Perform all administrative responsibilities necessary to implement this work.

Maintain all roadways and pedestrian and bicycle facilities affected by the work in a smooth and traversable condition. Construct and maintain approaches, crossings, intersections, and other necessary features throughout the project for the life of the contract.

Illuminate construction activities listed in Table 643-4 during hours of night work on roads open to the public within project limits.

643-1.02 DEFINITIONS. These definitions apply only to Section 643.

ATM. When used in this Section, ATM stands for the Alaska Traffic Manual, which is comprised of the Manual on Uniform Traffic Control Devices (MUTCD), the Alaska Traffic Manual Supplement, any adopted revisions or interim addenda to either document issued subsequently, and corrections to known errors to either document.

BALLOON LIGHT. Light surrounding by a balloon-like enclosure kept inflated by pressurized air or helium, and producing uniform light through 360 horizontal degrees.

CONSTRUCTION PHASING PLAN. A plan for each phase of the project showing how to accommodate traffic. Show the sequence of work by segment or phase, if required.

FIXED OBJECTS. Private vehicles, parked flagger vehicles, idle construction equipment, construction material stockpiles, culvert ends, individual trees, power poles, utility poles and appurtenances, and other items deemed by the Engineer to present a hazard to motorists, pedestrians, or bicyclists traveling through the work zone.

NIGHT WORK. Work occurring between sunset and sunrise on all days except the "No Lighting Required" period shown in the Table 643-1 below:

TABLE 643-1
PROJECT LOCATIONS – NIGHT TIME ILLUMINATION EXCLUSION

Latitude (degrees)	No Lighting Required		Nearby Cities
	Start	End	
South of 61	Lighting Required All Year		Everything South of Hope
61	June 11	July 1	Anchorage, Valdez, Girdwood
62	June 2	July 13	Wasilla, Palmer, Glennallen, Talkeetna
63	May 27	July 17	Cantwell, Paxson, McGrath
64	May 22	July 21	Tok, Delta, Nome
65	May 18	July 25	Fairbanks
66	May 14	July 29	Circle City
67	May 10	August 2	Coldfoot, Kotzebue
68	May 7	August 6	Galbraith Lake
69	May 3	August 9	Happy Valley
70	April 30	August 12	Deadhorse
71	April 27	August 15	Barrow
72	April 24	August 19	

TRAFFIC. The movement of vehicles, pedestrians, and bicyclists through road construction, maintenance operations, utility work, or similar operations.

TRAFFIC CONTROL PLAN (TCP). A drawing or drawings indicating the method or scheme for safely guiding and protecting motorists, pedestrians, bicyclists, and workers in a traffic control zone. The TCP depicts the traffic control devices and their placement and times of use.

TRAFFIC CONTROL ZONE. A portion of a road construction project, maintenance operation, utility work or similar operation that affects traffic and requires traffic control to safely guide and protect motorists, pedestrians, bicyclists, or workers.

643-1.03 TRAFFIC CONTROL PLAN. Implement an approved TCP before beginning work within the project limits.

The TCP includes, but is not limited to, signs, barricades, traffic cones, plastic safety fence, sequential arrow panels, portable changeable message board signs, special signs, warning lights, portable concrete barriers, crash cushions, flaggers, pilot cars, interim pavement markings, temporary lighting, temporary roadways and all other items required to direct traffic through or around the traffic control zone according to these Specifications and the ATM. Address in the TCPs placement of traffic control devices, including location, spacing, size, mounting height and type. Include code designation, size, and legend per the ATM and the Alaska Sign Design Specification (ASDS). Include longitudinal buffer space for the posted speed limit, according to Table 6C-2 of the ATM unless project conditions or geometric features prohibit including all or a portion of the buffer length.

When a TCP is included in the Plans, use it, modify it, or design an alternative TCP. When a TCP is omitted from the Plans, provide one according to this Section and the ATM.

Submit new or modified TCPs to the Engineer for approval. All TCPs must include the following information:

1. Project name and number.
2. A designated TCP number and name on each page.
3. For TCPs more than one page, each page must be numbered.
4. The posted speed limit for each roadway.
5. Existing striping width, lane width, and road surfacing.
6. Construction lane widths, striping layout, and temporary pavement marker layout.
7. Provisions for Pedestrian, Bicycle, and ADA travel through the work zone.
8. Dates and times the TCP will be in effect and why it is being used.
9. The Worksite Traffic Supervisor’s signature certifying that all TCPs conform to the ATM and the Contract.
10. The Project Superintendent’s signature confirming the TCP is compatible with the work plan.
11. The name(s) of the Worksite Traffic Supervisor, his/her alternate and their 24-hour telephone number(s).
12. Signs to be used and the ASDS designation number and size.
13. Location and spacing of all devices and signs.
14. A plan to address any possible slopes, drop offs, paving joints, or similar temporary features that may occur during use of the TCP.
15. For TCPs proposed to be used at night, note how the requirements will be met for the required lighting and retroreflective material.

TCPs submitted for approval without all the required information will be rejected. Allow 7 days for review of each TCP submittal. All required modifications to a TCP require a new submission and an additional 7 days for review.

A minor revision to a previously approved TCP during construction requires 48 hours for review and approval by the Engineer.

The TCPs, Plans, and Alaska Standard Plans show the minimum required number of traffic control devices. If unsafe conditions occur, the Engineer may require additional traffic control devices.

A waiver may be requested, in writing, of regulation 17 AAC 25 regarding oversize and overweight vehicle movements inside the project limits. If the waiver is approved, movements of oversize and overweight vehicles in or near traffic inside the project limits will be done according to the provisions of an approved Traffic Control Plan. Maintain a minimum 12-foot lateral separation between the nonstreet legal vehicles and the motoring public. The Traffic Control Plan shall specify the traffic control devices required for these operations.

Road Closures and Major Traffic Sequencing (events). Submit a written request to the Engineer for review and approval of each proposed event and event date. Allow 7 days for the Engineer to review any proposed event or subsequent changes/corrections. The proposed event date will be no less than 14 days from the date of written approval.

643-1.04 WORKSITE TRAFFIC SUPERVISOR. Provide a Worksite Traffic Supervisor responsible for maintaining 24-hour traffic operations.

1. **Qualifications**. Provide a Worksite Traffic Supervisor knowledgeable and experienced regarding the requirements of the ATM and the implementation of those requirements. Provide a Worksite Traffic Supervisor familiar with the Plans, the Specifications, proposed operations, and certified as one of the following:

    a. Traffic Control Supervisor, American Traffic Safety Services Association (ATSSA)

    b. Traffic Control Supervisor, Laborers' International Union of North America (LIUNA)

    c. Work Zone Temporary Traffic Control Technician, International Municipal Signal Association (IMSA). After December 31, 2026 IMSA certification will not be accepted.

    Certify according to Form 25D-124 that the Worksite Traffic Supervisor has a minimum 4000 hours of temporary traffic control work experience, is competent and capable, and has the authority to perform the duties and responsibilities in accordance with this section.

    a. Temporary traffic control work experience shall demonstrate an understanding of concepts, techniques, and practices in the installation and maintenance of traffic control devices, and skill in reading, interpreting, implementing, and modifying TCPs.

    b. Temporary traffic control work experience includes a combination of: flagging; installing traffic control devices in accordance with TCPs; monitoring traffic control devices and TCP performance; and recognizing and reporting deficiencies in traffic control devices and TCPs for correction.

    c. Temporary traffic control work experience is gained while serving as a Worksite Traffic Supervisor-in-training, temporary traffic control support personnel, and Flagger.

    Worksite Traffic Supervisors shall maintain current certification and be able to show their certification anytime they are on the project.

2. **Duties**.

   a. Prepare the TCPs and public notices and coordinate traffic control operations between the Project Superintendent and the Engineer.

   b. Physically inspect the condition and position of all traffic control devices used on the project at least twice each day and at approximately 12-hour intervals. Ensure that traffic control devices work properly, are clean and visible, and conform to the approved TCP. Complete and sign a detailed written report of each inspection within 24 hours. Use Traffic Control Daily Review Form 25D-104.

   c. Supervise the repair or replacement of damaged or missing traffic control devices.

   d. Review and anticipate traffic control needs. Make available proper traffic control devices necessary for safe and efficient traffic movement.

   e. Review work areas, equipment storage, and traffic-safety material handling and storage.

   f. Hold traffic safety meetings with superintendents, foremen, subcontractors, and others as appropriate before beginning construction, prior to implementing a new TCP, and as directed. Invite the Engineer to these meetings.

   g. Supervise all traffic control workers, flaggers, and pilot car drivers.

   h. Certify that all flaggers are certified as required by Subsection 643-3.04.4. Submit a copy of all flagger certifications to the Engineer.

   i Supervise lighting for night work.

3. **Authority**. The Worksite Traffic Supervisor shall have the Contractor's authority to stop work and implement immediate corrective action to unsafe traffic control, in locations where unsafe traffic control is present.

643-1.05 CONSTRUCTION PHASING PLAN. Submit a Construction Phasing Plan for approval no less than 5 working days prior to the preconstruction conference. Include the following:

1. Form 25D-124 designating the Worksite Traffic Supervisor, providing the 24-hour telephone number, and certifying minimum 4,000 hours of work experience as described in 643-1.04 Worksite Traffic Supervisor.
2. A construction-phasing plan for each phase or segment of the project.
3. TCPs for the first phase of the project. Show permanent and temporary traffic control measures, including the times each TCP will be used.

Submit any changes to the Engineer for approval 7 days before proposed implementation.

643-1.06 TRAFFIC MAINTENANCE SETUP. When shown on the bid schedule, Traffic Maintenance Setup items are site specific and are detailed as individual TCPs on the plan sheets. They depict the method or scheme required to route traffic safely and efficiently when any of the following restrictions occur:

1. **Lane Closure**. The closure of one or more lanes on a roadway.
2. **Detour**. The redirection of traffic through or around a traffic control zone.
3. **Road Closure**. The closure of a roadway with or without a specified detour route.
4. **One Lane Road**. A two-way roadway reduced to a single-lane roadway with flaggers, pilot cars, traffic signals, stop signs, or yield signs.

643-2.01 MATERIALS. Provide traffic control devices meeting the following requirements:

1. **Signs**. Use signs, including sign supports, that conform to Section 615, the ATM, and ASDS.

   a. Construction Signs: Regulatory, guide, or construction warning signs designated in the ASDS.

   b. Permanent Construction Signs: As designated on the Plans or an approved TCP.

   c. Special Construction Signs: All other signs are Special Construction Signs. Neatly mark the size of each sign on its back in 3-inch black numerals.

2. **Portable Sign Supports**. Use wind-resistant sign supports with no external ballasting. Use sign supports that can vertically support a 48 X 48 inch traffic control sign at the height above the adjacent roadway surface required by the ATM.

3. **Barricades and Vertical Panels**. Use barricades and vertical panel supports that conform to the ATM. Use Type III Barricades at least 8 feet long. Use retroreflective sheeting that meets ASTM D4956 Type II or III.

4. **Portable Concrete Barriers**. Use portable concrete barriers that conform to the Contract. For each direction of traffic, equip each 12.5-foot section of barrier with at least two side-mounted retroreflective tabs placed approximately 6 to 8 feet apart, or a continuous 4-inch wide horizontal retroreflective stripe mounted 6 inches below the top of the barrier. Use yellow tabs or stripe when barriers are placed at centerline. Use white tabs or stripe when barriers are placed on the roadway shoulder. Use retroreflective sheeting that meets ASTM D4956 Type III, IV or V.

5. **Warning Lights**. Use Type A (low intensity flashing), Type B (high intensity flashing) or Type C (steady burn) warning lights that conform to the ATM.

6. **Drums**. Use plastic drums that conform to the requirements of the ATM. Use retroreflective sheeting that meets ASTM D4956 Type II or III.

7. **Traffic Cones and Tubular Markers**. Use reflectorized traffic cones and tubular markers that conform to the requirements of the ATM. Use traffic cones and tubular markers at least 28 inches high. Use retroreflective sheeting that meets ASTM D4956 Type II or III.

8. **Interim Pavement Markings**. Apply markings according to Section 670 and the manufacturer's recommendations. Use either:

   a. Paint meeting Subsection 708-2.03 with glass beads meeting Subsection 712-2.08,

   b. Preformed Marking Tape (removable or non-removable) meeting Subsection 712-2.14, or

   c. Temporary Raised Pavement Markers meeting Subsection 712-2.15 or 712-2.16, as appropriate.

9. **High-Level Warning Devices**. Use high-level warning devices that conform to the ATM.

10. **Temporary Crash Cushions**. Use retroreflective sheeting that meets ASTM D4956 Type III, IV or V. Application of crash cushion must be appropriate for the intended use and be installed per manufacturer’s recommendation. Temporary crash cushions used as rail or barrier end treatments must be redirective. Temporary crash cushions that are barrels or barricade filled with sand or water may only be used when the forecasted temperature during their use is above 32 degrees Fahrenheit.

11. **Sequential Arrow Panels**. Use Type A (24 X 48 inch), Type B (30 X 60 inch) or Type C (48 X 96 inch) panels that conform to the ATM.

12. **Portable Changeable Message Board Signs**. Use new truck or trailer mounted portable changeable message board signs with self-contained power supply for the sign and with:

    a. Message sign panel large enough to display 3 lines of 18-inch high characters

    b. Eight character display per message module

    c. Fully programmable message module

    d. Remote control cellular, wireless radio frequency (RF), landline

    e. Waterproof, lockable cover for the controller keyboard

    f. Capacity for electric/hydraulic sign raising or lowering

    g. Radar over speed detection

    h. Variable flash and sequence rates

    i. Light emitting diode (LED) display, using Institute of Transportation Engineers (ITE) amber/yellow

    j. The capacity for a minimum of 150 pre-programmed messages

    k. Battery-Pack Operation Duration: minimum of 55 hours under full load

    l. Power chords shall comply with the National Electrical Code (NEC) Article 600.10 Portable or Mobile Signs, paragraphs 600.10(C)(1) Cords and 600.10(C)(2) Ground-Fault Circuit Interrupter (GFCI). The cord will have integral GFCI protection located in either the attachment plug or 12 inches or less from the plug.

13. **Plastic Safety Fence**. Use 4-foot high construction orange fence manufactured by one of the following companies, or an approved equal:

    a. "Safety Fence" by Jackson Safety, Inc., Manufacturing and Distribution Center, 5801 Safety Drive NE, Belmont, Michigan, 49306. Phone (800) 428-8185.

    b. "Flexible Safety Fencing" by Carsonite Composites, LLC, 19845 U.S. Highway 76, Newberry, South Carolina, 29108. Phone (800) 648-7916.

    c. "Reflective Fencing" by Plastic Safety Systems, Inc., 2444 Baldwin Road, Cleveland, Ohio 44104. Phone (800) 662-6338.

14. **Temporary Sidewalk Surfacing**. Provide temporary sidewalk surfacing as required by an approved TCP and the following:

    a. Use plywood at least 1/2-inch thick for areas continuously supported by subgrade. Use plywood at least 1 inch thick for areas that are not continuously supported.

    b. Do not use unsupported 1-inch plywood longer than 30 inches.

    c. Use plywood with regular surfaces. Do not overlap plywood joints higher than 1/2-inch. Bevel overlap joints so the maximum slope of the overlapping edge is 2 horizontal to 1 vertical.

    d. Fasten so wind and traffic will not displace temporary surfacing.

15. **Temporary Guardrail**. Use temporary guardrail that meets Section 606, except that posts may require placement under special conditions, such as in frozen ground.

16. **Flagger Paddles**. Use flagger paddles with 24 inches wide by 24 inches high sign panels, 8 inch Series C lettering (see ASDS for definition of Series C), and otherwise conform to the ATM. Use retroreflective sheeting that meets ASTM D4956 Type VIII, IX or XI. Use background colors of fluorescent orange on one side and red on the other side.

17. **Truck Mounted Attenuator (TMA)**. The TMA shall be mounted on a vehicle with a minimum weight of 15,000 pounds and a maximum weight per the manufacturer's recommendations.

18. **Portable Steel Barriers**. Use portable steel barriers that conform to the contract. For each direction of traffic, equip each section of barrier with side-mounted retroreflective tabs placed approximately 6 to 8 feet apart, or a continuous 4-inch wide horizontal retroreflective stripe mounted 6 inches below the top of the barrier. Use yellow tabs or stripe when barriers are placed at centerline. Use white tabs or stripe when barriers are placed on the roadway shoulder. Use retroreflective sheeting that meets ASTM D4956 Type III, IV, or V.

19. **Flexible Markers**. Refer to Subsection 606-2.01 Materials.

643-2.02 Crashworthiness. Temporary Work Zone devices, including portable barriers, manufactured after December 31, 2019, must have been successfully tested to the 2016 edition of Manual for Assessing Safety Hardware (MASH). Such devices manufactured on or before this date, and successfully tested to National Cooperative Highway Research Program (NCHRP) Report 350 or the 2009 edition of MASH, may continue to be used throughout their normal service lives.

Submit documentation, by the method indicated on table 643-2, that the following devices comply with Test Level 3 requirements of National Cooperative Highway Research Program (NCHRP) Report 350 or the Manual for Assessing Safety Hardware (MASH). Submit documentation of compliance to the Engineer before installing devices on the project.

TABLE 643-2
WORK ZONE TRAFFIC CONTROL DEVICE AND BARRIER CRASH TESTING COMPLIANCE

Category	Devices	Devices Manufactured Before Dec. 31, 2019[1]	Devices Manufactured after Dec. 31, 2019[1]	Method of Documentation
1	Low-mass single-piece devices w/o attachments; traffic cones, tubular markers, single piece drums, delineators	NCHRP 350, MASH 2009, or MASH 2016	MASH 2016	Manufacturer's Certification for devices exceeding height and weight limits
2	Category 1 devices with attachments, barricades, portable sign supports, drums w/lights, other devices weighing less than 100 pounds but not included in Category 1	NCHRP 350, MASH 2009, or MASH 2016	MASH 2016	FHWA eligibility letter, at Test Level 32.
3	Fixed sign supports, truck mounted attenuators, temporary crash cushions, bridge railing, bridge and guardrail transitions, and guardrail and barrier end treatments.	NCHRP 350, MASH 2009, or MASH 2016	MASH 2016	FHWA eligibility letter, at Test Level 32.
	Portable Concrete and steel barriers	NCHRP 350, MASH 2009, or MASH 2016	MASH 2016	FHWA eligibility letter, if available, at Test Level 3, or DOT&PF eligibility determination, unless otherwise required in the Contract

1 The Engineer will determine whether a device is in serviceable condition. Serviceable means the device will function equivalent to a new device of the same manufacture.
2 When no test level is specified in a FHWA Eligibility letter; it is implied that the tests were run for Test Level 3.

In Table 643-2, Category 1 devices that exceed the following weights and heights require certification that they meet the evaluation criteria of NCHRP Report 350 or MASH, Test Level 3. This certification may be a one-page affidavit signed by the vendor. Documentation supporting the certification (crash tests and/or engineering analysis) must be kept on file by the certifying organization. No certification is required for devices less than or equal to both the weight and height on the schedule below:

Device	Composition	Weight	Height
Cones	Rubber	20 lb	36 in.
	Plastic	20 lb	48 in.
Candles	Rubber	13 lb	36 in.
	Plastic	13 lb	36 in.
Drums	Hi Density Plastic	77 lb	36 in.
	Low Density Plastic	77 lb	36 in.
Delineators	Plastic or fiberglass	N/A	48 in.

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. Keep the work, and portions of the project affected by the work, in good condition to accommodate traffic safely. Provide and maintain traffic control devices and services inside and outside the project limits, day and night, to guide traffic safely.

Unless otherwise provided in this Section, keep all roadways, business accesses, and pedestrian facilities within the project limits open to traffic. Obtain the Engineer's approval before temporarily closing residential, commercial, or street approaches. Provide access through the project for emergency vehicles and school and transit buses. Properly sign and/or flag all locations where the traveling public is redirected or stopped. Organize construction operations so the total of all construction related stoppages experienced by a vehicle traveling through the project does not exceed 20 minutes except when indicated otherwise in the Contract.

Stop equipment at all points of intersection with the traveling public unless an approved TCP shows otherwise.

Continue to operate all illumination and signalization according to the requirements of Subsection 660-3.09. When moving approach lanes, realign signal heads as necessary according to the ATM. Coordinate any modifications to existing traffic signals with the agency that maintains and operates them. Operate flood lighting at night according to the ATM. Adjust flood lighting so that it does not shine into oncoming traffic.

Provide and maintain safe routes for pedestrians and bicyclists through or around traffic control zones at all times, except when regulations prohibit pedestrians or bicyclists. Station a flagger, where construction activity encroaches onto the safe route in a traffic control zone, to assist pedestrians, and bicyclists past the construction activity.

Maintain business access(s) during flagging operations.

Immediately notify the Engineer as soon as an employee or a subcontractor becomes aware of any traffic related crash that occurs within the project limits, between construction warnings signs, along a detour route, or involving traffic in a queue back up from project work. Within 3 days fill out the information on Form 25D-123 Work Zone Crash Report and submit a copy to the Engineer.

643-3.02 ROADWAY CHARACTERISTICS DURING CONSTRUCTION. Obtain an approved TCP before reducing existing roadway lane and shoulder widths and before starting construction. Maintain a clear area with at least 2 feet between the edge of traveled way and the work area. Use barricades, traffic cones, or drums to delineate this area. Place traffic control devices on the work side of the clear area. Space them according to the ATM.

Traffic Traversing Unpaved Surface(s).

The total length of unpaved surfaces(s), measured parallel to the roadway, may not exceed the disturbed ground limit in Subsection 652-1.04 and as noted in 643-3.02.

Limit the concurrent unpaved surfaces to two, and the immediate area of work. Patch with hot mix asphalt less than 48 hours after removing the existing pavement.

If maintaining traffic on an unpaved surface, provide a smooth and even surface that public traffic can use at all times. Properly crown the roadbed surface for drainage. Before beginning other grading operations, place sufficient fill at culverts and bridges to permit traffic to cross smoothly and unimpeded. Use part-width construction techniques when routing traffic through roadway cuts or over embankments under construction. Excavate the material or place it in layers. Alternate the construction activities from one side to the other. Route the traffic over the side opposite the one under construction.

Detour traffic when the Plans or an approved TCP allows. Maintain detour routes so that traffic can proceed safely. When detours are no longer required, obliterate the detour. Topsoil and seed appropriate areas.

If two-way traffic cannot be maintained on the existing roadway or detour, use half-width construction or a road closure if it is shown on an approved TCP. Make sure the TCP indicates closure duration and conditions. Schedule the roadway closures to avoid delaying school buses, and peak-hour traffic. For road closures, post closure-start and road-reopen times at the closure site, within view of waiting traffic.

Pave lanes next to the median first. Pave lanes next to exit and entrance ramps last. Place temporary 12:1 sloped wedge of asphalt concrete against the abrupt pavement edge on lanes next to exit and entrance ramps. Do not open the roadway to traffic until slope wedges are in place.

643-3.03 PUBLIC NOTICE. Give notice at least 3 days before major changes, delays, lane restrictions, or road closures to local officials and transportation organizations, including but not necessarily limited to:

- Alaska Trucking Association
- Alaska State Troopers
- Division of Measurement Standards
- Local Police Department
- Local Fire Department
- Local Government Traffic Engineer
- School and Transit Authorities
- Local Emergency Medical Services
- Local Media (newspapers, radio, television)
- Railroads (where applicable)
- U.S. Postal Service
- Major Tour Operators

Provide local traffic enforcement and maintenance agencies 24-hour notice before shutting down a traffic signal system. Provide notice as required by utility companies before repairing or replacing a utility.

Provide the Alaska State Troopers, local police and fire department with the radio frequencies used on the project and the 24-hour telephone numbers of the Worksite Traffic Supervisor and the Project Superintendent. These telephone numbers are used to alert construction employees when emergency vehicles must pass through the project. When notified of emergencies make every necessary effort to expedite rapid passage.

Additional notices may be given through the Navigator or 511 System for selected projects. Check the special provisions for those requirements.

643-3.04 TRAFFIC CONTROL DEVICES. Before starting construction, erect permanent and temporary traffic control devices required by the approved TCPs. The Engineer will determine advisory speeds when necessary.

For lane closures on multilane roadways, use sequential arrow panels. During hours of darkness when required by the approved TCP, use flashing warning lights to mark obstructions or hazards and steady-burn lights for channelization.

Use only one type of traffic control device in a continuous line of delineating devices, unless otherwise noted on an approved TCP. Use drums or Type II barricades for lane drop tapers.

During non-working hours and after completing a particular construction operation, remove all unnecessary traffic control devices. Store all unused traffic control devices in a designated storage area which does not present a nuisance or visual distraction to traffic. If sign panels are post mounted and cannot be readily removed, cover them entirely with either metal or plywood sheeting. Completely cover signal heads with durable material that that fully blocks the view of signal head and will not be damaged or removed by weather.

Keep signs, drums, barricades, and other devices clean at all times.

Use only traffic control devices that meet the requirements of the “Acceptable” category in ATSSA (American Traffic Safety Services Association) “Quality Guidelines for Temporary Traffic Control Devices” and meet crashworthiness requirements per Section 643-2.02.

Immediately replace any devices provided under this Section that are lost, stolen, destroyed, inoperable or deemed unacceptable while used on the project. Stock repair parts for each Temporary Crash Cushion used on the project. Repair damaged crash cushions within 24 hours.

Maintain pre-existing roadside safety hardware at an equivalent or better level than existed prior to project implementation until the progress of construction necessitates removing the hardware. All existing hazards that are currently protected with roadside safety hardware or new hazards which result from project improvements shall be protected or delineated as required in the plans, specifications, and approved TCPs until permanent roadside safety hardware is installed. All temporary roadside safety hardware shall meet crashworthiness requirements of Subsection 643-2.02.

All items paid under this Section remain the property of the Contractor, unless noted otherwise in the contract. Remove them after completing the project.

1. **Embankments**. Close trenches and excavations at the end of each continuous work shift, except as indicated by the Engineer.

   Install portable concrete or steel barrier, plastic drums, barricades, tubular markers, plastic safety fence, and cones as specified on the Plans or TCPs to delineate open trenches, ditches, other excavations, and hazardous areas when they exist along the roadway for more than one continuous work shift.

2. **Adjacent Travel Lane Paving**. When paving lifts are 2 inches or greater and you cannot finish paving adjacent travel lanes or paved shoulders to the same elevation before the end of the paving shift, install: W8-11 (Uneven Lanes), W8-9 (Low Shoulder), W8-17 (Shoulder Drop-Off), W14-3 (No Passing Zone), R4-1 (Do Not Pass), R4-2 (Pass with Care), and W8-1 (Bump) signs as appropriate. Place additional signs every 1500 feet if the section is longer than 1/2 mile.

3. **Fixed Objects, Construction Vehicles and Equipment Working On or Next to the Traveled Way**. Do not park equipment in medians. Locate fixed objects at least 30 feet from the edge of traveled way. Fixed objects that exist prior to construction activity are not subject to this requirement unless the proposed temporary traffic routing moves the edge of traveled way closer to the pre-existing fixed object. Vehicles and other objects within parking lots in urban environments are considered preexisting fixed objects regardless of whether they are or are not present continuously throughout the day.

   When worksite restrictions, land features, right of way limitations, environmental restrictions, construction phasing, or other construction conditions allow no practicable location meeting the preceding requirements, the Engineer may approve alternate locations for fixed objects. Alternate locations shall be as far as practicable from the edge of traveled way. When the alternate location provides 15 feet or more separation from the edge of traveled way, the Engineer may verbally approve the alternate location. When the alternate location provides less than 15 feet separation, written approval is required.

   When the Engineer determines a fixed object or fixed objects present unacceptable hazard, use drums, or Type II barricades with flashing warning lights, or use portable concrete or steel barriers, or temporary crash cushion to delineate or shield the hazard, as approved by the Engineer.

   Remove obstructions greater than 4 inches above the nominal foreslope grade at the end of each continuous work shift.

4. **Flagging**. Furnish trained and competent flaggers and all necessary equipment, including lighting of the flagging position during nighttime operations, to control traffic through the traffic control zone. The Engineer will approve each flagging operation before it begins and direct adjustments as conditions change.

   Flaggers must be certified as one of the following:

   a. ATSSA Flagger
   b. ATSSA Flagging Instructor
   c. LIUNA Flagger
   d. LIUNA Traffic Control Technician
   e. IMSA Work Zone Temporary Traffic Control Technician

   After December 31, 2026, IMSA certification will not be accepted.

   Flaggers shall maintain current flagger certification. Flaggers must be able to show their flagger certification anytime they are on the project.

   Flaggers must maintain their assigned flagging location at all times, unless another qualified flagger relieves them, or the approved traffic control plan terminates the flagging requirements. Remove, fully cover, or lay down flagger signs when no flagger is present. Keep the flaggers' area free of encumbrances. Keep the flagger's vehicle well off the roadway and away from the flagging location so the flagger can be easily seen.

   Provide approved equipment for two-way radio communications between flaggers when flaggers are not in plain, unobstructed view of each other.

Obtain the Engineer's written approval before flagging signalized intersections. When flagging a signalized intersection, either turn off and cover the traffic signal or place it in the All-Red Flash mode. Coordinate changing traffic signal modes and turning off or turning on traffic signals with the agency responsible for signal maintenance and operation and the Engineer. Get their written approval in advance. Only uniformed police officers are permitted to direct traffic in an intersection with an operating traffic signal.

5. **Pilot Cars**. You may use pilot cars when part of an approved TCP, if the Engineer determines one-way traffic is necessary, or if the route through the traffic control zone is particularly hazardous, involved, or frequently altered to preclude adequate signing, Do not use pilot cars to avoid localized traffic control at several locations. Pilot car operators may not control Automated Flagger Assistance Devices while operating a pilot car.

   Organize construction operations so the total of all stoppages experienced by a vehicle traveling through a project does not exceed 20 minutes. However, this does not imply that you may allow 20 minutes in all cases. Coordinate multiple pilot-car operations within a project or adjoining projects to minimize inconvenience to the traveling public. Two or more pilot cars may be used to provide two-way traffic through the traffic control zone to reduce the waiting period. The flagger or pilot car operator must record each pilot car's departure time in a bound field book furnished by the Engineer. Whenever practical, the flagger should tell the motorist the reason for and approximate length of the delay. Make every reasonable effort to yield right-of-way to the public and prevent excessive delay.

   Use an automobile or pickup as the pilot car, with the company logo prominently displayed. Equip the pilot car with a two-way radio for contact with flaggers and other pilot cars. Mount a G20-4 sign (Pilot Car Follow Me) on the rear at least 5 feet above the driving surface. Use high intensity flashing strobe lights, oscillating beacons, or rotating beacons on all Pilot Cars. Vehicle hazard warning lights may supplement but are not permitted to be used instead of high intensity flashing strobe lights, oscillating beacons, or rotating beacons. Identify the last vehicle in the column.

   When pilot car operations are approved, establish all required pilot car traffic control devices before beginning work. Continue pilot car operations until no longer necessary and an approved TCP is in place for operations without pilot car, including all required traffic control devices.

6. **Street Sweeping and Power Brooming**. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material. Use equipment for brooming and sweeping as recommended by the manufacturer and the following:

   Dirt, dust and construction materials, mobilized as a result of power brooming and or sweeping, shall not be pushed, ejected, thrown or drift beyond the lesser of, 2 feet from the equipment perimeter or the edge of the paved surface.

   All equipment shall operate to typical industry standards. Maintain equipment to operate as designed by the manufacturer. Equipment will employ safety equipment, warning lights, and other as required by the Specifications and these Special Provisions.

   Sweeper and Broom Options: Table 643-5, Traffic Control Rate Schedule, Street Sweeping

   a. **Regenerative Sweeper**: Sweeper that blows a stream of air at the paved surface, causing fine particles to rise, and then caught through a vacuum system.

   b. **Vacuum Sweeper**: Sweeper that creates a vacuum at the paved, surface sucking dirt, dust, and debris into a collection system.

   c. **Mechanical Broom Sweeper**: Sweeper designed to pick up and collect larger size road debris, stones and litter, etc. In addition to the requirements noted in these Specifications, use of a mechanical broom sweeper requires the Engineer to approve the sweeper for the intended use.

d. **Power Broom**: Power brooming that wets, pushes and or ejects loose material directly into an attached collection/pickup container may be used when approved by the Engineer. The added moisture will be contained to the paved roadway surface.

   Dry Power Brooming is not permitted. Power brooming without direct/immediate means of collection/pickup is not permitted.

7. **Watering**. Furnish, haul, and place water for dust control and pavement flushing, as directed. Use water trucks that can provide a high-pressure water stream to flush the pavement and a light-water spray to control dust. If the flushing operations contaminate or fill adjacent catch basins, clean and restore them to their original condition. This requirement includes sections of roadway off the project where flushing is required. The Engineer will control water application.

   Obtain an Alaska Department of Natural Resources permit for water removal before taking water from a lake, stream, or other natural water body. Comply with the Alaska Department of Fish and Game screening requirements for all water removal operations.

8. **Portable Changeable Message Board Signs**. Furnish Changeable Message Signs when approved on a TCP. Display only messages approved on the TCP. Follow application guidelines in the ATM.

9. **Truck Mounted Attenuator (TMA)**. TMAs are mounted on the rear of work vehicles. Impact attenuators shall meet crashworthiness requirements of 643-2.02. TMAs shall be mounted on a vehicle with a minimum weight of 15,000 pounds and a maximum weight in accordance with the manufacturer's recommendations. TMAs shall have an adjustable height so that it can be placed at the correct elevation during usage and to a safe height for transporting. Approach ends of TMAs shall have impact attenuator markings in accordance with the ATM. Do not use a damaged attenuator in the work. Replace any damaged TMA at your expense.

10. **Traffic Control Vehicles**. Use high intensity flashing strobe lights, oscillating beacons, or rotating beacons on the Work Zone Supervisor's vehicle and on vehicles being used to transport and set-up traffic control devices. Vehicle hazard warning lights may supplement but are not permitted to be used instead of high intensity flashing strobe lights, oscillating beacons, or rotating beacons.

643-3.05 AUTHORITY OF THE ENGINEER. When existing conditions adversely affect the public's safety or convenience, the Contractor will receive an oral notice, and then a written notice according to Subsection 105-1.01, Authority of the Engineer. The notice will state the defect(s), the corrective action(s) required, and the time required to complete the corrective action(s). In no case shall this time exceed 24 hours. If corrective action(s) are not completed within the specified time, the Engineer may immediately suspend work on the offending operations until the defect(s) are corrected. The Engineer may require outside forces to correct unsafe conditions. The cost of work by outside forces will be deducted from any monies due under the terms of this Contract.

643-3.06 TRAFFIC PRICE ADJUSTMENT. A Traffic Price Adjustment, under Item 643.0023.____, will be assessed for unauthorized lane closures or reductions. Unauthorized lane reductions will be assessed as one full lane closure, for each lane reduced without authorization.

Authorized lane closures and/or lane reductions are those shown in the Contract, an approved TCP, or authorized in writing.

Unauthorized lane reductions include unacceptable roadway, pedestrian walkway or route, and bicycle route or pathway surfaces, such as severe bumps, ruts, washboarding, potholes, excessive dust or mud, and non-conforming or out of place traffic control devices. Failure to install temporary crash cushions or barriers, when required according to the Contract or TCP, is also considered an unauthorized lane reduction. The Engineer will make the sole determination whether unauthorized lane reductions or closures are present.

Failure to maintain an acceptable infrastructure or traffic control plan will result in a price adjustment equal to 100 percent of the applicable rate shown in Table 643-3, Adjustment Rates, for the time the roadway or pedestrian facility is in an unacceptable condition.

The rates are liquidated damages which represent highway user costs, based on Average Daily Traffic (ADT). The Engineer will use the rate shown for the current ADT for this project, as published in the Regional Traffic Volume Report prepared by the Department's Planning Section. Adjustment rates for unauthorized reduction or closure of each lane of pedestrian walkways or route, and bicycle route or pathway, are the same as for one full roadway lane closure.

TABLE 643-3
ADJUSTMENT RATES

Published ADT	Dollars/Minute of Unauthorized Lane Reduction or Closure
Less than 1,000	$6
1,000-4,999	$25
5,000-9,999	$75
10,000-29,999	$105
30,000+	$150

643-3.07 MAINTENANCE OF TRAFFIC DURING SUSPENSION OF WORK. Approximately one month before work is suspended for the season, schedule a preliminary meeting with the Engineer and Maintenance & Operations to outline the anticipated roadway condition and the work expected to be completed before shutdown. Schedule a field review with the Department for winter maintenance acceptance. At the field review, the Engineer will prepare a punch list for implementation before acceptance.

To be relieved of winter maintenance responsibility, leave all roads with a smooth and even surface for public use at all times. Properly crown the roadbed surface for drainage and install adequate safety facilities. Make sure all illumination and signals, including vehicle detectors, are in good working order.

After the project is accepted for winter maintenance and until ordered to resume construction operations, the Department is responsible for maintaining the facility. The Department will accept maintenance responsibility only for portions of the work that are open to the public, as determined by the Engineer. The Department will not accept maintenance responsibility for incomplete work adjacent to accepted roads. The contractor is responsible for maintaining all other portions of the work. The Engineer will issue a letter of “Acceptance for Winter Maintenance” that lists all portions of the work that the Department will maintain during a seasonal work suspension. The contractor retains all contractually required maintenance responsibilities until receipt of this letter.

If the contractor suspends work due to unfavorable weather (other than seasonal) or due to failure to correct unsafe conditions, carry out Contract provisions, or carry out the Engineer’s orders. All costs for traffic maintenance during the suspended period will be borne by the Contractor.

When work is resumed, replace or renew any work or materials lost or damaged during temporary use. If the Department caused damage during winter suspension, payment will be made for repairs by unit pay item or in accord with Subsection 109-1.05, Compensation for Extra Work. When the Engineer directs, remove any work or materials used in the temporary maintenance. Complete the project as though work has been continuous.

643-3.08 CONSTRUCTION SEQUENCING. The construction sequencing detailed in these provisions, the Special Provisions, and the Plans is suggested only. The Contractor may propose alternative construction sequencing.

Throughout the project, maintain the existing roadway, pedestrian walkway, or route, and bicycle route or pathway configuration (such as the number of lanes and their respective widths) except for restrictions to traffic allowed in the Special Provisions or on the Plans, and addressed through approved TCPs. A restriction to traffic is any roadway surface condition, work operation, or traffic control setup that reduces the number of lanes or impedes traffic. Obtain an approved TCP before restricting traffic.

Unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic during the times listed below:

1. **Monday through Friday**: 0530 hrs to 0800 hrs and 1630 hrs to 1900 hrs.

2. **Around any Holiday**:

    a. If a holiday falls on Sunday, Monday, or Tuesday, the above stipulations apply from 1200 hrs on the Friday before the holiday to 0300 hrs. on the day after the holiday.

    b. If a holiday falls on Wednesday, the above stipulations apply from 1200 hrs on the Tuesday before the holiday to 0300 hrs. on the Thursday after the holiday.

    c. If a holiday falls on Thursday, Friday, or Saturday, the above stipulations apply from 1200 hrs on the day before the holiday to 0300 hrs. on the Monday after the holiday.

3. **During the Alaska State Fair**: Friday from 1600 hrs. to Sunday 2300 hrs on all streets except Palmer-Wasilla Highway. Weekend traffic restrictions not allowed on Palmer-Wasilla Highway.

Lane restrictions, if allowed, conducted so that no more than a 10 minute accumulated stopped delay, 40 vehicles, or 1/4 mile (1320 feet) of traffic detained, whichever occurs first, before releasing the detained motorists. During paving operations, a 20 minute stopped delay, 80 vehicles, or 1/2 mile (2640 feet) of traffic detained, allowed for motorists, except school buses. If a queue of traffic develops at a stop, empty the entire queue to include the last car that entered the queue at the time the queue was released.

Do not delay the school busses through the construction zone; obtain the local school bus schedule and coordinate work efforts. Submit the plan, as a TCP, to the Engineer for approval before the implementation of the school bus coordination plan.

643-3.09 INTERIM PAVEMENT MARKINGS. Place permanent or interim pavement markings according to this Subsection, details shown on the Plans, approved TCPs, and Parts III and VI of the ATM before opening existing paved roadways, temporary paved roadways, detours, interim paving lifts, and roadways with seal coats and surface treatments for more than one continuous work shift. This work may include restriping the existing roadway before beginning construction, before seasonal suspension, and/or after seasonal suspension.

Remove conflicting pavement markings according to Subsection 670-3.04, Paint Removal.

Mark existing roadway sections that will be opened to traffic during the winter. Mark over the existing lines and markings, unless shown otherwise on the Plans or an approved TCP.

Maintain all interim pavement markings for their intended life including reapplication when necessary. There will be no compensation to upgrade interim pavement markings required for work operations lasting up to 2 weeks.

Use only temporary raised pavement markers as interim pavement markings on final pavement surfaces. Completely remove and dispose of them when placing the final markings. Completely remove any residual adhesive that might misguide motorists. Place final pavement markings on finished pavement surfaces and interim pavement surfaces before suspending work for the winter.

Stage the construction to avoid routing traffic over conflicting markings, for more than one continuous work shift. If traffic is routed over conflicting markings during a work shift, delineate the roadway with a complement of warning signs, channelizing devices, and flaggers as required by the ATM.

Use only temporary raised pavement markers meeting Subsection 712-2.16 as interim markings on seal coat and surface treatment pavements. Install the markers according to the manufacturer's instructions before applying the asphalt surface material and cover coat. Remove the vinyl protective covers after applying the asphalt pavement.

On multicourse surface treatments, install the temporary raised pavement markers after applying the full width of the first layer of cover coat. Install the markers on each day's completed surface before removing the pilot car operations and allowing unescorted traffic on the surface treatment.

Apply final pavement markings according to Subsection 670-3.01, Construction Requirements, of these Special Provisions.

Apply final pavement markings within 10 days of completing the final sweeping or brooming of the mainline seal coat or surface treatment.

643-3.10 LIGHTING FOR NIGHT WORK. Illuminate the night work areas according to Table 643-4. Table 643-4 does not provide a comprehensive list of operations that require lighting. Provide lighting for other operations when necessary.

Use balloon lighting as the main light sources. Do not use floodlights without prior approval by the Engineer. When approved, install floodlighting in a manner that minimizes glare for motorists, workers, and residents living along the roadway. Locate, aim, louver, and/or shield light sources to reduce glare.

The Engineer shall be the sole judge of when glare is unacceptable, either for traffic or for adjoining residences. When notified of unacceptable glare, modify the lighting system to reduce glare to an acceptable level.

TABLE 643-4
NIGHT WORK ILLUMINATION EQUIPMENT AND LOCATION REQUIREMENTS

Type of Work or Equipment	Lighting Configuration
Paving, Milling, Striping, Pavement Marking Removal, Rumble Strip Installation.	At least one machine-mounted balloon light of at least 2000 watts. Provide additional lights or wattage if necessary to provide complete coverage.
Rolling, Pavement Sweeping.	At least 4 sealed beam halogen lamps in the front and four in the back. Each should be at least 55 watts.
Flagging.	One balloon light of at least 2000 watts, located within 30 feet of the flagger location. Locate so the flagger and the flagging location are illuminated. Provide additional lights or wattage if necessary to provide complete coverage of the flagging location.
Truck Crossings where haul vehicles cross or enter a road with more than 10,000 ADT, or where the haul vehicle crossing or entering location is controlled by portable traffic signals or flaggers.	At least one balloon light of at least 2000 watts, located on the main road on the far right side of the intersection. Locate light within 30 feet of the edge of the side street. If there is a flagger at the crossing, locate the light or lights so the lighting requirements for Flagging are also satisfied.

If the Contractor fails to provide required lighting equipment or provides lighting that creates unacceptable glare, the Contractor shall cease all construction activities that require illumination, including flagging operations, until the condition or conditions are corrected.

Use lighting equipment in good operating condition and that complies with applicable state and local adopted codes and standards, and OSHA, NEC, and NEMA requirements.

Provide suitable brackets and hardware to mount lighting fixtures and generators on machines and equipment. Design mountings so lights can be aimed and positioned as necessary to reduce glare. Locate mounting brackets and fixtures so they don't interfere with the equipment operator or overhead structures. Connect fixtures securely in a manner that minimizes vibration.

Ensure ground, trailer, and equipment-mounted light towers or poles are sturdy and freestanding without the aid of guy wires. Towers shall be capable of being moved as necessary to keep pace with the construction operation. Position the ground and trailer-mounted towers and trailers, to minimize the risk of being impacted by traffic on the roadway, or by construction traffic, or equipment.

Raise trailer or equipment mounted lights to maximum height, except do not exceed the clearance required for overhead objects such as overhead signals, overhead signs, trees, aerial utilities, or bridges. Aim and adjust lights to provide the required light levels. Provide uniform illumination on the hopper, auger, and screed areas of pavers. Illuminate the operator's controls on all machines uniformly.

Furnish each side of non-street legal equipment with a minimum of 75 square inches high intensity retroreflective sheeting in each corner, so at least 150 square inches of sheeting is visible from each direction. Provide red sheeting on the rear of the equipment and yellow sheeting elsewhere.

Existing street and highway lighting and conventional vehicle headlights may supplement but do not relieve the Contract requirement to provide lighting for night work, according to the requirements of Table 643-4.

Provide sufficient fuel, spare lamps, spare generators, and qualified personnel to ensure that all required lights operate continuously during nighttime operations. Ensure generators have fuel tanks of sufficient capacity to permit operation of the lighting system for a minimum of 12 hours. In the event of any failure of the lighting system, discontinue the operation that requires illumination until the required level and quality of illumination is restored.

Maintain a supply of at least twenty emergency flares for use in the event of emergency or unanticipated situations. Comply with local noise ordinances.

Install all post-mounted electroliers located within the clear zone, on NCHRP 350 or MASH compliant breakaway bases.

643-3.11 HIGH VISIBILITY GARMENTS. Ensure all workers within project limits wear outer garments that are highly visible and comply with the following requirements:

1. **Standards**. Use high visibility garments conforming to the requirements of ANSI/ISEA 107-2004, Class 2 for tops or Class E for bottoms, and Level 2 retroreflective material.

2. **Labeling**. Use garments labeled in conformance with Section 11.2 of ANSI/ISEA 107-2004 or ANSI/ISEA 107-2010.

3. **Tops**. Wear high visibility vests, jackets, or coverall tops at all times.

4. **Bottoms**. Wear high visibility pants or coverall bottoms during nighttime work (sunset to sunrise). Worksite traffic supervisors, employees assigned to traffic control duties, and flaggers wear high visibility pants or coverall bottom at all times.

5. **Outer Raingear**. Wear raingear tops and bottoms conforming to the requirements of this Subsection 643-3.11.

6. **Exceptions**. When workers are inside an enclosed compartment of a vehicle, they are not required to wear high visibility garments.

7. **Condition**. Furnish and maintain all vests, jackets, coveralls, rain gear, hard hats, and other apparel in a neat, clean, and presentable condition. Maintain retroreflective material to Level 2 standards.

Payment for high visibility garments for workers is subsidiary to other traffic contract items.

643-4.01 METHOD OF MEASUREMENT. Section 109 and as follows: Quantities will not be measured during winter suspension of work.

1. **Traffic Maintenance**. Calendar Day: Every day shown on the calendar, beginning and ending at midnight. Measurement begins on the day following receipt of the Notice to Proceed or on the first day of work at the project site, whichever is later, and ends on the date of project completion.

2. **Traffic Control Device Items**. By the number of units of each bid item shown on the bid schedule (or the Traffic Control Rate Schedule, if item 643.0025.____, Traffic Control, is included) that are installed, accepted, and operational. Incomplete or unsatisfactory devices will not be measured. Special Construction Signs are measured by the total area of legend-bearing sign panel, as determined under Subsection 615-4.01. Compensation for a 24-hour period shall be made under Construction Signs in the Traffic Control Rate Schedule, Table 643-5. Items measured by the day are for each item per 24-hour period.

3. **Traffic Maintenance Setup Items**. By each lane closure or one-lane road in place per hour. By each detour or road closure in place per 24-hour period.

4. **Portable Concrete Barrier**. By each nominal 12.5-foot section placed according to the approved TCPs, for the initial placement and for each subsequent relocation when moved more than 10 feet in any direction. Each transition piece (sloping end) will be measured as a single section.

5. **Temporary Crash Cushion**. By each acceptable installation.

6. **Interim Pavement Marking**. By the single-stripe station. A single stripe is a marking or a temporary raised pavement marker 4 inches wide. Wider striping is measured in multiples of 4 inches. Centerline gaps are not deducted from measurements.

7. **Flagging and Pilot Car**. By the number of approved hours, supported by certified payroll.

8. **Street Sweeping**. By the number of operated hours, supported by certified payroll and approved by the Engineer.

9. **Watering**. By the 1,000 gallons (M-Gallon) of water applied. The Engineer may specify measurement by weight or volume. If by weight, convert to gallons at 8.34 pounds per gallon. If by volume, convert to gallons at 7.48 gallons per cubic foot.

10. **Traffic Price Adjustment**. By each minute that any lane of traffic is not open to full use by the traveling public, measured to the nearest minute. The Engineer will determine whether the roadway is opened to full use.

11. **Traffic Control**. By the units specified in the Special Provisions.

12. **Portable Changeable Message Board Sign**. By the 24-hour period for each sign, as shown on an approved TCP and displaying an approved message.

13. **Plastic Safety Fence**. By the linear foot, as placed, to protect or channelize pedestrian traffic as shown on an approved TCP. Any adjustment in configuration of the fence at the same location that does not result in an increased amount of fence is not measured. Opening and closing the fence to gain access to and from the worksite is not measured.

14. **Temporary Sidewalk Surfacing**. By the square yard as shown on an approved TCP.

15. **Temporary Guardrail**. By the linear foot, including end treatments, as shown on an approved TCP.

16. **Portable Steel Barrier**. By the linear foot placed according to the manufacturer's recommendation and approved TCPs, for the initial placement, and for each subsequent relocation when moved more than 10 feet in any direction.

17. **Hotline Road Report**. No measurement required to provide a 24-hour toll free (1-800 ###-####) "Hotline Road Report" telephone with a prerecorded message, and weekly notices with daily updates. Work will be subsidiary to Pay Item 643.0001.____ or 643.0002.____, Traffic Maintenance.

643-5.01 BASIS OF PAYMENT.

1. **Traffic Maintenance**. The contract price includes all resources required to provide the Worksite Traffic Supervisor, all required TCPs and public notices, the Construction Phasing Plan, and the maintenance of all roadways, approaches, crossings, intersections and pedestrian and bicycle facilities, as required. This item also includes any Traffic Control Devices required but not shown on the bid schedule.

   Items required by the Contract that are not listed on the bid schedule or not included in other items are subsidiary to Item 643.0001.____ or 643.0002.____ Traffic Maintenance, except the following:

   a. Traffic Price Adjustment
   b. Traffic Maintenance Setup

2. **Traffic Control Device Items**. The contract price includes all resources required to provide, install, maintain, move, and remove the specified devices. Warning lights, high-level warning devices, vertical panels, and sign supports required for traffic control devices are subsidiary.

3. **Traffic Maintenance Setup Items**. Each setup consists of all traffic control devices, flaggers, pilot cars, and subsidiary items necessary to implement the TCP shown on the Plans. Warning lights, high-level warning devices, vertical panels, and sign supports required for traffic control devices are subsidiary.

   Construction and obliteration of temporary roadways, when required on the Plans or approved TCP under a traffic maintenance setup item, is paid for under their respective roadway pay items.

   When topsoil or seeding is required for detours, payment will be made under Sections 620 and/or 618.

4. **Portable Concrete Barrier**. The contract price includes all resources required to provide, install, maintain, and remove each barrier section.

5. **Temporary Crash Cushion**. The contract price includes all resources required to provide, install, maintain, repair, and remove each crash cushion.

6. **Interim Pavement Marking**. The contract price includes all resources required to provide, install, maintain, and remove the specified markings. Installation of word and symbol markings are subsidiary. The No-Passing Zone signing, described in Subsection 643-3.04, is subsidiary.

7. **Flagging and Pilot Car**. The contract price includes all required labor, vehicles, radios, flagger paddles and pilot car signs, and transportation to and from the worksite.

   The Engineer will pay for Item 643.0032.____ Flagging on a contingent sum basis at the rate of $82.00/hour. The Engineer does not require a change order/directive for the flagging Pay Item. Flagging associated with Change Order work paid at the prices according to Subsection 109-1.05 Compensation for Extra Work.

8. **Street Sweeping**. The contract price includes all resources required to keep the roadway free of loose material.

9. **Watering**. The contract price includes all resources required to provide watering, as directed.

10. **Traffic Price Adjustment**. If Item 643.0023.____, Traffic Price Adjustment, is shown on the bid schedule, the total value of this contract will be adjusted, for unauthorized lane reductions or closures, at the rates listed in Table 643-3.

11. **Traffic Control**. Payment for Item 643.0025.____, Traffic Control, will be made at the unit rate value contained in the Traffic Control Rate Schedule shown in the Special Provisions for the accepted units of traffic control devices. The Engineer does not require a change order/directive for Pay Item 643.0025.____, Traffic Control.

12. **Portable Changeable Message Board Sign**. The contract price includes all resources required to furnish, move, and operate the sign.

13. **Plastic Safety Fence**. The contract price includes all resources required to install, maintain, and remove the fence.

14. **Temporary Sidewalk Surfacing**. The contract price includes all resources required to construct, maintain, and remove the surfacing.

15. **Temporary Guardrail**. The contract price includes all resources required to construct, maintain, and remove the guardrail.

16. **Portable Steel Barrier**. The contract price includes all resources required to provide, install, maintain, move, and remove each barrier.

17. **Lighting for Night Work**. Payment for illuminating night work areas and any required adjustments to work zone illumination is subsidiary to other items.

18. **Pavement Breaks**. Temporary hot mix asphalt at pavement breaks, as noted in Subsection 643-3.02. Gravel Surface Not Specified is subsidiary to Pay Item 401.0001.____.

19. **Temporary Pavement Markings**. Except where specified as an individual Pay Item (Interim Pavement Markings) temporary pavement markings are subsidiary to Section 670 Pay Items. Refer to Section 670 Traffic Markings, for further information.

20. **Temporary Crash Cushion / Redirective**. The price listed in the Traffic Control Rate Schedule, Table 643-5, will be full compensation for the purchase, installation, maintenance during construction, removal, and salvaging the Temporary Crash Cushion / Redirective unit(s). Deliver the salvaged unit(s) to the nearest DOT&PF Maintenance & Operations Station or as directed by the Engineer.

Traffic control devices, barriers, and crash cushions required to delineate or shield fixed objects will not be measured or paid for separately, but will be subsidiary

Traffic control devices, barriers, and crash cushions required to delineate or shield guardrail posts or non-crashworthy ends will not be measured or paid for separately, but will be subsidiary, when required for failure to meet completion timelines in subsection 606-3.01.

TABLE 643-5
TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$6.50
Special Construction Signs	Square Foot	$31.00
Type II Barricade	Each/Day	$3.30
Type III Barricade	Each/Day	$11.00
Traffic Cone or Tubular Marker	Each/Day	$1.10
Drums	Each/Day	$3.30
Temporary Guardrail	Lineal Foot	$35.00
Portable Concrete or Steel F Shape Barrier (12.5 foot long or $8/foot for other lengths)	Each	$100.00
Temporary Crash Cushion / Non-redirective Water Filled Barrier (all required per end)	Each	$2500.00
Temporary Crash Cushion / Non-redirective Water Filled Barrels (all required per end)	Each	$3285.00
Temporary Crash Cushion / Non-redirective Sand Filled Barrels (all required per end)	Each	$4325.00
Temporary Crash Cushion / Redirective	Each	$9230.00
Plastic Safety Fence	Lineal Foot	$1.00
Temporary Sidewalk Surfacing	Square Foot	$2.00
Flexible Markers (Flat Whip, Reflective)	Each	$60.00
Cars and Trucks w/driver		
Pilot Car (4x2, 1/2 ton truck)	Hour	$128.00
Watering Truck – up to 4900 gallon capacity	M-Gallon	$40.00
Watering Truck – more than 4900 gallon	M-Gallon	$30.00
Street Sweeping: Regenerative Sweeper, Vacuum Sweeper, Mechanical or Power Broom with Vacuum	Hour	$214.00
40,000 GVW Truck with Crash Attenuator	Hour	$162.00
Electronic Boards, Panels, and Signals		
Sequential Arrow Panel	Each/Day	$60.00
Portable Changeable Message Board Sign	Calendar Day	$210.00

PAY ITEM		
Item Number	**Item Description**	**Unit**
643.0001.____	Traffic Maintenance	CDAY
643.0002.____	Traffic Maintenance	LS
643.0003.____	Permanent Construction Signs	LS
643.0004.____	Construction Sign	Day
643.0005.____	Type II Barricade	Day
643.0006.____	Type III Barricade	Day
643.0007.____	Traffic Cone/Tubular Marker	Day
643.0008.____	Plastic Safety Fence	LF
643.0009.____	Drum	Day
643.0010.____	Sequential Arrow Panel, Type C	Day
643.0011.____	Special Construction Signs	SF
643.0012.____	Portable Concrete Barrier	Each
643.0013.____	Temporary Crash Cushion	Each
643.0014.____	Interim Pavement Marking	STA
643.0015.____	Flagging	HR
643.0016.____	Pilot Car	HR
643.0017.____	Street Sweeping	HR
643.0018.____	Watering	MGAL
643.0019.____	Lane Closure	HR
643.0020.____	Detour	Day
643.0021.____	Road Closure	Day
643.0022.____	One Lane Road	HR
643.0023.____	Traffic Price Adjustment	CS
643.0024.____	Portable Changeable Message Board Sign	Day
643.0025.____	Traffic Control	CS
643.0026.____	Temporary Sidewalk Surfacing	SY
643.0027.____	Temporary Guardrail	LF
643.0030.____	Portable Steel Barrier	LF
643.0031.____	Interim Pavement Marking	LS
643.0032.____	Flagging	CS
643.0033.____	Detour	LS

C643-24.1001

SECTION 644
SERVICES TO BE FURNISHED BY THE CONTRACTOR

Special Provisions

Replace Subsection 644-2.01 with the following:

644-2.01 FIELD OFFICE. Furnish and maintain a suitable office for the Engineer, available for occupancy from 2 weeks before beginning work through 30 days after issuance of the notice of project completion as defined in Subsection 105-1.15. The following office requirements shall be met:

1. A minimum of 1000 square feet of floor area. The office area shall be divided so that it contains an office room separated by a closeable door. The office room shall have a minimum of 160 square feet of floor area.
2. A thermostatically controlled interior heating system with necessary fuel.
3. Adequate electrical lighting and 120-volt, 60 hertz power, with a minimum of 6 electrical outlets.
4. A minimum of 100 square feet of window area and adequate ventilation.
5. Adequate parking for a minimum of 16 vehicles, with one handicap parking space meeting the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG).
6. Attached indoor plumbing with sanitary lavatory facilities and potable drinking water provided.
7. Provide engineering communication services to the field office, Subsection 644-2.08.
8. If a part of the Contractor's building, it shall be completely partitioned off from the balance of the structure and provided with a separate outside door equipped with a lock.
9. Located within 3 miles of the project.
10. Weekly janitorial service consisting of emptying trash receptacles, vacuuming the office area, and cleaning restrooms and counter areas.
11. Provide one mobilization and one demobilization of the Engineer's office equipment and furniture.
12. Provide a security system controlled by the Department for the office including camera coverage for the vehicle parking.

C644.1-20.0801_FOCOM

644-2.02 FIELD LABORATORY.

Replace 2.g. with the following:

g. 500-gallon capacity tank with a pressure pump or a commercial pressurized system.

Replace Subsection 2.h.(2) and (3) with the following:

(2) Wiring system to support a 100-amp user load demand with one 50-amp and two 20-amp circuits, all GFI protected.
(3) Outlets, ten conveniently spaced around the lab, 20-amp capacity, with no more than five outlets per circuit, and consistent with local codes.

Add 2.h.(6):

(6) Outside outlet, 220-volt.

Replace Subsection 4.c.(3) with the following:

(3) Wiring system with each circuit GFI protected to satisfy a 60-amp user load demand. Provide three 20-amp circuits each with a 20-amp outlet. Space the outlets around the shed for the user's convenience.

Replace 6.a. with the following:

a. Supply 240-volt, 60 hertz power, a 100-pound propane bottle, and a 500-gallon capacity water tank with a pressure pump or a commercial pressurized system for a State provided portable asphalt lab at a location designated by the Engineer.

Add the following:

7. Provide one mobilization and one demobilization of the Engineer's laboratory equipment from Anchorage.
8. Provide engineering communication services to the field laboratory, Subsection 644-2.08.
9. Provide a security system controlled by the Department for the lab including camera coverage for the vehicle parking.

C644.2-20.0801-1_LAB

644-2.05 VEHICLES.

Replace the second and third paragraphs with the following:

Pickup(LT)/Sport Utility Vehicle (SUV): Furnish full-size, four-wheel drive vehicles, either pickup/light truck(s) with crew cabs or sport utility vehicle(s). Provide vehicles less than three model years old, in good condition, and with less than 36,000 miles on the odometer. Furnish all fuels, maintenance and parts, and insurance during the Department's operation and use.

Equip each vehicle with lightbars wired into the vehicle's electrical system with a dash mounted switch easily accessible to the vehicle operator. Provide Code 3; Reflex C5590AA 15.3-inch mini lightbar, or approved equal. Approved equal equipment shall have the following characteristics:

- (4) 55-watt rotators with amber filters
- 1200 flashes per minute
- (2) diamond mirrors
- 55 inches in length

Equip each vehicle with hands-free communication connectivity.

If you are working after October 1, provide four studded snow tires mounted on each vehicle.

You are responsible for normal wear and tear, and any other incidental damage including broken windshields occurring during the Department's operation and use. The State of Alaska is responsible for damage to any vehicle caused by its own negligent operation.

C644.3-20.1130_LTSUV

Add the following Subsection 644-2.08 Engineering Communication and Office Equipment:

644-2.08 ENGINEERING COMMUNICATION AND OFFICE EQUIPMENT. Engineering Communications and Office Equipment, minimum service includes:

1. Three phone/facsimile lines and commercial phones (different phone numbers for each line)

    a. One phone with a built-in digital answering machine.
    b. Ancillary equipment for operational service and as required by the Engineer.

2. High speed internet service with modem (DSL or Cable)

    a. Send and receive capability supporting 10.0 Mbps download and upload speed or higher at all times.
    b. Data usage, 10 GB minimum monthly.
    c. Wireless router.
    d. Battery backup.
    e. Ancillary equipment for operational services and as required by the Engineer.

3. Equipment rental services

    a. All-in-one printer/copier/scanner

        (1) Black-white and color
        (2) Pages per minute (ppm): 50
        (3) Paper trays: 8.5" x 11" and 11" x 17"
        (4) Capacity: 1100 sheets minimum

C644.1-20.0801_FOCOM

Add the following Subsection 644-2.09 Image Documentation:

644-2.09 IMAGE DOCUMENTATION. Provide secure "digital image" (image) documentation of construction activity at the project site(s); inclusive of an integrated, professional-grade, high resolution digital webcam image system designed for the construction industry with camera(s) and related hardware, support structure, mounting equipment, software, data transmission service, website hosting, image hosting, storage/archiving and online interface for the system with technical support and as further defined herein.

1. Period of Service. Begin Image Documentation one week before construction begins through one week after project completion.

2. Ownership of Image Documentation. All images are copyright of the Department including still images and time-lapse movies. The Contractor and Vendor may not use the image documentation without the written approval of the Department.

3. Ownership of Camera(s) and Accessories. The camera(s) is the property of the Contractor.

4. Submittals. Provide complete submittals (3 printed copies), to the Engineer for review and approval, at least 21 days before beginning Construction activity. Submittals will be returned to the Contractor, within 14 days from the date submitted, marked as approved by the Department, or requiring revisions. Amend and resubmit the documents for review until approved by the Engineer.

   Include the following:

   a. Shop Drawings. Submit a key plan of the project site and construction to be documented with vantage points marked for location and direction of each camera. Coordinate layout and installation of cameras to avoid interference from site line obstructions such as trees and to prevent sunlight and light from fixtures entering directly into the camera lens. Indicate camera mounting heights relative to ground and the construction being documented. Include mounting structure, if required, and mount.

      Approximate location of the camera(s) is provided in the Plans (plan and profile sheets coordinated with the summary sheets). Coordinate with the Engineer the actual location(s) (plan and elevation) to capture the specified construction activity.

   b. Data Sheets and Certificates: Submit the technical data sheets and certificates for materials including equipment and software.

   c. Maintenance: Submit maintenance requirements with schedule and service instructions.

   d. Qualifications: Submit:
      - Technical Representative's Resume: name, education, training, and two years minimum experience providing same or similar service. Include names of individuals and contact information for verification of service.
      - Vendor Qualifications: Name and qualifications including five years minimum experience providing completed successful same service. Include names of projects, project descriptions and contact information for individuals able to verify service.

5. Materials.

a. Camera. Provide 1 camera(s) with specifications similar to those listed in the table below with equivalent to or better performance. Provide pan-tilt-zoom for all cameras.

TABLE 644-2.09-1
CAMERA SPECIFICATIONS

	Camera(s)		
	0	1	0
Features			
Imager:	6 Megapixels, minimum	12 Megapixels, minimum	8 Megapixels, minimum
Lens:			
F-Stop	f/3.5 - f/5.6	f/3.5 - f/5.6	f/2.7 - f/3.5
Zoom:	18 mm - 55 mm	18 mm - 55 mm	Motorized 6 mm - 72 mm
Optical:	3x min.	3x min.	12x min.
Digital:	-	-	4x min.
Resolution: (minimum)			
Stills:	3088 x 2056	4288 x 2848	3264 x 2448
Panoramic:	-	-	29376 x 9792 (288 MP)
Streaming Video:	640 x 480	640 x 480	640 x 480
Angle of View:	Cover intended site area		
Auto Features:	ISO, shutter, white balance, and focus		
Compression:	JPEG, Motion JPEG		
Communication:			
IP Addressing:	Dynamic or Static		
Types:	Provide stable communication, by one or more of the following types, dependent on availability with the order of precedence as follows: 1. Wired Broadband (10Base-T/100Base-TX) 2. Wireless (802.11n) 3. Cellular (3G min) 4. Satellite Broadband		
Base:			
Fixed Position [a]:	Yes/NA	Yes	Yes/NA
Operable Motorized/robotic:	Yes/NA	Yes	Yes/NA
	Pan range: 360° continuous, Tilt range: level + 30° to -90°. Adjust as required to meet the documentation requirements.		

a. Fixed Position: Pan-tilt-zoom control is within a high-definition image.

b. Online Access, Interface, and Online Software. Contractor's System Vendor shall provide an online based interface and online software as managed service to allow the viewing of all still images captured and stored/archived during construction, from any location with internet access using a PC computer and/or cellular device. The Department will not be required to own specific software or operating equipment proprietary to the system vendor to utilize any part of the Vendors service.

(1) Solution Service: provide solution service, including technical corrective service, continuous 24 hrs., 7 days a week during a period of service.
(2) Machine to machine automated maintenance of the camera system providing continual operation without interruption.
(3) Communication:
  a) Broadband/High-Speed connection (1.5 Mbps)
  b) Wi-Fi G or N // 3G cellular connection
(4) Accessibility: Vendor, provide a web page linked to the Department's Central Region web page;

"Alaska DOT&PF Project Information",
http://dot.alaska.gov/creg/project_info/,
"Central Region Projects", Seward Hwy MP 14 Reconstruction.

Add the link to the • Project Name web page through the Engineer. The Engineer will coordinate with the Central Region Web Manager.

(a) Public: Provide the public with viewing access to still image documentation.
(b) Department: Provide the Department with viewing access of the still images and live video as specified in 6) User Screen Viewing.

(5) System Navigation: Calendar based.
(6) User Screen Viewing: Display the Project Name and Number; Owner and Contractor Logo. Multifunction image browsing (still images, multiple images, online time-lapse movies) per individual camera and between multiple cameras. Additional viewing requirements include:

Public and Department.
- Images: including time and date.
- Navigation: calendar to navigate between documentation.
- Weather Data: graphical display of local weather data including long term forecast (4–7-day forecast including, sun, overcast, rain, snow, wind speed, temperature, high and low-pressure systems and others).
- Full-Screen: screen maximizing view of images on users monitor.
- Multiview Screen: instant view/image of past days, weeks, months, or years at one time.
- Time-lapse movies: not real-time video.
- Split Screen: Instant play back, two or more discreet images side by side from one or more cameras.
- Share Image Tools: save, print, email, and post to message board or, mobile devices.
- Map: aerial and satellite view by Google or other.

Department Only. Provide password protection for Department only viewing.
- Pan-tilt-zoom control within a high-definition image (fixed base) or by operable motorized/robotic base. Refer to the "Camera Specifications" table for the base.
- Real-Time Image Browsing/Viewing: view images and video from all cameras in the same display at the same time by day, week, year, and event.
- Overlays: graphical mark-up tools for detailing and creating overlays from multiple discrete images.
- Automated progress reports: Power Point, Open Office, and PDF formats.

c. Environmental. Camera and support equipment shall be designed for continual operation in all weather conditions relative to the project site, 24 hours each day, each day of the week. Weather conditions including but not limited to:

(1) Wet: waterproof.
(2) Operational Temperatures: -500˚F to +120˚F (thermostatically controlled heater and blower or other as required).
(3) Winds: 110 mph (3sec gust)
(4) Fugitive Materials: dust, rain, snow and similar.

d. Physical. Designed and constructed for the conditions existing at the project site.

(1) Housing: impact resistant, waterproof enclosure constructed of aluminum with stainless steel fittings and UL rated compression glands.
(a) Adjustability: adjustable camera sled.
(b) Operational Options: (See camera specifications for actual)
- Fixed (pan-tilt-zoom in high-definition image provided by software interface)
- Operable remotely controlled (pan-tilt-zoom)

(2) Viewing Window: impact resistant with remotely controlled washer/wiper.
(3) Security: protect against vandalism. Lockable housing secured in-place to prevent unauthorized removal from the project site.

e. Power. Provide continuous uninterrupted power as required by the Vendor to operate and maintain the image documentation system.

6. Vendors. Vendors that may meet the requirements specified in this subsection include, but are not limited to the following:

EarthCam, Inc. 84 Kennedy Street, Hackensack, NJ 07601 Ph: 800.327.8422 Ph: 201.488.1111 Fax: 201.488.1119 www.EarthCam.net	OxBlue Corporation 814 Bellemeade Ave. NW Atlanta, GA 30318 Ph: 888.849.2583 Ph: 404.917.0200 Fax: 404.917.0201 www.OxBlue.com	Work Zone CAM, LLC 331 W 57th St, Suite 310 New York, NY 10019 Ph: 877.966.3101 www.Workzonecam.com

7. Security. Provide security for the image documentation and documentation system. Prevent; interruption of the continuous documentation, damage to the documentation (data corruption, theft, or loss of the data), and damage to the system (the physical equipment, interface, software, data collection, and storage).

Maintain all images on System Vendor owned and operated secure and redundant servers, in a secure area at a location owned by the Vendor. Minimum levels of security include multiple levels of password protection, IP address block/permission and SSL protection of the user login password.

8. Installation and Maintenance. Provide initial installation by the Vendor, or other as approved by the Vendor, with the option to move the camera(s) 1 time(s); and maintain the system throughout the period of service without interruption except as may be specified in this specification. Damaged or failed parts and service complications, resulting in documentation interruption, are to be repaired, replaced, and resolved within 48 hours from the time of interruption.

Training: provide training for the Engineer's staff in the use of the image documentation system as described in 5.b.6) and as applicable. Schedule the training, coordinated with the Engineer, directly after the installation is completed and the system is operational.

9. Documentation. Throughout the Period of Service, during the day and night, document the construction activity. Approximate times are included herein; the approximate location of the camera(s) is provided in the Plans (plan and profile sheets coordinated with the summary sheets). Coordinate with the Engineer, adjusting the times of documentation and actual location(s) (plan and elevation) to capture the specified activity.

For all image documentation, include the project name and number with the date and time. The date and time for a still image would be at the time of capture and for a time-lapse movie the time from start to finish of the movie.

a. Type.

(1) Still Image Capture. Capture still images at regular intervals. Intervals = 15 minutes.

(2) Pan-Tilt-Zoom. Real-time video and stills with high-definition image. Available on an as-needed basis, except restricted to periods each side of the scheduled still image capture and timed out after a predetermined set time coordinated with the Engineer.

(3) Time-Lapse. Create time-lapse movies during the Period of Service as directed by the Engineer and as follows:

Regular Interval. Time-Lapse Movie Interval = End of Each Month.

Seasons.
- Construction season
- Winter shutdown

Milestones and Events.
- BMP(s)
  - Installation: permanent and temporary
  - Removal: temporary
- Bridge Work
  - Bridge abutments
  - Bridge substructure or superstructure

Bridge Number	Bridge Name
1970	Seward Hwy MP 14 Railroad Crossing

- Clearing and grubbing
- Culvert construction and installation
- Detours
- Erosion, Sediment and Pollution Control - Monitoring:
  - Beginning of construction season
  - During active construction
  - Winter shutdown
  - Spring thaw
  - Storm Event: before, during, after
- Establishment Period: start of, during, at end
- Excavation - general
- Excavation - Specific Event
- Guardrail installation
- Headwall construction
- Lighting installation - general lighting
- Lighting installation - high tower lighting
- Paving
- Pile driving
- Signal(s): installation, modification, removal
- Striping
-

Period of Service. At the end of the Period of Service, create a time-lapse movie of the construction activity(s) from the beginning of service to the end of service.

10. Removal. Remove the complete documentation system after completion of the service period. The Engineer may direct the system to be removed prior to the end of the service period.

11. Deliverables. Provide the Engineer with (2) DVDs (2 copies) of:

    a. Stills: as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications, in compressed JPEG format, no more than 7 days after the service period ends.
    b. Time Lapse-Movies: in compressed motion JPEG format, no more than 7 days after each interval, season change, milestone, event, and the Period of Service specified in 9) "Documentation."

C644.6-18.0201-1_CMRA

644-4.01 METHOD OF MEASUREMENT.

Replace the third paragraph with following:

Vehicle (LT/SUV). For each vehicle provided. If a replacement vehicle is necessary, no additional measurement will be made.

C644.3-20.1130_LTSUV

Add the following:

Image Documentation. No additional measurement will be made if any part of the documentation system requires replacement.

C644.6-18.0201-1_CMRA

644-5.01 BASIS OF PAYMENT.

Add the following:

Electricity, propane, and water supplied for the State provided portable asphalt lab will not be paid for separately but will be subsidiary to Pay Item 644.0002.____ Field Laboratory.

C644.2-20.0801-1_LAB

Add the following:

Pay Item 644.2007.____ Vehicle (LT/SUV):

1. A percentage of the Contract unit price, to be determined by the Engineer, will be paid as full compensation for furnishing the vehicle at the site.

2. The balance of the Contract unit price will be prorated over the anticipated active construction period with a portion included as part of each interim payment, for maintenance, repairs, and fuel and, at the end of the project, for removing it from the site. If the anticipated construction period changes, the final increment will be held until the final payment.

PAY ITEM		
Item Number	**Item Description**	**Unit**
644.2007.____	Vehicle (LT/SUV)	Each

C644.3-20.1130_LTSUV

Add the following:

Pay Item 644.2004.____ Engineering Communications:

Usage services including long distance calls made by State personnel and the Internet service provider will be reimbursed by the State. Payment for communication usage services and equipment rental agreements shall be based on paid receipts to the service provider plus 15%.

Connection fees (initial connection) local calls, providing equipment and disconnection are subsidiary to Pay Item 644.0001.____ Field Office and as such are paid by the Contractor.

PAY ITEM		
Item Number	**Item Description**	**Unit**
644.2004.____	Engineering Communications	CS

C644.1-20.0801_FOCOM

Add the following:

Pay Item 644.2003.____ Image Documentation:

At the Contract lump sum price to include labor, equipment, materials, fees, and service specified. The lump sum price is inclusive of all cameras specified in Subsection 644-2.09.

Lump Sum Items. Payment for lump sum items will be made as follows:

1. A percentage of the Contract lump sum amount, to be determined by the Engineer, will be paid as full compensation for a complete, properly functioning, image documentation system including site installation(s), power, camera(s), and operating system(s), with automatic archiving, set up and interfaced with internet access via the specified device(s).

2. The balance of the Contract lump sum amount will be prorated over the anticipated active construction Period of Service with a portion included as part of each interim payment, for maintenance, repairs, utilities, fees and for removing the complete documentation system from the site with the final payment being made after all deliverables are received as specified.

PAY ITEM		
Item Number	**Item Description**	**Unit**
644.2003.____	Image Documentation	LS

C644.6-18.0201-1_CMRA

Special Provision

Replace Section 645 with the following:

SECTION 645
TRAINING PROGRAM

645-1.01 DESCRIPTION. This Statewide Special Provision for on-the-job training (OJT) implements 23 CFR 230, Subpart A, Appendix B.

As part of the Equal Employment Opportunity Affirmative Action Program, the Contractor shall provide on-the-job training aimed at developing full journey status in the type of trade or job classification involved. The number of individuals to be trained and the number of hours of training to be provided under this contract will be as shown on the bid schedule.

645-2.01 OBJECTIVE. Training and upgrading of minorities and women toward journey status is the primary objective of this program. The Contractor shall enroll minorities and/or women, where possible, and document good faith efforts prior to the hire of non-minority males in order to demonstrate compliance with this Training Special Provision. Specific good faith efforts required under this Section for the recruitment and employment of minorities and women are found in the Federal EEO Bid Conditions, Form 25A-301.

645-3.01 GENERAL. The Contractor shall determine the distribution of the required number of apprentices/trainees and the required number of hours of training among the various work classifications based upon the type of work to be performed, the size of the workforce in each trade or job classification, and the shortage of minority and female journey workers within a reasonable area of recruitment.

Training will be provided in the skilled construction crafts unless the Contractor can establish prior to contract award that training in the skilled classifications is not possible on a project; if so, the Department may then approve training either in lower level management positions such as office engineers, estimators, and timekeepers, where the training is oriented toward construction applications, or in the unskilled classifications, provided that significant and meaningful training can be provided. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Credit for offsite training hours indicated above may only be made to the Contractor where the apprentices/trainees are concurrently employed on the project and the Contractor does one or more of the following: contributes to the cost of the training, provides the instruction to the apprentice/trainee, or pays the apprentice's/trainee's wages during the offsite training period.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

Prior to award of the contract, the Contractor shall submit Form 25A-311, Training Utilization Report, indicating the training program to be used, the number of apprentices/trainees to be trained in each selected classification, the number of hours of training to be provided, and the anticipated starting time for training in each of the classifications.

Training must begin within 2 weeks of the anticipated start date(s); unless otherwise authorized by a Directive. Such authorization will be made only after submission of documentation by the Contractor, and approval by the Engineer, of efforts made in good faith which substantiate the necessity for a change.

Contractors may use a training program approved by the U.S. Department of Labor, Office of Apprenticeship (USDOL/OA); or one developed by the Contractor using Form 25A-310 and approved prior to contract award by the OJT Coordinator in the DOT&PF Civil Rights Office.

The minimum length and type of training for each classification will be established in the training program selected by the Contractor. Training program approval by the Department for use under this section is on a project by project basis.

It is expected that each apprentice/trainee will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist or until training has been completed. It is not required that apprentices/trainees be continuously employed for the duration of the contract.

If, in the judgment of the Contractor, an apprentice/trainee becomes proficient enough to qualify as a journey worker before the end of the prescribed training period and the Contractor employs that individual as a journey worker in that classification for as long as work in that area remains, the individual's training program will be considered completed and the balance of training hours required for that apprentice/trainee shall be waived.

The Contractor shall furnish each Alaska DOT&PF training program trainee a copy of the program (Form 25A-310) to be followed during training on the project, and with a written certification showing the type and length of training completed on the project. Existing USDOL/OA apprentices should already have a copy of their program. No employee shall be employed for credit as an apprentice/trainee in a classification in which that employee has previously worked at journey status or has previously completed a training course leading to journey status.

The Contractor shall periodically review the training and promotion potential of minority and women employees and shall encourage eligible employees to apply for such training and promotion.

The Contractor shall provide for the maintenance of records and the furnishing of periodic reports documenting the progress of each apprentice/trainee. The Contractor must submit Form 25A-313 by the 15th of each month and provide each Alaska DOT&PF trainee written evaluation reports for each unit of training provided as established on Form 25A-310.

645-3.02 WAGES. Trainees in Alaska DOT&PF approved training programs will be paid prevailing Davis-Bacon fringe benefits plus at least 60 (but less than 100) percent of the appropriate minimum journey rate specified in the contract for the first half of the training period, at least 75 (but less than 100) percent for the third quarter of the training period, and at least 90 (but less than 100) percent for the last quarter of the training period. Trainee wages shall be identified on Form 25A-310. Apprentices in USDOL/OA training programs shall be paid in accordance with their approved program. Beginning wages of each trainee/apprentice enrolled in a Section 645 Training Program on the project shall be identified on Form 25A-312.

645-3.03 SUBCONTRACTS. In the event the Contractor subcontracts a portion of the work, he shall determine how many, if any, of the apprentices/trainees are to be trained by the subcontractor. Any such subcontracts shall include this Section 645, Form 25A-311 and Form 25A-310, where appropriate. However, the responsibility for meeting these training requirements remains with the Contractor; compliance or non-compliance with these provisions rests with the Contractor and sanctions and/or damages, if any, shall be applied to the Contractor in accordance with subsection 645-5.01, Basis of Payment.

645-4.01 METHOD OF MEASUREMENT. The Contractor will be credited for each approved apprentice/trainee employed on the project and reimbursed on the basis of hours worked, as listed in the certified payrolls. There shall be no credit for training provided under this section prior to the Contractor's submittal and approval by the Engineer of Form 25A-312 for each apprentice/trainee trained under this Section. Upon completion of each individual training program, no further measurement for payment shall be made.

645-5.01 BASIS OF PAYMENT. Payment will be made at the contract unit price for each hour of training credited. Where a trainee or apprentice, at the discretion of the Contractor, graduates early and is employed as a journey worker in accordance with the provisions of Subsection 645-3.01, the Contractor will receive payment only for those hours of training actually provided.

This payment will be made regardless of any other training program funds the Contractor may receive, unless such other funding sources specifically prohibit the Contractor from receiving other reimbursement.

Payment for training in excess of the number of hours specified on the approved Form 25A-311 may be made only when approved by the Engineer through Change Order.

Non-compliance with these specifications shall result in the withholding of progress payments until good faith efforts documentation has been submitted and acceptable remedial action has been taken.

Payment will be at the end of the project following the completion of all training programs approved for the project. No payment or partial payment will be made to the Contractor if he fails to do any of the following and where such failure indicates a lack of good faith in meeting these requirements:

1. provide the required hours of training (as shown in the Bid Schedule and approved Form 25A-311),

2. train the required number of trainees/apprentices in each training program (as shown in the Bid Schedule and approved Form 25A-311), or

3. hire the apprentice/trainee as a journey worker in that classification upon completion of the training program for as long as work in that area remains.

Failure to provide the required training damages the effectiveness and integrity of this affirmative action program and thwarts the Department's federal mandate to bring women and minorities into the construction industry. Although precise damages to the program are impractical to calculate, they are at a minimum, equivalent to the loss to the individuals who were the intended beneficiaries of the program. Therefore, where the Contractor has failed, by the end of the project, to provide the required number of hours of training and has failed to submit acceptable good faith efforts documentation which establishes why he was unable to do so, the Contractor will be assessed an amount equal to the following damages to be deducted from the final progress payment:

Number of hours of training not provided, times the journey worker hourly scale plus benefits. The journey worker scale is that for the classification identified in the approved programs.

PAY ITEM		
Item Number	**Item Description**	**Unit**
645.0001.____	Training Program, __ Trainees/Apprentices	LH

HSP20.2-20.1130_FED

SECTION 646
CPM SCHEDULING

Special Provisions

Replace Subsection 646-2.01 with the following:

646-2.01 SUBMITTAL OF SCHEDULE.

Submit a detailed initial CPM Schedule at the preconstruction conference for the Engineer's acceptance as set forth below.

The construction schedule for the entire Project shall not exceed the specified contract time. Allow the Engineer 14 days to review the initial CPM Schedule. Revise promptly. The finalized CPM Schedule must be completed and accepted before beginning work on the Project.

646-3.01 REQUIREMENTS AND USE OF SCHEDULE.

Replace the first sentence of No. 2 Schedule Updates. with the following:

Hold job site progress meetings with the Engineer for the purpose of updating the CPM Schedule. Meet with the Engineer monthly or as deemed necessary by the Engineer.

C646.1-23.0501

Special Provision

Add the following Section:

SECTION 670
TRAFFIC MARKINGS

670-1.01 DESCRIPTION. Furnish and place traffic markings of the type, color, dimensions, and at the locations shown on the Plans. Meet these specifications and the applicable portions of the Alaska Traffic Manual.

670-2.01 MATERIALS. Use materials that conform to the following:

Traffic Paint	Subsection 708-2.03
Glass Beads	Subsection 712-2.08
Preformed Pavement Markings	Subsection 712-2.15
Methyl Methacrylate Pavement Markings	Subsection 712-2.17
Glass Beads for Methyl Methacrylate Markings	Subsection 712-2.18

Construct the iron casting for the raised pavement markers of modular iron meeting ASTM A536.

Methyl Methacrylate Pavement Markings are a combination of methyl methacrylate, glass beads, and anti-skid aggregate.

Submit a single certification from the manufacturer of the marking material, for each material combination, certifying the combination of marking material, glass beads and anti-skid aggregate, as furnished, provides the durability, retroreflectivity, and skid resistance specified.

670-3.01 CONSTRUCTION REQUIREMENTS. Install interim pavement markings meeting Section 643 if permanent markings are not installed prior to opening the roadway to traffic.

1. Paint.

   a. Apply paint only to pavements that are clean, dry, and warmer than 40 °F.

   b. Remove all dirt, oil, grease, and other foreign matter from the surfaces to be painted in a satisfactory manner.

   c. Apply the paint at the rate of 80 ft^2/gal (approximately 20 mils wet film thickness). This rate is effectively 22 gallons of paint per mile of solid 4-inch stripe. A tolerance not to exceed 10 percent is allowed for film thickness or yield.

   d. Apply glass beads over the wet painted stripes in a uniform pattern at the rate of 6 pounds (± 0.1 pound) of beads per gallon of paint. Pressure-apply the beads using a mechanical dispenser mounted not more than 12 inches behind the paint dispenser.

   e. Use approved equipment for highway lane striping that is specifically designed and manufactured for that purpose by a company experienced in the design and manufacture of such equipment. Minimum requirements include the capability of striping two 4-inch yellow centerlines and one 4-inch white edge line simultaneously. Apply markings with clear-cut edges, true and smooth alignment, and uniform film thickness.

2. Preformed Marking Tapes (PMT). Apply the PMT material as directed by the manufacturer by either the inlay or overlay method. Use the inlay method whenever new HMA is placed. Use the overlay method to apply markings to existing pavement.

   Store all PMT materials between 60 °F and 85 °F for at least 24 hours prior to installation. During installation, maintain field stockpiles at the required storage temperature.

For the inlay method, embed the pavement markings in the HMA surface with a conventional steel wheeled roller. Apply when the surface temperature of the mat is the warmest possible without deforming the marking. The minimum allowable surface temperature, taken within 3/8 inch of the top of the mat, is 140 °F.

If the application of the PMT materials falls behind the paving operation to the extent that the markings are not being applied at the minimum acceptable temperature, slow the paving operation to match the rate of the marking laydown. Resume full paving operations after demonstrating that you have sufficiently skilled personnel to install the markings within the required temperature limits.

When applying pavement markings by the overlay method, ensure the surface is clean and dry and is at least 60 °F and rising. Broom the surface clean. Remove any dust using compressed air. Apply a coat of primer/adhesive activator according to the manufacturer's recommendations. Install and roll the markings with a minimum 200-pound pneumatic roller.

3. Raised and Recessed Pavement Markers. Install raised and recessed pavement markers per the manufacturer's instructions.

   Cut or dado the finished pavement surface with a concrete saw to produce a slot with dimensions as shown on the Plans or recommended by the manufacturer. Clean and dry the slots using compressed air. Install a reflective marker of the color indicated with an epoxy adhesive recommended by the marker manufacturer.

4. Methyl Methacrylate Pavement Markings (MMA).

   a. General. 15 days before starting work meet with the Engineer for a prestriping meeting. At this meeting, do the following:

      (1) Furnish a striping schedule showing areas and timing of work, placing materials and the Traffic Control Plans to be used.

      (2) Discuss placement of materials, potential problems.

      (3) Discuss work plan at off ramps, on ramps and intersections.

      (4) Discuss material handling procedures.

      (5) Provide copies of the manufacturer’s installation instructions and copies of the Material Safety Data Sheets.

   b. Manufacturer's Representative. Provide the services of a manufacturer’s representative (the “Manufacturer’s Representative”). Ensure the Manufacturer’s Representative observes the application of the pavement marking materials. Cooperate with the Manufacturer’s Representative and the Engineer to ensure that the materials are placed according to these Specifications and the manufacturer’s recommended procedures.

   c. Manufacturer Certified Installers. Install pavement markings using only striping installers certified by the marking materials manufacturer for the specific striping material and method. Submit these certifications to the Engineer at the Preconstruction Conference.

   d. Preparation. Prepare the roadway surface to receive pavement markings according to these Specifications and the manufacturer’s recommendations. Clean and dry the roadway surface. Completely remove contaminants such as dirt, loose asphalt, curing agents, surface oils, or existing road marking materials before applying pavement marking material.

e. Equipment.

(1) Grooving Equipment.

Use grooving equipment that produces a dry cut. Use vacuum shrouded equipment or other equally effective containment procedures.

(2) Marking Equipment.

(a) Longitudinal Marking: Use truck mounted application equipment capable of installing a double centerline and a single shoulder line in a single pass. Use automatic bead applicators that place a uniform layer of beads on the lines. Hand units are not permitted.

(b) Other Markings: Use manual or automatic application equipment. Use stencils or extruders to form sharply defined markings.

Used Stencils and Delivery to Maintenance Facility.

i. Notify the Engineer 5 working days before beginning markings requiring a stencil. The Engineer will identify stencils for a condition review after their use is complete.

ii. After all the identified stencil's use is complete, notify the Engineer and schedule a condition review. The Engineer will review the stencils and indicate the stencils to be delivered to the maintenance agency.

N/A

Stencils not selected for a condition review, or selected for maintenance facility delivery, are the property of the Contractor.

f. Application. Apply marking material according to these Specifications and the manufacturer's recommendations. Use equipment designed and capable of properly mixing at the place and time of application and approved by the manufacturer for the type of product being installed.

Anti-skid Aggregate. During marking material application, anti-skid aggregate will be evenly distributed and visible throughout the top 20 mils of the marking material mixture, and after the application, in the surface of the cured material.

SURFACE APPLIED

Marking thickness will be measured from the pavement surface.

(1) Longitudinal Markings. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 250 mils.

(2) Other Markings.

(a) Transverse and Symbol Markings:

Apply marking for symbols, arrows, stop bars, railroad symbols, and cross walks to yield a thickness of 250 mils.

(b) Gore Markings:
Apply diagonal gore markings to yield a thickness of 250 mils.

INLAID

Groove the area(s) designated in the Plans. Install markings in the same work shift as the grooving operation. Markings will be measured flush with the pavement surface.

(1) Longitudinal Markings. Groove the pavement to a depth of 200 mils. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 200 mils.

(2) Other Markings.

(a) Transverse and Symbol Markings:

Groove the area for inlaid markings to a depth of 200 mils. Apply marking for symbols, arrows, stop bars, railroad symbols, and cross walks to yield a thickness of 200 mils.

(b) Roundabouts:

As designated on the plans, groove the area for inlaid markings in roundabouts to a depth of 500 mils. Apply markings to yield a thickness of 500 mils.

(c) Gore Markings:

Diagonal gore markings will not be inlaid unless shown in the Plans.

g. Disposal of Waste. Waste material(s) are the Contractor's property. This includes grindings and removed marking material. Do not dispose of or store waste material(s) on State property. Dispose of waste material(s) according to applicable Federal, State, and local regulations.

h. Sampling. On the form provided by the Engineer, record the following readings and locations where they were taken using project stationing, and submit them to the Engineer within 24 hours for evaluation. Thickness of material and depth of slot are measured from the surface of the pavement.

SURFACE APPLIED

(1) For surface applied longitudinal applications, measure the thickness of the lines (above the pavement surface) at the time of application, every 500 feet.

(2) For surface applied other markings measure the thickness in three locations for each marking.

INLAID

(1) For inlay longitudinal applications, record the depth of the slot every 500 feet during the grinding operation.

(2) For inlay other markings measure the thickness in three locations for each marking.

Inspect the markings initially, and again two weeks after placement, to ensure the material has cured properly. Remove soft spots or abnormally darkened areas and replace with material meeting specifications.

The Engineer may elect to use the Contractor's readings or perform additional sampling.

Refer to the Survey Field Books identifying the no passing zones (see Subsection 642-3.01)

670-3.02 and 3.03 RESERVED

670-3.04 PAVEMENT MARKING REMOVAL. Remove all existing traffic markings that are in conflict with the striping details shown on the Plans, an approved TCP, or any temporary striping as directed. Do not paint over existing markings. Do not use open flame on the final paving lift.

Remove pavement markings to the fullest extent possible without materially damaging the pavement surface, color, or texture. As the work progresses, remove sand or other material deposited on the pavement as a result of removing markings. Remove accumulations of sand or other material that might interfere with drainage or constitute a hazard to traffic.

Before making any change in the traffic pattern, remove or obliterate pavement markings that may create confusion to motorists.

Where using blast cleaning to remove pavement markings or objectionable material within 10 feet of a lane occupied by public traffic, immediately remove the residue (including dust) after contact between the sand and the surface being treated. For such removal, use a vacuum attachment operating concurrently with the blast cleaning operation or by other approved methods.

Repair any damaged pavement or surfacing caused by the pavement marking removal operation.

Coordinate removal work with construction activity. Remove pavement markings the same day permanent markings are applied, unless otherwise directed. Use vacuum shrouded equipment or other equally effective containment procedures.

670-3.05 PRELIMINARY SPOTTING. Provide the necessary control points at intervals including all changes of direction and changes in the basic configuration of striping, such as at the beginning and ending of no-passing zones on a 2-way, 2-lane roadway. Use these points in preliminary spotting of lines before striping is commenced. Perform preliminary spotting of the lines to be painted and obtain approval for all spotting before striping begins. Preliminary spotting is required for all longitudinal striping, with spacing of spots not to exceed 50 feet.

Reference the lines and markings to be replaced at their existing locations prior to performing any work that may disturb them.

670-3.06 TOLERANCE FOR LANE STRIPING.

1. Length of Stripe. ± 2 inches.
2. Width of Stripe. ± 1/8 inch.
3. Lane Width. ± 4 inches from the width shown on the Plans.
4. Stripes on Tangent. Do not vary more than 1 inch laterally within a distance of 100 feet when using the edge of the stripe as a reference.
5. Stripes on Curves. Uniform in alignment with no apparent deviations from the true curvature.
6. All Stripes. Keep the center of the stripe within planned alignment.
7. Double Stripes. ± 1/4 inch.
8. Thickness of Surface Applied. Minimum specified to a maximum of + 30 mils.
9. Depth of Inlay Slot. Minimum specified to a maximum of + 40 mils.
10. Thickness of Inlaid Marking Material. Fill inlay area completely from the bottom of the inlay to the surface of the pavement.

If it is determined that the material is being placed too thin, the beads are not properly placed, the anti-skid aggregate is not visible, or otherwise not to specification, make immediate adjustments to correct the problem.

Pavement markings applied by any method will be unacceptable if:

1. Marking is not straight or wide enough.
2. Thickness of line is not uniform.
3. Thickness of line is less than specified.
4. Material is uncured.
5. Material blackens or is inconsistent in color.
6. Inlay slot is not the specified depth.
7. Inlay slot is not filled to the specified depth.
8. Edge of the markings is not clear cut and free of overspray.
9. Reflective elements are not properly embedded.
10. Retroreflectivity of the markings is less than specified.
11. Anti-skid aggregate is not visible in the marking material during application and the dried surface.
12. Markings exhibit poor adhesion.
13. Color is not as specified.

Perform repairs using equipment similar to the equipment initially used to place the materials. Do not perform repairs in a “patch work” manner. If more than one repair is required in a single 500 foot section, grind and repair the entire section.

670-4.01 METHOD OF MEASUREMENT. See Section 109 and the following:

1. Mile Basis. By the horizontal distance along centerline from beginning to end of each stripe pattern, excluding gaps for intersections or other openings. Skip stripes will be measured as 1/4 of this distance.

    a. Single Stripe: A longitudinal marking less than 6 inches wide, such as, but not limited to, a single center line or edge stripe.

    b. Double or Wide Stripe: A longitudinal marking greater than 6 inches wide, such as, but not limited to, double center lines, and auxiliary lane lines.

2. Reserved.

3. Each. Pavement markings using letters, numbers, and arrows will be measured on a unit basis with each separate word or symbol constituting a unit. Railroad Markings will be measured by the complete unit shown for each lane of travel.

4. Foot Basis. Longitudinal pavement markings, transverse, and gore markings, surface applied or inlaid will be measured by the linear foot of 4 inch wide line. Wider striping will be measured in multiples of 4 inches.

Thickness will be measured from the top of the marking to the top of the pavement surface. Marking material placed in a depression left by pavement line removal will not be included in measuring the thickness of the line.

670-5.01 BASIS OF PAYMENT. At the Contract price per unit of measurement for those items listed below that appear on the bid schedule.

Accept payment as full compensation for cleaning of pavement, painting traffic markings, application of preformed pavement markings, glass beads, installing raised or recessed pavement markers, furnishing paint, glass beads, preformed marking tape, MMA, and all other materials necessary to complete the work prescribed in this Section.

Additionally, all work and materials, associated with pavement markings, are subsidiary to 670 items, including but not limited to:

- Milling for installation of the inlaid pavement markings including the removal of millings
- Temporary pavement markings and removal of conflicting markings, including repair of the roadway surface, milled surface or otherwise
- Traffic Control required for the installation of permanent and temporary pavement markings, removal of conflicting markings, and repairs
- Used stencils delivered to the maintenance agency.
- Removal of pavement markings, items 670.0009.____, .0014.____, .0015.____, .0016.____ when not shown on the bid schedule.

There will be no separate payment for:

- Over-runs of material caused by the variation of the gradation of the asphalt
- Additional material required to achieve the thickness specified on open graded pavement

For traffic markings which do not conform to the requirements of this Section, but which are allowed to remain in place, payment will be adjusted as follows:

1. Lump Sum. When payment is on a lump sum basis the price reduction will be the product of the lump sum price times the length of non-conforming markings divided by the total length of markings. For the purpose of this calculation, stripe lengths will be considered as continuous with no deduction for skips or breaks, for each 4-inch width stripe being applied, except that a double centerline stripe (No Pass) will be considered as one stripe.

2. Unit Prices. When payment is on a unit price basis, no payment will be made for those units which are not in conformance.

PAY ITEM		
Item Number	**Item Description**	**Unit**
670.0001.____	Painted Traffic Markings	LS
670.0002.____	Single Stripe	Mile
670.0003.____	Double or Wide Stripe	Mile
670.0006.____	Preformed Pavement Markings	LS
670.0007.____	Raised Pavement Marker	Each
670.0008.____	Recessed Pavement Marker	Each
670.0009.____	Removal of Pavement Markings	Mile
670.0013.____	Painted Traffic Markings	LF
670.0014.____	Removal of Pavement Markings	LS
670.0015.____	Removal of Pavement Markings	SF
670.0016.____	Removal of Pavement Marking Symbols	Each
670.2000.____	MMA Pavement Markings	LS
670.2003.____	MMA Pavement Markings, Longitudinal Surface Applied	LF
670.2004.____	MMA Pavement Markings, Symbols and Arrow(s) Surface Applied	Each
670.2005.____	MMA Pavement Markings, Transverse and Gore Surface Applied	LF
670.2006.____	MMA Pavement Markings, Longitudinal Inlaid	LF
670.2007.____	MMA Pavement Markings, Symbols and Arrow(s) Inlaid	Each
670.2008.____	MMA Pavement Markings, Transverse and Gore Inlaid	LF

C670-24.1001

Special Provision

Add the following Section:

DIVISION 700 — MATERIALS

Special Provisions

Add the following:

Products identified by name in the list below are manufactured predominately of steel or iron. The information below represents the Department's knowledge at the time of advertisement regarding whether products are "Manufactured in the United States" as defined in Section 106 of the Contract. Including this information in the Contract does not relieve the Contractor of responsibility for complying with Section 106 of the Contract and the Buy America Act and providing the Material Origin Certificate Form 25D-60 and the Certificate of By America Act Compliance Form 25D-62 as required in Subsection 106-1.01.

(a) **Named Product A is/is not** "Manufactured in the United States".
(b) **Named Product B is/is not** "Manufactured in the United States".
(c) **Named Product C is/is not** "Manufactured in the United States".

HSP18.1-18.0525

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SECTION 702
ASPHALT MATERIALS

Standard Modification

Replace Subsection 702-2.01 with the following:

702-2.01 ASPHALT BINDER. Meet AASHTO M 320 or M 332 for the specified Performance Grade, except as indicated in Table 702-2.01-1 Exceptions to Performance-Graded Binder Specifications.

TABLE 702-2.01-1
EXCEPTIONS TO PERFORMANCE GRADED ASPHALT BINDER SPECIFICATIONS

Performance Grade	AASHTO Specification	Viscosity AASHTO T 316	MSCR, AASHTO T 350			PAV, Dynamic Shear AASHTO T 315	Direct Tension AASHTO T 314
			$J_{NR3.2}$ kPa^{-1}	J_{NR} Diff	% $Recovery_{3.2}$		
PG 52-28	M 320	None	—	—	—	None	Delete
PG 52-34 E	M 332	None	None	Delete	60 min.	None	Delete
PG 58-28 E	M 332	None	None	Delete	60 min.	None	Delete
PG 58-34 V	M 332	None	None	Delete	60 min.	None	Delete
PG 64-28 E	M332	None	None	Delete	60 min.	None	Delete
PG 52-40 E	M 332	None	None	Delete	75 min.	None	Delete
PG 58-34 E	M 332	None	0.25 max.	Delete	85 min.	None	Delete
PG 64-40 E	M 332	1 Pa•s max.	0.10 max.	Delete	95 min.	5000 max. @ 4°C	Delete

None indicates no exceptions from the listed test. Delete indicates this property is not required from the listed test.

Use asphalt binders without re-refined engine oil bottoms (REOB)/vacuum tower extenders (VTAE) as a modifier. REOB/VTAE are materials as defined in the Asphalt Institute document IS-235. Furnish a certificate of compliance according to Subsection 106-1.05.1 certifying that REOB/VTAE were not used as a modifier of asphalt binder.

HSM20.44-23.0801

702-2.03 EMULSIFIED ASPHALT.

Replace item 1. with the following:

1. Cationic Emulsified Asphalt. Meet AASHTO M 208, except CRS-2P meet AASHTO M316.

HSM20.32-21.1231

702-2.07 WARM MIX ASPHALT (WMA). Add the following to Table 702-3:

WMA Technology	Process Types	WMA Supplier
AD-here ULTRA 1	Chemical Additive	Arkema – Road Science
Cecabase RT	Chemical Additive	Arkema – Road Science

HSM20.44-23.0801

SECTION 703
AGGREGATES

Standard Modification

703-2.03 AGGREGATE FOR BASE AND SURFACE COURSE.

In Table 703-1 replace the line for Degradation Value with the following:

TABLE 703-1
AGGREGATE QUALITY PROPERTIES FOR BASE AND SURFACE COURSE

PROPERTY	BASE COURSE	SURFACE COURSE	TEST METHOD
Micro-Deval	15%, max.	15%, max.	AASHTO T 327

HSM20.40-22.0501

Special Provisions

Replace Subsection 703-2.04 with the following:

703-2.04 AGGREGATE FOR HOT MIX ASPHALT. Process and crush aggregate that is free from clay balls, organic matter, other deleterious material, and not coated with dirt or other finely divided mineral matter. Aggregate used must consist of sound, tough, durable rock of uniform quality.

Remove all natural fines passing a No. 4 sieve before crushing aggregates for Type IV, and V mixes.

Coarse Aggregate. Aggregate retained on the No. 4 Sieve.

Meet Table 703-3 requirements:

TABLE 703-3
COARSE AGGREGATE QUALITY FOR HMA

Description	Specification	Type II, Class A	Type I; Type II, Class B; Type III	Type IV	Type V
LA Wear, % max.	AASHTO T 96	45	45	45	45
Micro-Deval, % max.	AASHTO T 327	18	18	18	18
Sodium Sulfate Loss, % max. (5 cycles)	AASHTO T 104	9	9	9	9
Fracture, % min.	ATM 305	90, 2 face	80, 1 face	90, 2 face	98, 2 face
Flat-Elongated Pieces, % max.	ATM 306				
1:5		8	8	8	8
Absorption, % max.	ATM 308	2.0	2.0	2.0	2.0
Nordic Abrasion, % max.	ATM 312	-	-	-	

Fine Aggregate. Aggregate passing the No. 4 sieve.

Aggregate shall meet the quality requirements of AASHTO M 29, including S1.1, Sulfate Soundness.

Aggregate for Type II, Class A mix shall not contain more than 10% natural fines (blend sand and mineral filler) added to the crushed aggregate, and shall not exhibit rut depth larger than 1/4-inch, as determined by ATM 419.

Fine aggregate for Type IV and V mixes:

- do not blend back natural sand
- shall be non-plastic as determined by ATM 205
- shall have a minimum uncompacted void content (Fine Aggregate Angularity) determined by AASHTO T 304, Method A, of 45%

TABLE 703-4
BROAD BAND GRADATIONS FOR HOT MIX ASPHALT AGGREGATE
Percent Passing by Weight

SIEVE	GRADATION				
	Type I	Type II	Type III	Type IV	Type V
1 inch	100	-	-	-	-
3/4 inch	80-90	100	-	-	100
1/2 inch	60-84	77-99	100	100	65-90
3/8 inch	48-78	68-88	80-90	80-95	55-80
No. 4	28-63	48-68	44-81	55-70	40-60
No. 8	14-55	33-53	26-70	35-50	≤ 45
No. 16	9-44	20-40	16-59	20-40	≤ 35
No. 30	6-34	14-30	9-49	15-30	≤ 25
No. 50	5-24	9-21	6-36	10-24	≤ 20
No. 100	4-16	6-16	4-22	5-15	≤ 12
No. 200	4-7	3-6	4-7	4-7	4-7

C703.1-22.0501

703-2.05 AGGREGATE FOR COVER COAT AND SURFACE TREATMENT.

In Table 703-5 replace the line for Degradation Value with the following:

TABLE 703-5
QUALITY PROPERTIES FOR COVER COAT AND SURFACE TREATMENT

Micro-Deval	AASHTO T 327	15%, max.

HSM20.40-22.0501

Special Provision

703-2.07 SELECTED MATERIAL.

Replace 1. Type A with the following:

1. Type A. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the following gradation as tested by ATM 304:

Sieve	Percent Passing by Weight
No. 4	20-55%
No. 200	0-6%, determined on the minus 3-inch portion of the sample

C703.1-22.0501

703-2.09 SUBBASE.

In Table 703-8 replace the line for Degradation Value with the following:

TABLE 703-8
QUALITY PROPERTIES FOR SUBBASE

Micro-Deval	AASHTO T 327	25%, max.

HSM20.40-22.0501

703-2.10 POROUS BACKFILL MATERIAL.

Add the following to the end of the paragraph:

Use Gradation A unless otherwise specified.

HSM20.33-21.1231

Special Provision

703-2.13 STRUCTURAL FILL. Replace Table 703-12 with the following:

TABLE 703-12
AGGREGATE GRADATION FOR STRUCTURAL FILL

SIEVE	PERCENT PASSING BY WEIGHT
3-inch	100
3/4-inch	75-100
No. 4	20-55
No. 200	0-6

Replace Subsection 703-2.16 with the following:

703-2.16 RECYCLED ASPHALT PAVEMENT (RAP). RAP shall be free of contamination and deleterious materials. RAP maximum particle size shall not exceed 1.5-inch.

C703.1-22.0501

SECTION 705
JOINT MATERIAL

Special Provisions

705-2.05 FLEXIBLE WATERTIGHT GASKETS. In 2. Joining flexible metal pipe (steel and aluminum)" delete Item "a. ASTM C433". Re-letter the remaining items.

HSM20.48-24.0129

SECTION 706
CONCRETE AND PLASTIC PIPE

Special Provisions

Replace Subsection 706-2.07 with the following:

706-2.07 CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE FOR CULVERTS, STORM DRAINS, AND UNDERDRAINS. Meet the following:

Corrugated Pipe and Fittings (non-pressurized)

AASHTO M 294 and 252	Type S
Perforations	
1. Underdrains	Class 2
2. Underdrains and Storm Drains	Class 1
Joints	Subsection 705-2.05.3.

Polyethylene Pipe Manufacturer

1. Participate in the National Transportation Product Evaluation Program (NTPEP) work plan for HDPE thermoplastic pipe and listed on the NTPEP audit website displaying NTPEP compliance.

2. Conduct and maintain a quality control program under the NTPEP.

3. Provide a manufacturer's certificate of compliance identifying production lots for all materials.

Provide corrugated polyethylene pipe and fittings manufactured from high-density polyethylene (HDPE) virgin compounds. May use clean, reworked polyethylene materials from the manufacturer's own production.

Do not install pipe that is more than two years from the date of manufacture.

C706.1-19.0501

SECTION 708
PAINTS

Standard Modification

708-2.01 PAINT FOR STEEL STRUCTURES.

3. Top Coat. In the 2nd sentence of the 1st paragraph, replace Federal paint specification "FSS No. 595B" with "AMS-STD-595".

HSM20.31-21.1231

SECTION 710
FENCE AND GUARDRAIL

Special Provision

Replace Subsection 710-2.04 with the following:

710-2.04 METAL BEAM RAIL.

1. W-Beam and Thrie Beam Guardrail. Meet AASHTO M 180, Class A, Type II.

2. Box-Beam Guardrail. Meet ASTM A500 Grade B, or ASTM A501.

3. Symmetric and Asymmetric W-Thrie Beam Transition Section. Meet AASHTO M 180, Class B, Type II.

Galvanize the rail per AASHTO M 111 after fabrication.

710-2.06 GUARDRAIL POSTS AND BLOCKOUTS.

Add the following:

4. Transition Posts. Meet the section and length specified on the Plans. Meet ASTM A992 or ASTM A709, Grade 50.

5. Transition Blockouts. Meet the shape and dimensions shown on the Plans. Meet ASTM A500. Grade B or Grade C.

Replace Subsection 710-2.11 with the following:

710-2.11 GUARDRAIL TERMINALS.

W-beam shall meet requirements of AASHTO M 180, Class A, Type II. Box beam shall meet requirements of ASTM A500 Grade B, or ASTM A501. Galvanize after fabrication.

Components made from rolled pressed and forged shapes, castings, plates, bars, and strips shall meet the coating requirements of AASHTO M 111. Galvanize after fabrication.

All hardware or fasteners supplied shall meet the coating requirements of AASHTO M 232.

Guardrail Terminals shall be AASHTO MASH Test Level 3.

1. W-Beam. Provide one of the following terminal types, as shown on the plans, for single-rail W-beam guardrail. Design requirements: 31-inch top of rail height, 8-inch blockouts, W6x8.5 steel posts, 12 ft x 6-inch w-beam panels, and mid-span splice connection to run of rail.

    a. Parallel Terminals. Provide terminals meeting the following:

        (1) Length: 50 ft nominal effective length.

        (2) End Offset: 0 ft to 2 ft (25:1 or flatter straight taper). Offset end as shown on the plans.

    b. Buried in Backslope Terminal. Provide terminals as shown on the Plans.

2. Box Beam. Provide terminals, as shown on the plans for box beam guardrail. Design requirements: 28-inch top of rail height, designed for use with 6-inch by 6-inch by 3/16-inch box beam.

a. Parallel Terminals. Provide terminals meeting the following:

(1) Length: 33 ft nominal effective length, or a minimum 18 ft of box beam rail and standard 3-inch weak posts beyond the 1/8-inch tube rail, or as recommended by the manufacturer's installation manual.

(2) End Offset: 25:1 or flatter straight taper. Offset end as shown on the plans.

Add the following Subsection 710-2.12 Transition Connection:

710-2.12 TRANSITION CONNECTION.

1. Thrie Beam Terminal Connector. Meet AASHTO M 180, Class B, Type II.

2. Guardrail Connection Plate. Meet ASTM A709, Grade 50.

HSM20.34-21.1231

SECTION 712
MISCELLANEOUS

Standard Modification

712-2.08 GLASS BEADS.

Replace the 2nd sentence with the following:

Glass Beads shall contain no more than 200 ppm of lead or 200 ppm of arsenic when tested in accordance with EPA testing methods 3052, 6020B, or 6020C.

HSM20.35-21.1231

Special Provision

712-2.17 METHYL METHACRYLATE PAVEMENT MARKINGS. Replace No. 1. Quality Requirements: with the following:

1. Quality Requirements: Use a marking material formulated for the application type specified. Use a marking material manufactured from new materials and free from dirt and other foreign material. Use a methyl methacrylate based resin system for part "A". Use benzoyl peroxide system for part "B".

   Extruded or stenciled application: Material formulated for extruded or direct stenciled application with factory intermix beads, and anti-skid aggregate and the application of additional surface applied beads.

   Submit a manufacturer certification for both the methyl methacrylate material, glass beads and anti-skid aggregate to ensure that the materials furnished conform to these Specifications.

4. Performance Properties: Add the following:

   k. Color: Yellow, PR-1 Chart, 33538 Federal Yellow. White, minimum daylight reflectance of 84.

Replace Subsection 712-2.18 with the following:

712-2.18 GLASS BEADS FOR METHYL METHACRYLATE PAVEMENT MARKINGS. Use the type and quantity of beads specified in writing by the marking material manufacturer required to satisfy the specified performance requirements. The written certification will note the bead coating is compatible with the marking material binder.

1. Bead Manufacturer and Type.

   a. Swarco, Megalux-Beads or
   b. Approved equal beads

      Approved Equal Beads. Equal beads will demonstrate:
      (1) Bead coatings compatible with marking materials. Marking Material Manufacturer will certify compatibility.
      (2) Lasting retro reflectivity.

C712.1-09.0101-1

SECTION 714
PRESERVATIVES FOR TIMBER

Standard Modification

714-2.01 PRESERVATIVES.

Replace the 2nd sentence of item 3. Round Timber Piling, with the following:

Use Category 4C for soil and freshwater contact.

HSM20.36-21.1231-1

SECTION 722
BRIDGE RAILING

722-2.01 BRIDGE RAILING. *Replace with the following:*

Steel Tube Bridge Rail Elements	ASTM A500, Grade B or Grade C
Thrie-Beam Bridge Rail Elements	AASHTO M 180, Class B, Type II
Bridge Rail Posts	ASTM A709, Grade 50
Bronze Bridge Number Plate	ASTM B98, UNS Alloys C65100 or C65500 or ASTM B584, UNS Alloy C92200
Cable Safety Railing Posts and Braces	AASHTO M181, Grade 1 or Grade 2, or ASTM A53
Cable Safety Railing Cable	¼ inch galvanized wire rope with a minimum breaking force of 7,000 pounds.
Machine Bolts, Cap Screws, Nuts and Washers	ASTM A307
High Strength Bolts, Nuts and Washers	Subsection 716-2.03
Anchor Bolts and Rods	ASTM F3125, Grade A325 or ASTM A449, Type 1
Welded Studs	AASHTO M 169, Grade 1015 or Grade 1020
Shims, Plates, Plate Washers, Angles, Sleeves, and Scuppers	ASTM A709, Grade 50
Guardrail Connection Plate	ASTM A709, Grade 50
Beveled Washers and Tapered Plate Washers	ASTM F436
Galvanize steel portions of railing after fabrication.	AASHTO M 111 or AASHTO M 232 and Subsection 716-2.07

SECTION 724
SEED

724-2.01 DESCRIPTION. Grass seed to provide a living vegetative cover.

724-2.02 MATERIALS. Provide seed mix as specified in the Special Provisions. Provide seed collected or harvested within 2 years of the targeted seeding date. Provide all seed in pure live seed (PLS) unless otherwise directed.

Furnish seed true of genus and species. Meet applicable requirements of the State of Alaska *Seed Regulations*, Alaska Administrative Code, Title 11, Chapter 34, (11 AAC 34), and the Federal Seed Act, 7 CFR Part 201.

The Engineer will review requests for genus, species, or cultivar substitutions(s). The Contractor shall submit a proposed seed mix accompanied by approval from the Alaska Plant Materials Center, and confirmation the vendor can provide the requested mix in quantities adequate for the project.

1. Prohibited and Restricted Noxious Weeds and Quarantined Pests. Furnish seed certified to be free of prohibited noxious weeds or quarantined pests, and certified to contain no more than the maximum allowable tolerances for restricted noxious weeds, according to 11 ACC 34.

    a. Seed found to contain prohibited noxious weeds or quarantined pests will be rejected, according to 11 AAC 34.020(a) and 11 AAC 34.105 through 34.180, respectively.

    b. Seed found to contain restricted noxious weed seed in excess of the maximum allowable tolerance per pound will be rejected, according to 11 AAC 34.020(b).

    Prohibited and restricted noxious weeds are listed in 11 AAC 34.020, and can be viewed at the following URL: http://plants.alaska.gov/invasives/noxious-weeds.htm.

2. Labeling. Ensure each bag or container of individual seed species is labeled to meet requirements of 11 AAC 34.010. Do not remove labels from bags or containers.

3. Certification. Certify seed is free of prohibited noxious weeds and restricted noxious weeds are within allowable tolerances. Furnish to the Engineer a statement signed by the vendor identifying the lot number or lot numbers, certifying each lot of seed has been tested within the preceding nine months, by a recognized seed testing laboratory, a member of the Association of Official Seed Certifying Agency (AOSCA), or the Alaska Plant Materials Center.

    Seed will be rejected if:

    a. Contains prohibited noxious weeds;

    b. Contains restricted noxious weeds above maximum allowable tolerances;

    c. Not certified as tested within the preceding nine months;

    d. Wet, moldy, or otherwise damaged in transit or storage; or

    e. Containers do not have labels, or the labels have been removed.

Seed may be rejected for:

a. Discrepancies in the lot numbers listed on the statement to the lot numbers indicated on the labels of the seed containers.

The Contractor shall immediately remove rejected seed from the project premises. If seed is rejected for containing prohibited noxious weeds or for exceeding maximum allowable tolerances of restricted noxious weeds, dispose of rejected seed according to 11 AAC 34.075(g).

C724-20.1130

SECTION 726
TOPSOIL

726-2.01 TOPSOIL. Furnish topsoil that is representative of the existing, natural organic blanket of the project area, and free of prohibited and restricted noxious weeds (Prohibited and Restricted Noxious Weeds 11AAC 34.020 http://plants.alaska.gov/invasives/noxious-weeds.htm). Perform a quality test, as defined by ATM 203, on the soil to determine the organic content of the soil. Supply the results to the Engineer.

Soil with an organic content of 5 percent or more may be reused and spread on the finished slopes where topsoil is noted on the plans. Remove roots, stumps, unnatural material, and rocks greater than 3 inch in diameter from the organic material before it is graded onto the finished slope.

Soil with an organic content of less than 5 percent cannot be used as topsoil for the project. In this case furnish topsoil consisting of a natural friable surface soil without admixtures of undesirable subsoil, refuse or foreign materials having an organic content of 5 percent or more, as determined by ATM 203. The material shall be reasonably free from roots, clods, hard clay, rocks greater than 3 inches in diameter, noxious weeds, tall grass, brush, sticks, stubble or other litter, and shall be free draining and nontoxic. Notify the Engineer of the topsoil source location at least 30 calendar days before delivery of topsoil to the project from the identified location. The Engineer will inspect the topsoil and its sources before approval will be granted for its use.

TABLE 726-1
LIMESTONE REQUIREMENTS

Soil pH	Limestone, tons/acre
Above 6.0	0
5.0-6.0	1.5
Below 5.0	3.0

C726-20.0101-1

Special Provision

Replace Section 727 with the following:

SECTION 727
SOIL STABILIZATION MATERIAL

727-2.00 GENERAL. Free of restricted and prohibited noxious weeds (11 AAC 34), seeds, chemical printing ink, germination and growth inhibitors, herbicide residue, chlorine bleach, (except where specified: rock, metal, plastics) and other deleterious materials and not harmful to plants, animals and aquatic life. Wood cellulose "paper" fiber, wood chips, sawdust, and hay are not permitted as stand-alone stabilization materials.

727-2.01 MULCH. Flexible blanket/covering, temporary degradable (bio/photo) form of erosion control. Use one of the following:

Dry Erosion Control, Stabilization Products. Hand applied or spread with mulch blower equipment.

1. Straw. Use straw, in an air-dried condition, from oats, wheat, rye, barley, or other approved grain crops that are free from noxious weeds, seeds, mold, or other materials detrimental to plant life. Straw material shall be certified weed-free straw using North American Invasive Species Management Association (NAISMA) Standards. In-lieu of certified weed-free straw provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

2. Shredded Bark Mulch. Shredded bark and wood with the following characteristics:
   a. Not containing resin, tannin, or other compounds in quantities harmful to plant life.
   b. Maximum length of individual pieces is 2 inches with 75% passing through a 1 inch sieve.
   c. Will form a uniform ground cover/mat, have moisture absorption, retention, and percolation properties, not be susceptible to spreading by wind or rain providing a good growth medium.
   d. May contain up to 50% shredded wood material.
   e. Shredded wood material aged 1 year minimum prior to use.

Hydraulic Erosion Control Products (HECPs) Applied hydraulically.

A fiber mulch matrix: biodegradable and composed of wood, straw, coconut and other fibers natural and man-made. When applied, create a continuous, porous, absorbent high water holding, flexible blanket/mat/mulch/covering making intimate contact with, and adhering to sloped soil surface; permitting water infiltration; resists erosion and promotes rapid germination and accelerated plant growth. The fibers may be thermally processed, and cross-linked with a hydro-colloidal or linear anionic tackifier (curing period 24-48 hours) or mechanically-bonded (no curing period). When agitated in slurry tanks with water the fibers will become uniformly suspended, without clumping to form homogeneous slurry.

The HECPs shall be delivered premixed by the manufacturer. The HECP will contain only the materials provided in the sealed containers from the manufacturer. No added components are permitted after the manufacturer seals the product container, before application, during application or otherwise. Submit documentation dated within 3 years of application, from an independent accredited laboratory as approved by the Engineer, showing that the product's testing performance meets the requirements for the slope(s) to be protected on the project, according to the National Transportation Product Evaluation Program (NTPEP), Erosion Control Technology Council (ECTC) and or the Texas DOT/Texas Transportation Institute (TTI) Laboratory.

If the HECP contains cotton or straw provide documentation that the material is certified weed free using NAISMA Standards. In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

The HECP shall contain a dye to facilitate placement and inspection of the material.

1. Wood Strand, Fiber.
   A blend of angular, loose, long thin wood pieces with a high length to width ratio and that are frayed. Minimum 95% of strands between 2 inches and 10 inches, at least 50% of the length shall have a width thickness between 1/16 and 1/8 inch. No single strand shall have a width or thickness greater than 1/2 inch. Processed wood fiber with the following characteristics:
   a. Will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer and other additives to form homogeneous slurry.
   b. Will form a blotter-like uniform ground cover on application, have moisture absorption, retention and percolation properties, the ability to cover, and hold grass seed in contact with soil, and not create a hard crust upon drying providing a good growth medium.

2. Dried Peat Moss. Partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses with the following characteristics:
   a. Chopped or shredded to allow distribution through normal hydraulic type seeding equipment and capable of being suspended in water to form part of a homogeneous slurry.
   b. Free from woody substances and mineral matter such as sulfur or iron and with a pH value of between 4.0 and 6.5.
   c. Furnished in an air dry condition and containing less than 35% moisture by weight. Have a water holding capacity of not less than 800% by weight on an oven dry basis.

3. Fiber Matrix (FM) Mulch - Types.
   a. Stabilized Mulch Matrices (SMMs)
   b. Bonded Fiber Matrices (BFMs)
   c. Mechanical Bonded Fiber Matrix (MBFM)
   d. Polymer Stabilized Fiber Matrix (PSFM)
   e. Fiber Reinforced Matrices (FRMs)
      - Flexible Growth Medium (FGM)
      - Extended-Term Flexible Growth Medium (ET-FGM)

727-2.02 MATTING. Fiber mulches, mulch matrices, nets and turf reinforcement mats manufactured from wood fibers, straw, jute, coir, polyolefins, PVC, nylon and others creating dimensionally stable nets, meshes, geotextiles and blankets; creating a continuous, porous, absorbent, flexible blanket/mat/mulch/covering making intimate contact with and adhering to sloped soil surface, resisting erosion and promoting rapid germination and accelerated plant growth.

Rolled Erosion Control Products (RECPs) (Temporary Degradable and Permanent Erosion Control)
Use RECPs that bear the Quality and Date Oversight and Review (QDOR) Seal from the ECTC. Independent test results from the NTPEP, that the mulch, when tested according to ASTM 6459 Standard Test Method for Determination of Rolled Erosion Control Products (RECP), Performance in Protecting Hillslopes from Rainfall-Induced Erosion, meets the performance requirement using the Revised Universal Soil Loss Equation (RUSL).

Functional Longevity.

1. Temporary Degradable.

   a. Duration.

      1) Short-Term RECPs. (RECPs 3 - 12 months)
         C_{Factor} = .15 maximum
         Test Soil Type = Sandy Loam
         (National Resources Conservation Service (NCRS) Soil Texture Triangle)

      2) Moderate (Extended) -Term RECPs. (RECPs 24 months)
         C_{Factor} = .05 maximum
         Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)

3) Long-Term RECPs. (RECPs 36 months)
C $_{Factor}$ = .01 maximum
Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)

b. Product types.

1) Mulch-Control Nets (MCNs). Planar woven natural fiber or extruded geosynthetic mesh used to anchor loose fiber matting/mulches.

2) Erosion Control Blankets (ECBs). Processed natural and/or polymer fibers, yarns or twines mechanically, structurally, or chemically bound together to form a continuous matrix with a minimum weight of 8 oz/yd^2 and a limiting shear stress of 0.45 lb/ft^2.

3) Netless. Fibers mechanically interlocked and/or chemically adhered together.

4) Single-net and Double-net. Fibers mechanically bound together by single or double netting.

5) Open Weave Textiles (OWTs). Fibers woven into a continuous matrix.

c. Materials.

1) Burlap. Standard weave with a weight of 3.5 to 10 oz/yd^2.

2) Jute Mesh Fabric. Cloth of a uniform, open, plain weave of undyed and unbleached single jute yarn. Use yarn that is loosely twisted and not varying in thickness more than one-half its normal diameter. Furnish jute mesh in rolled strips meeting the following requirements:
   a) Width: 45 to 48 inches, ± 1 inch
   b) 78 warp-ends per width of cloth (minimum)
   c) 41 weft-ends per yard (minimum)
   d) Weight: 20 ounces per linear yard, ± 5%

3) Woven Paper or Sisal Mesh Netting. Woven from twisted yarns available in rolls 45 to 48 inches wide. Mesh may vary from closed to open weave, ranging from 1/8 to 1/4 inch openings. Shrinkage after wetting may not exceed 20% of the surface area.

4) Knitted Straw Mat. Commercially manufactured ECB. Use photodegradable netting and biodegradable thread. Use straw, in an air-dried condition, from oats, wheat, rye, barley, or other approved grain crops that are certified weed free of prohibited and restricted noxious weed seed and quarantined pests, according to Alaska Administrative Code, Title 11, Chapter 34 (11 AAC 34), and in conjunction with North American Invasive Species Management Association (NAISMA) standards, and free of mold, or other objectionable materials detrimental to plant life. When straw or straw products certified according to 11 AAC 34 are not available, use non-certified products manufactured within Alaska before certified products manufactured in another state, country, or territory. Non-certified products manufactured in Alaska In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw. Non-certified straw or straw products manufactured in another state, country, or territory shall not be used. ECB may contain coconut or fiber to reinforce the straw.

5) Woven/Curled Wood blanket. Machine produced mat of curled wood shavings with a minimum of 80% 6-inch or longer fibers, with consistent thickness and the fibers evenly distributed over the entire area of the blanket. Smolder resistant without the use of chemical additives. Cover the top side of the blanket with biodegradable extruded plastic mesh.

6) Coconut (Coir Fiber). Machine produced mat, ECB of consistent thickness and coir fiber evenly distributed over the area of the mat. Use bio/photo degradable netting and thread.

2. Permanent.

    a. Product Types and Materials.

        1) Turf Reinforcement Mats (TRMs). A rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh, and/or other elements, processed into a permanent, three-dimensional matrix of sufficient thickness with a minimum weight of 8 oz/yd^2 and a minimum limiting shear stress of 1.5 lb/ft^2. TRMs (may be supplemented with degradable components) shall impart immediate erosion protection, enhance vegetation establishment during and after maturation and permanent vegetation reinforcement providing long-term functionality.

727-2.03 SEDIMENT RETENTION FIBER ROLLS (SRFRs). Fiber rolls also referred to as wattles. Manufacture of photodegradable or biodegradable fabric netting without preservative treatment, evenly woven, free of crusted material, cuts, and tears. Manufacture stakes of photodegradable or biodegradable material (wood stakes, except as approved by the Engineer).

1. Filter Sock (Wattle)
    a. Fabric netting.
    b. Filled with wood fiber, straw, flax, rice, coconut fiber material.
    c. Minimum diameter 5 inches.

2. Compost Sock.
    a. Extra Heavy weight fabric netting with a minimum strand width of 5 mils.
    b. Filled with coarse compost.
    c. Minimum diameter 8 inches.

3. Coir Log.
    a. Woven wrap bristle coir twine netting.
    b. Filled with 100% coconut (coir) fiber uniformly compacted.
    c. Segments maximum length 20 foot, diameter as suited to the application and a density of 7 lbs/pcf or greater.
    d. Coir twine strength equal to 80 lb minimum weaved to a 2 inch x 2 inch opening pattern.
    e. Ties made of hemp rope by 1/4 inch diameter.

727-2.04 COMPOST. Suitable for serving as a soil amendment or an erosion control material. Sanitized, mature compost meeting local, state, and Federal quality requirements tested and certified by the U.S. Composting Council (USCC) under the Seal of Testing Assurance (STA) Program. Biosolids compost must meet the Standards for Class A biosolids outlined in 40 Code of Federal Regulations (CFR) Part 503. Additionally, meet the requirements of the AASHTO specifications:

1. Compost Blankets. Standard Practice for Compost for Erosion/Sediment Control (Compost Blankets) R 52.

2. Compost Filter Berms and Filter Socks. Standard Practice for Compost for Erosion/Sediment Control (Filter Berms and Filter socks) R 51.

727-2.05 TACKIFIER. Tackifier, viscous overspray, generally composed of dry powered vegetable gums derived from guar gum, psyllium and sodium alginase; asphaltic emulsions; petroleum distillates; co-polymer emulsions; and lignosulfonates and used to anchor soil, compost, seed, the mulch fibers to one another, and the ground. Contain no growth or germination inhibiting materials nor significantly reduce infiltration rates. Tackifier shall hydrate in water and readily blend with other slurry material. Tackifier options include:

1. Type A. Organic tackifier with certification of plant sources; or

2. Type B. Synthetic tackifier with certification confirming product is not harmful to plants, animals, or aquatic life.

727-2.06 POLYACRYLAMIDE (PAM). Use as a tie-down for soil, compost, seed and as a flocculent. Polyacrylamide (PAM) products shall meet the requirements of American National Standards Institute (ANSI)/National Sanitation Foundation International (NSF) Standard 60 for drinking water treatment, be anionic (not cationic), linear and not cross-linked with an average molecular weight greater than 5 Mg/mole, minimum 30 percent charge density; contain at least 80% active ingredients and a moisture content not exceeding 10% by weight.

Deliver PAM in a dry granular powder or liquid form.

727-2.07 GEOTEXTILE-ENCASED CHECK DAM AND SEDIMENT BARRIER. Urethane foam core encased in geotextile material (silt fence material Section 633), minimum 8 inches height by minimum base width of 16 inches by minimum 7 foot length. Overhang the geotextile 6 inch minimum each end with apron type ties by 24 inches each side of the foam core.

727-2.08 SANDBAG.

1. Sandbag Sack Fabric. Fabric shall be a nonwoven, needle punched design meeting the Minimum Average Roll Values (MARV) verified in accordance with ASTM D4759.

2. Seam Thread. Similar durability to the sandbag sack fabric.

3. Sandbag Fill Material.
   a. Selected Material 703-2.07 Type B

4. Cinch Ties. Plastic ties or equivalent tie recommended by the sandbag manufacturer.

727-2.09 MANUFACTURED INLET PROTECTION SYSTEM.

1. Manufacturers:
   a. Ultra Tech International – Ultra-DrainGuard
   b. Bowhead Environmental and Safety - StreamGuard Exert II Sediment Insert
   c. Enpac - Catch Basin Insert, Oil and Sediment or
   d. Approved equal.

727-2.10 CLEAR PLASTIC COVERING. A clear plastic covering meeting the requirements of the National Institute of Standards and Technology (NIST) voluntary Product Standard PS 17 - 69 for polyethylene sheeting having a minimum thickness of 6 mils.

727-2.11 STAPLES. U-shaped staples for anchoring matting, approximately 6 inches long and 1 inch wide. Machine-made: No. 11 gage or heavier steel wire. Hand-made: 12-inch lengths of No. 9 gage or heavier steel wire.

C727-12.0508-2

SECTION 730
SIGN MATERIALS

Special Provisions

730-2.04 SIGN POSTS.

Add No. 7:

7. Structural Tubing and W-Shape Beams.

   a. Structural tubing shall conform to ASTM A500, Grade B, or ASTM A501. The tubing shall be square and of the dimensions called for in the Plans with 0.2 inch thick walls. 0.4 inch diameter holes shall be drilled as required to permit mounting of the sign.

   b. W-shape beams shall conform to ASTM A36.

   c. Structural tubing and W-shape beams shall be hot dip galvanized according to 1.b. of this subsection. Damaged and abraded tubes and beams shall be repaired according to 1.c. of this subsection.

C730.1-04.0622

Replace Subsection 730-2.05 with the following:

730-2.05 FLEXIBLE DELINEATOR POSTS. Durable fiberglass composite, polymer, or plastic material meeting the dimensions and colors shown on the Plans. Resistant to ultraviolet light, ozone and hydrocarbon damage and remain flexible at a temperature of minus 40 °F. Provide posts with reflectors that are capable of self-erecting and remaining serviceable after 5 head-on impacts at 55 mph and 10 impacts at 35 mph with an automobile at an air temperature of plus 40 °F.

Terminal Markers - Flexible (marker). The marker includes the pole/post/rod (pole), reflective and retroreflective sheeting and mounting hardware.

Provide durable markers: resistant to impact from (snow and vehicle), vandals, ultraviolet light, moisture, ozone, and hydrocarbons.

When the pole is loaded, the marker shall bend/flex, remain flexible and oriented as installed continuing to function as designed without permanent displacement along the length of the member. Provide the flexibility in the primary vertical element, a connecting device between the vertical element and connection to the support member (spring or other) or a combination.

Provide a connection sufficient to transfer the loads from the pole to the supporting member without reducing the strength, flexibility, or durability of either. The connection shall not negatively influence the performance of the guardrail. Provide approval of the connection from the marker manufacturer and support member manufacturer (if proprietary).

1. Design Loads:

   a. Impact load from snow thrown by snowplows
   b. Weight of snow covering the pole (snow thrown from snowplows)
   c. Wind loads (100 mph, 3 sec gust)

2. Service Temperature Range: -40˚ F to +140˚ F.

3. Pole:

   a. Material:

      (1). Steel, or
      (2) Stainless Steel, or
      (3) Other Poles:
         (a) Continuous glass fiber and marble reinforced thermosetting composite, or
         (b) Engineered plastic alloy, or
         (c) Fiberglass Reinforced Polyester (FRP)
         (d) High-Impact Polyolefins

   b. Dimensions

      (1) Top of Pole: 60 inches to 84 inches above top of guardrail
      (2) Width/Diameter: minimum = 1 1/4 inches, maximum = 2 inches (steel/stainless steel not be greater than 5/8 inch diameter)
      (3) Thickness: as required by design

   c. Visibility:

      (1) Daytime: Pole - color orange
         (a) Steel and Stainless Steel Poles: Applied permanent finish.
         (b) Other Poles: Color pigment ultraviolet stabilized and solid through the cross section from end to end.
      (2) Nighttime: Added retroreflective sheeting - color white
         (a) Approximately 12 square inches visible from the traveled way before and after the marker. Applied to a flag attached to the pole or as banding applied directly to the pole. (A flag is required when using steel/stainless steel poles.)
         (b) Place top edge of flag/banding 1 inch from top of pole.
            (i) Flag: Single retroreflective sheet each face
            (ii) Banding: Two bands completely around marker, 4 inches between bands

4. Hardware and Fasteners:

   a. Steel, and/or
   b. Stainless Steel, or
   c. Aluminum alloy (hardware only)

Manufacturers of flexible markers (snowpoles):

Manufacturer	Model	Type	Contact
Nordic Fiberglass, Inc.	FF2	Steel Pole w/ Flag	Ph: (218) 745-5095
PEXCO	Model 3639	High-Impact Polyolefins	Ph: (404) 564-8560
New Century Northwest, LLC	NCN2549	Engineered Plastic Alloy	Ph: (541) 485-5566
Carsonite Composites, LLC	SNFB	Continuous glass fiber and marble reinforced thermosetting composite	Ph: (800) 648-7916

Submit manufacturer's specifications to the Engineer for review and approval before ordering terminal markers.

C730.2-17.1222

SECTION 731
WATERPROOFING MEMBRANE

731-2.01 SPRAY-APPLIED WATERPROOFING MEMBRANE. *Replace Table 731-1 SPRAY-APPLIED WATERPROOFING MEMBRANE with the following*:

Test	Requirements	Test Method
Adhesion to Concrete	100 psi min., with failure in concrete	ASTM D7234
Tensile Strength at Break	1500 psi min.	ASTM D638
Elongation at Break	130% min.	ASTM D638
Crack Bridging	Pass at 10 cycles of 1/8 inch when tested at -15°F	ASTM C1305
Interlayer Shear Strength	30 psi min.	AASHTO TP-114

APPENDIXES

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APPENDIX A

CONSTRUCTION SURVEY REQUIREMENTS

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APPENDIX B

ENVIRONMENTAL PERMITS

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MATERIAL CERTIFICATION LIST

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APPENDIX D

SIGN SHOP DRAWINGS

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APPENDIX E

TEMPORARY CONSTRUCTION EASEMENTS

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