

MEMORANDUM

State of Alaska

Department of Transportation and Public Facilities

to: Distribution

DATE: February 26, 2026

FROM: Matthew Hansen, P.E.

TELEPHONE: 269-0602

SUBJECT: **HSIP: Tudor Road: Baxter Road to Patterson
Street Channelization**
Program No. 0544023 / CFHWY01073
PS&E Review

Attached for final review and comment 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 (L:) drive at <\\dot.soa.alaska.gov\shared\AV\LIB\Admin\FORMS\FORMS> -> Pre PS&E Review comments.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.

Timesheet coding is as follows:

IRIS Project No. CFHWY01073

IRIS Activity: __ _ P (input your own activity code in the blank spaces)

IRIS Phase: T02015

IRIS Template: TTPJ001

**HSIP: Tudor Road: Baxter Road to Patterson Street Channelization
Program No.: 0544023 / CFHWY01073**

PS&E Review

PS&E REVIEW COMMENTS are due on Friday March 20, 2026. The review meeting will be held at **9:00 AM** on Wednesday March 25, 2026 in the **Main Conference Room**. **Please E-mail comments, using the comment form, to Rori Van Nortwick (rori.vannortwick@alaska.gov) and CC Matthew Hansen (matthew.hansen@alaska.gov).**

*****Electronic Copy available on the internet at the following location:**

dot.alaska.gov/creg/design/highways/PS&E_Review/CFHWY01073/

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

Microsoft Teams:	(907) 202-7104
Conference ID:	291 055 993#

DISTRIBUTION (1 copy, MS 2525 unless otherwise noted):

* Luke Bowland, Pre-Construction Engineer

Highway Design

Sean Baski, Highway Design Group Chief
Rori Van Nortwick, Project Manager, **(4+CD)**
Fred Park, Spec/Estimating Engineer, Highway Design
* Chris Post, Standards Manager
* Jeff Carleton, Electrical Engineer

Materials

* Mike San Angelo, Statewide Materials Eng. (MS 2538)
Mitch Miller, Central Region Materials, (MS 2526) **(2)**

Traffic, Safety, & Utilities

Cindy Ferguson, TS&U Group Chief
David Freese, Utilities Engineer **(2)**
Anna Bosin, Traffic Safety
Dalton Perry, HSIP Coordinator
Ken Thomas, Traffic & Safety
Roxanne Risse, Traffic Design **(2)**

Maintenance & Operations

* Kirk Warren, Chief, Maintenance and Operations
* Burrell Nickeson, M&O Manager
Jeremy Thompson, M&O Specialist

Construction

* Joel St. Aubin, Regional Construction Engineer
Brian Schumacher, Construction Group Chief
Jason Lamoreaux, Construction Project Manager **(3)**
* Laren Meyer, Regional Construction Office Engineer
* Athena Marinkovic, ESCP Coordinator

Quality Assurance

Mahear Aboueid, Concurrent Review Engineer
Jim Klebesadel, Lead Materials Rover

Contracts

Sharon L. Smith, Contracts Group Chief
Matthew Hansen, Review Engineer

Preliminary Design & Environmental

* Alex Read, PD&E Group Chief
* Brian Elliott, Environmental Manager
Roy Dahlstrom, Environmental Impact Analyst
Orion LeCroy, Regional Hydrologist
Elliott Smith, Hydraulics Engineer

Right-of-Way

Melanie Arnolds, Right-of-Way Group Chief
* Bob Keiner, ROW Engineering Supervisor
* James Sowerwine, ROW, 2525
* Lorraine Kastner, Appr. & Acq Supervisor

Planning

* Ben White, Planning Group Chief
Mark Eisenman, Area Planner
* Justin Zarr, Hwy Data Supervisor

Surveys

* Travis Test, Survey Manager

Project Control

* Jennifer Coisman, Project Control Group Chief

* Electronic (email) Only

Additional Distribution (without Engineer's Estimate):

Brandon Telford, MOA Project Management and Engineering, 4700 Elmore Road, Anchorage, AK 99507,
brandon.telford@anchorageak.gov **(3)**

* Emily Haynes, FHWA emily.haynes@dot.gov

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION



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

**HSIP: Tudor Road: Baxter Road to
Patterson Street Channelization
Program No. 0544023 / CFHWY01073**

**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)

1.	<u>Invitation</u> (yellow)		
	INVITATION TO BID	25D-7	(CR 7/18)
2.	<u>Bid Notices</u> (yellow)		
	REQUIRED DOCUMENTS	25D-4H	(11/23)
	FEDERAL EEO BID CONDITIONS	25A-301	(03/23)
3.	<u>Forms</u> (yellow)		
	SUBCONTRACTOR LIST	25D-5	(5/17)
	BIDDER REGISTRATION	25D-6	(6/22)
	CONTRACTOR'S QUESTIONNAIRE	25D-8	(8/01)
	BID FORMS		
	a. Bid Cover Sheet		
	b. Bid Schedule		
	c. Bid Attachments		
	d. Addenda Acknowledgement		
	e. Bidder's Acknowledgement and Certification		
	CONSTRUCTION CONTRACT	25D-10H	(1/15)
	PAYMENT BOND	25D-12	(8/01)
	PERFORMANCE BOND	25D-13	(8/01)
	BID BOND	25D-14	(8/01)
	BID MODIFICATION	25D-16	(7/18)
	NON-COMPLIANT MINIMAL USE & DE MINIMIS REGISTER	25D-60B	(10/25)
	EEO-1 CERTIFICATION	25A-304	(10/19)
	CONTACT REPORT	25A-321A	(10/16)
	DBE UTILIZATION REPORT	25A-325C	(3/12)
	PRIME CONTRACTOR'S WRITTEN DBE COMMITMENT	25A-326	(8/01)
	SUMMARY OF GOOD FAITH EFFORT DOCUMENTATION	25A-332A	(8/01)
4.	<u>Contract Provisions and Specifications</u> (white)		
	STANDARD MODIFICATIONS		
	SPECIAL PROVISIONS		
	APPENDIX A: CONSTRUCTION SURVEY REQUIREMENTS		
	APPENDIX B: MATERIAL CERTIFICATION LIST		
	REQUIRED CONTRACT PROVISIONS FOR		
	FEDERAL-AID (FHWA) CONSTRUCTION CONTRACTS	25D-55H	(10/23)
5.	<u>Federal Wage Rates</u>		
	Federal wage rates can be obtained at https://sam.gov/content/home for the State of Alaska. Use the federal wage rates that are in effect 10 days before Bid Opening. The Department will include a paper copy of the federal wage rates in the signed Contract.		
6.	<u>State Wage Rates</u>		
	State wage rates can be obtained at http://www.labor.state.ak.us/lss/pamp600.htm . Use the State wage rates that are in effect 10 days before Bid Opening. The Department will include a paper copy of the State wage rates in the signed Contract.		



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

INVITATION TO BID

for Construction Contract

Date TBD

HSIP: Tudor Road: Baxter Road to Patterson Street Channelization
Program No. 0544023 / CFHWY01073

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 2026**. 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: Anchorage, Alaska
Contracting Officer: Katherine Keith, PMP, PMI-ACP, Acting CR Director, Deputy Commissioner
Issuing Office: Central Region
State Funded Federal Aid

Description of Work:
This federally funded project will include road reconstruction, roadside hardware, WIM reconstruction, drainage improvements, utility relocations, and ADA improvements as needed to install non traversable median and roadside barrier.

Project DBE Utilization Goal: Race-Neutral

The Engineer's Estimate is between **\$2,500,000** and **\$5,000,000**

All work shall be completed by **October 31, 2026**.
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: HSIP: Tudor Road: Baxter Road to Patterson Street Channelization Program No. 0544023 / CFHWY01073	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/dcspecs/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-1gg9j9gk.html>
 - b. Alaska Test Methods Manual (Lab & Field), May 19, 2025 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
 - d. Utility facility clearance requirements. Available online at:
 - Chugach Electric Association, Inc. (CEA) Electrical Facility Clearance Requirements <https://www.chugachelectric.com/system/files/Electrical%20Facility%20Clearance%202020.pdf>
 - ENSTAR Natural Gas Company (ENSTAR) <https://www.enstarnaturalgas.com/wp-content/uploads/2023/04/2023-Contractor-Excavation-Safety-Letter-with-attachments.pdf>
 - e. Quantity Computations **TO BE FINALIZED AND INCLUDED AT CERTIFICATION**
 - f. Erosion, Sediment Control Plan (ESCP). HSIP: Tudor Rd: Baxter Rd to Patterson St Channelization, 0544023/CFHWY01073, XXX2026 **TO BE FINALIZED AND INCLUDED AT CERTIFICATION**
 - g. Traffic Management Plan (TMP). HSIP: Tudor Rd: Baxter Rd to Patterson St Channelization, 0544023/CFHWY01073, XXX2026 **TEMPORARY TRAFFIC CONTROL MEMO AND DETAILS/TYPICAL APPLICATIONS INCLUDED FOR REVIEW AND DISCUSSION. TMP TO BE FINALIZED AND INCLUDED AT CERTIFICATION.**
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 B. TO BE FINALIZED AND INCLUDED AT CERTIFICATION**
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 U.S. Department of Transportation issued an Interim Final Rule (IFR) on October 3, 2025 with an immediate effective date. The rule removes race- and sex-based presumptions in Disadvantaged Business Enterprise (DBE)/Airport Concessions DBE (ACDBE) qualifications and requires the Alaska Unified Certification Program (AUCP) to recertify all applicants based on evidence of social or economic disadvantage.

Until this recertification process is complete for all firms, the Department cannot count DBE participation toward overall DBE goals. In anticipation of recertification, the Department is still requiring submission of DBE paperwork for all projects, to include Good Faith Effort (GFE) and DBE Utilization Forms with the following guidance:

As a result:

- There are no mandatory DBE contacts required for Good Faith Effort (GFE) documentation.
- DBE Commitment Forms may be marked as "Not Applicable".
- Any submitted DBE Utilization Forms should reflect \$0.00 DBE participation.

The Interim Final Rule is available here:

<https://www.federalregister.gov/documents/2025/10/03/2025-19460/disadvantaged-business-enterprise-program-and-disadvantaged-business-enterprise-in-airport>

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. **Alaska DOT&PF Bidders List Form.** All bidders on federally funded projects must submit the Alaska DOT&PF Bidders List Form with their Bid submittal at the time of bid opening. This is a federal requirement of all bidders, but is not a condition of responsiveness.

Fill out the Alaska DOT&PF Bidders List Form for all subcontractors contacted for quotes regardless of whether they are the successful subcontractor. Ensure the NAICS codes submitted in the Alaska DOT&PF Bidders Form align the subcontractor scope for the work requested with the appropriate federal code. This may result in multiple NAICS codes for each subcontractor.

Vendor IDs are available at <https://dot.alaska.gov/procurement/awp/vendorcheck.html>

If a subcontractor does not have a Vendor ID in AASHTOWare, leave that field blank but fill in the Vendor Name and applicable NAICS codes.

For electronically submitted bids, attach a copy of the completed Excel file as an attachment in BidX. If submitting a manual bid, email the Excel file to the regional contracts office conducting the procurement prior to the bid opening.

Central – crdotpfcontracts@alaska.gov

Northern – dot.nrcontracts@alaska.gov

Southcoast – srdotpfcontracts@alaska.gov

The collection of this information is a requirement of 49 CFR 26.11(c) and is required of all bidders at the time of bid to ensure DOT&PF's compliance with Federal Regulation.

9. **Utilities. TO BE DELETED PRIOR TO CERTIFICATION, NO UTILITY AGREEMENTS ANTICIPATED**

- a. **Agreements and Dispositions.** Utility Agreements and dispositions are available for review at the office of the Utilities Engineer, (907) 269-0644. Copies may be available, coordinate with the Utility Engineer.
- b. **Utilities, and Erosion, Sediment and Pollution Control.** Utilities will be relocated by others concurrently with construction of this project. The Contractor is responsible for the coordination with Other Contractor's and for control of erosion, sediment and pollution including stabilization of areas disturbed during utility relocation, as described in Section 105-1.06.

The Contractor will identify, in their SWPPP, other work that is or will occur inside or adjacent to the project limits during the contract period.

10. **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/>

- 11. **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.
- 12. **Asphalt Material Price Adjustment.** The unit price adjustment for asphalt material will be combined and paid under one Pay Item. Refer to Sections in Division 300 and 400 that include an "Asphalt Material Price Adjustment" Pay Item.
- 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.

CSNtB-25.1001-1_SSHC20

PART 4

**STANDARD MODIFICATIONS
AND
SPECIAL PROVISIONS**

To the **STATE OF ALASKA**



**STANDARD
SPECIFICATIONS
FOR
HIGHWAY CONSTRUCTION**

**2020
EDITION**

Blank Page

TABLE OF CONTENTS

Section	Page
Special Notice to Bidders	
Standard Modifications and Special Provisions	
Table of Contents	

DIVISION 100 — GENERAL PROVISIONS

102	Bidding Requirements and Conditions	3
104	Scope of Work	4
105	Control of Work	5
106	Control of Material	6
107	Legal Relations and Responsibility to Public	10
108	Prosecution and Progress	13
109	Measurement and Payment	15
120	Disadvantaged Business Enterprise Program	16

DIVISION 200 — EARTHWORK

201	Clearing and Grubbing	19
202	Removal of Structures and Obstructions	20
203	Excavation and Embankment	23
204	Structure Excavation for Conduits and Minor Structures	24

DIVISION 300 — BASES

301	Aggregate Base and Surface Course	29
306	Asphalt Treated Base Course	31

DIVISION 400 — ASPHALT PAVEMENTS AND SURFACE TREATMENTS

402	Tack Coat	46
408	Hot Mix Asphalt Pavement – Type VH	47

DIVISION 500 — STRUCTURES

501	Concrete for Structures	70
550	Commercial Concrete	71

DIVISION 600 — MISCELLANEOUS CONSTRUCTION

603	Culverts and Storm Drains	76
604	Manholes and Inlets	80
606	Guardrail	82
608	Sidewalks	89
609	Curbing	96
615	Standard Signs	97
618	Seeding	102
619	Soil Stabilization	106
627	Water System	111
639	Driveways	113
641	Erosion, Sediment, and Pollution Control	114
642	Construction Surveying and Monuments	136
643	Traffic Maintenance	137
644	Services to be Furnished by the Contractor	159
646	CPM Scheduling	161
647	Equipment Rental	162
651	Control of Work – Supplemental Requirements	164
652	Prosecution and Progress – Supplemental Requirements	165
660	Signals and Lighting	166
669	Place Holder Automated Traffic Recorders	169
670	Traffic Markings	181
682	Utility Potholing	189

TABLE OF CONTENTS
DIVISION 700 — MATERIALS

Section	Page
702 Asphalt Materials	193
703 Aggregates	194
710 Fence and Guardrail	197
712 Miscellaneous	199
724 Seed.....	200
726 Topsoil	202
727 Soil Stabilization Material.....	203
730 Sign Materials	208

APPENDIXES

Appendix A Construction Survey Requirements

Appendix B Material Certification List

DIVISION 100 — GENERAL PROVISIONS

Blank Page

**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

104-1.01 INTENT OF CONTRACT.

Replace the second paragraph with the following:

The Contractor is responsible for the means, methods, techniques, sequence, and procedures of construction, safety, and quality control. This includes ensuring safety and overseeing the safety of all personnel and Subcontractors. In the event of a multi-employer site, the Contractor is the controlling employer responsible for coordinating site-wide safety efforts, ensuring compliance with applicable safety regulations, and mitigating potential hazards across all employees, Subcontractors or suppliers on the site, consistent with any applicable federal, state, and local laws, rules, regulations, and ordinances.

HSM20.53-25.0610

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

Standard Modification

105-1.05 COOPERATION BY CONTRACTOR.

Replace the second paragraph with the following:

Either the Contractor's Superintendent or an acting Superintendent with authority to represent and act for the Contractor shall be available on-site, or within a reasonable distance to ensure timely response and oversight of the project whenever work is occurring. The Contractor shall employ, as its agent, a competent superintendent thoroughly experienced in the work being performed and capable of reading and thoroughly understanding the Plans and Specifications.

The Contractor shall be responsible for maintaining a safe work environment, ensuring compliance with all applicable safety regulations, and overseeing the safety of all work being performed. The Superintendent shall have the Contractor's authority to stop work and implement immediate corrective action if safety concerns arise, or if the work is not being performed in accordance with the Contract documents.

The Contractor shall provide 24-hour contact information for the Superintendent. The Contractor shall ensure that the superintendent is available at all times to receive and execute Directives and other instructions from the Engineer, to supervise personnel and to coordinate the work of subcontractors. The Contractor shall give the superintendent full authority to supply the resources required. The Contractor shall furnish superintendence regardless of the amount of work sublet.

HSM20.52-25.0610

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**

Special Provision

106-1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.

Replace the fourth paragraph of 106-1.01 with the following:

The Contractor shall submit a certificate of compliance according to Subsection 106-105 for each item listed on the Material Certification List. The Engineer may authorize the use of articles, materials, or supplies based on a certificate of compliance Form 25D-62 Certificate of Domestic Materials Compliance. Materials incorporated into the project on the basis of a certificate of compliance may be tested or verified 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.

Replace the BUY AMERICA PROVISION with the following:

DOMESTIC MATERIALS PREFERENCE PROVISION. On projects using federal-aid funds the Contractor shall ensure all Iron and Steel Products, Manufactured Products, and Construction Materials, incorporated into the project are produced in the United States as required by 23 CFR 635.410-Buy America requirements (Iron, Steel, and Manufactured Products), and 2 CFR 184-Buy America Preferences for Infrastructure Projects (Construction Materials).

Domestic material requirements apply when articles, materials, or supplies are permanently incorporated into the work. Domestic material requirements do not apply to articles, materials, or supplies: (i) brought temporarily to the construction site and removed at or before the completion of the project, e.g., tools, construction equipment, Jersey barriers; or (ii) used by the Contractor to facilitate construction that are left in place upon completion of the work and are not required to be permanently installed as part of the contract requirements.

An article, material, or supply shall only be classified as an iron or steel product, a manufactured product, a construction material, or other material. An article, material, or supply shall not be considered to fall into multiple categories.† The classification of an article, material, or supply as falling into one of the categories listed must be made based on its status at the time it is brought to the work site for incorporation into the project. The work site is the location of the project at which the articles, material, or supply will be incorporated.

†As addressed in paragraph 3) below, 23 CFR 635.410(c)(2) creates an exception to the single category requirement regarding precast concrete products (Precast Concrete) and intelligent transportation systems (ITS) and other electronic hardware systems cabinets and other enclosure.

DOMESTIC MATERIAL CATEGORIES:

1) IRON AND STEEL PRODUCTS (23 CFR 635.410). Defined as articles, materials, or supplies that consist wholly or predominantly of iron and steel or a combination of both. To be classified as domestic, all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

If the cost of iron and steel content of an article, material, or supply exceeds 50 percent of the total cost of all components, the iron and steel must meet the domestic materials requirements of the Iron and Steel Products of this provision. The remaining components are then exempt from any domestic procurement requirement.

The cost of iron or steel is the cost of the iron and 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. Buy America requirements do not apply to iron ore, pig iron, and processed, pelletized and reduced iron ore.

Iron and Steel Minimal Use:

All wholly or predominantly iron and steel, or a combination of both, products incorporated into the work, shall be manufactured in the United States. Minimal amounts of iron and steel products of foreign or unknown 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 (established at award), 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.

- 2) CONSTRUCTION MATERIALS (2 CFR 184).** Defined as the articles, materials, or supplies that consist of only one of the items listed. Each material has a specific standard to be considered in compliance with domestic materials requirements. The items are:
- a. Non-ferrous metals. All manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.
 - b. Plastic and Polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiberoptic cables). 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.
 - c. Glass (including optic glass). All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
 - d. Fiber Optic Cable (including drop 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-bases products, or any others.
 - e. Optical Fiber. All manufacturing process, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
 - f. Lumber. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.
 - g. 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.
 - h. 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 a Construction Material contains, as minor additions, 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.

- 3) MANUFACTURED PRODUCTS (23 CFR 635.410).** Defined as 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. Manufactured products are acceptable under this provision if the product was manufactured in the United States. For the purposes of this provision, "manufactured in the United States" means that the final assembly of the product occurred in the United States.

For Precast Concrete and ITS and other electronic hardware systems cabinets and other enclosures that are classified as manufactured products, the components that are predominantly steel or iron or a combination of both must comply with the domestic materials requirements of the Iron and Steel Products in paragraph 1) above.

Declare all manufactured products on Form 25D-62 regardless of their exemption.

4) OTHER MATERIALS. Defined as articles, materials, or supplies that do not meet the definition of Iron and Steel Products, Manufactured Products, or Construction Materials. These materials do not have any requirements for domestic sourcing. This includes the following items that are specifically categorized as other (excluded) materials per BABA Section 70917(c) of the Infrastructure Investment and Jobs Act of 2021.

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

The Contractor shall submit a completed Non-Compliant Minimal Use & 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 prior to incorporating the non-compliant item on the subject federal-aid Project, (as defined by the NEPA decision).

The Contractor shall submit a completed Certificate of Domestic Materials Compliance Form 25D-62 for all materials incorporated into the project. The Department will not allow installation of, nor pay for, products that must comply with Domestic Materials requirements until the Contractor has submitted acceptable Forms 25D-60 and 25D-62.

Non-compliant Iron and Steel Products, Manufactured Products, and Construction Materials in Excess of the minimal use and/or the de minimis amounts are prohibited and shall be immediately replaced at no expense to the State. Failure to comply may also subject the Contractor to default, suspension, or debarment.

The entity 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, 2 CFR 200.322, and 2 CFR 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 Domestic Materials requirements.

De Minimis Waiver:

Notwithstanding the domestic materials requirements outlined in this section regarding Manufactured Products and Construction Materials, US DOT has adopted a limited, non-domestic content waiver regarding articles, materials, and supplies used in the project. As applicable here, US DOT has determined that it is in the public interest to waive domestic materials requirement for Manufactured Products and Construction Materials for which:

The total value of the non-compliant products is no more than the lesser of \$1,000,000 or 5% of total applicable costs for the project. In applying the waiver:

1. "Total value of non-compliant products" does not include the value of those products subject to a separate Buy America Waiver.
2. "Total applicable project cost" (as defined by the NEPA finding, determination, or decision and referenced in Form 25D-60) include the cost of materials used in the project that are subject to a domestic preference requirement, including materials that are within the scope of an existing waiver.

("Total value of non - compliant products" (Construction Materials + Manufactured Products))

(" Total applicable project costs" (Iron + Steel + Manufactured Products + Construction Materials)) x100

HSP20.7B-25.1030

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

106-1.05 CERTIFICATES OF COMPLIANCE.

Replace the first four paragraphs of 106-1.05 with the following:

A certificate of compliance must meet one of the following:

1. If by manufacturer's certification, the certificate must include the project name and federal project number, the quantity represented, the signature of the manufacturer, and must include information that clearly demonstrates the material or assembly complies with all Contract requirements including for domestic materials preference.
2. If by Contractor's summary sheet, the summary sheet must include the project name and federal project number, the quantity represented, the signature of the contractor, and must include attached documentation that clearly demonstrates the material or assembly fully complies with all Contract requirements including for domestic materials preference.

HSP20.7B-25.1030

**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. IF NO PERMITS REQUIRED, THIS SECTION TO BE DELETED. CONFIRM WITH ENVIRO
- b.

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. EXPECT TO DELETE THIS SECTION, CONFIRM WITH ENVIRO

C107.5-17.12011-1

Add No. 11:

11. A Municipality of Anchorage (MOA) Right-of-Way Use permit will be required. The Municipality will require a copy of the approved Traffic Control Plan and a copy of the Notice to Proceed from the Contractor. IF NO MOA ROW USE PERMIT REQUIRED, THIS SECTION TO BE DELETED. CONFIRM WITH ROW.

C107.6-17.1201-1

Standard Modification

107-1.06 SANITARY, HEALTH, AND SAFETY PROVISIONS.

Replace the fourth paragraph with the following:

The Contractor is responsible for ensuring all workers are adequately protected. The Contractor shall have a safety and health management program that complies with AKOSH requirements, and includes:

1. A Site Specific Safety Plan(s) (SSSP) prior to the commencement of work. This plan must outline the safety measures and procedures to be followed on-site, ensuring compliance with all applicable federal, state, and local safety regulations.

2. The SSSP shall be accessible to all contractor personnel and subcontractors, and provided to the Department upon request.
3. A hazard analysis prior to the commencement of work. It must specifically focus on the job functions and the hazards associated with performing them. The contractor is responsible for ensuring that all necessary personnel are informed of and follow the hazard analysis guidelines.
4. New employee training and periodic worker training regarding safety and health.
5. Regular safety meetings with written documentation of attendance, safety topics discussed, worker safety complaints, and corrective actions taken; and
6. The Contractor shall implement a comprehensive Safety Program to oversee site safety, including the development and maintenance of the SSSP, hazard analysis, employee training, and safety meetings. The program must ensure compliance with safety regulations and promote a proactive safety culture. For specific tasks, refer to Subsection 108-1.03.

HSM20.49-25.0610

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

Add the following:

Eagles. Eagles are protected under 16 U.S.C. 668-668c Protection of Bald and Golden Eagles, that prohibits "takes" of eagles, their eggs, nests, or any part of the bird. The Act defines "taking" as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb."

Maintain a Primary Zone of minimum 330-feet as an undisturbed habitat buffer around nesting eagles. If topography or vegetation does not provide an adequate screen or separation, extend the buffer to 1320-feet, or a sufficient distance to screen the nest from human activities. The actual distance will depend on site conditions and the individual eagle's tolerance for human activity. Within the Secondary Zone, between 330-feet and 660-feet from a nest tree, no obtrusive facilities, or major habitat modifications shall occur. If nesting occurs in sparse stands of trees, treeless areas, or where activities would occur within line-of-site of the nest, extend the buffer up to 2640-feet. No blasting, logging and other noisy, disturbing activities should occur during the nesting period (February 1 – August 31) within the primary or secondary zones.

Do not disturb a nesting eagle. Notify the Engineer when an active eagle nest is within the primary or secondary zones. **EXPECT TO DELETE THIS SECTION, CONFIRM WITH ENVIRO**

C107.1-18.1001

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

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

108-1.03 PROSECUTION AND PROGRESS.

Replace item 9. with the following: The Contractor shall provide a letter designating a Safety Officer, and designating that person's responsibilities and authority. The Safety Officer is responsible for the Safety Program. The Safety Officer must be familiar with the project plans, specifications, and proposed operations and have the necessary experience and training to assess and address safety elements associated with the project.

Add the following:

10. The Contractor shall implement a comprehensive Safety Program for the Project to ensure all safety measures are met throughout the duration of the project and that the program complies with all applicable federal, state, and local safety regulations.

Requirements. The Safety Program shall include the development, implementation, and ongoing maintenance of the Site-Specific Safety Plan (SSSP), along with the preparation and regular updating of hazard analyses to identify and mitigate risks associated with specific construction activities. It shall ensure that the site complies with project-specific safety requirements, OSHA/AKOSH regulations, and oversees the appropriate use of personal protective equipment (PPE) on-site.

The program will involve routine safety inspections to identify hazards, site-specific safety orientations, and ensure all personnel and Subcontractors receive the necessary training in accordance with AKOSH/OSHA standards. It will also establish procedures for investigating incidents, injuries, and near misses, with corrective actions implemented as needed. Detailed records, such as safety meeting minutes, training logs, incident reports, safety audits, and inspections shall be maintained. Safety reports shall be submitted to the project manager, engineers, or clients as requested.

The Safety Program shall have clear procedures for halting work and implementing immediate corrective actions if safety concerns arise, or if the work is not being conducted in compliance with the Contract documents, safety standards, or applicable federal, state, and local laws.

HSM20.50-25.0610

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

**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 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

Blank Page

**SECTION 201
CLEARING AND GRUBBING**

Special Provisions

201-3.01 GENERAL.

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

**SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS**

Special Provisions

202-1.01 DESCRIPTION.

Add the following:

Pavement Planing: remove and dispose, salvage and store or reuse planed pavement material.

C202.3-20.0401

Add the following:

Existing Weigh-In-Motion (WIM) Slab: remove and dispose of the existing WIM slab and associated materials including but not limited to loop sensors, electrical components, conduit runs, and junction boxes. The existing Type 2 CBA cabinet is to remain.

CFHWY01073

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 202-3.07 Pavement Planing:

202-3.07 PAVEMENT PLANING. Remove existing asphalt pavement by cold planing. Adjust the planing machine to remove all ruts in the roadway surface and as directed. Plane a uniformly fine milled textured surface.

Remove planed material from the project immediately after planing and dispose of planed material not accepted by the Maintenance Station, not used in the project, and not wanted by the Contractor outside the right-of-way project limits according to Subsection 202-3.06.

Notify the Engineer of pavement areas that may be thin or unstable. When the planing equipment breaks through the existing pavement, repair the pavement as specified in Sections 401 and 408. Repair with Section 401 HMA; Type II, Class B, except use the HMA type specified for the immediate layer of HMA above the planed surface when Type II, Class B HMA is not included in the project.

The pavement material planed from the project roadway is the property of the Department. Planed material not claimed by the Department is the property of the Contractor.

Stockpile the Department's planed material at the Anchorage maintenance station located at 5300 E Tudor Road. Coordinate with Kayce Eliason, Maintenance Foreman, telephone number 907-338-1466 for acceptance of material and desired location of stockpile.

Planed material, that is the property of the Contractor, may be used in the project with written approval.

- In the embankment construction, Section 203,
- As shoulder buttressing, Section 301,
- As recycled asphalt pavement, Section 306,
- As directed.

During planing operations, sweep the streets according to 643-3.04 Traffic Control Devices, No. 6. Street Sweeping and Power Brooming to control dust and remove loose material from the planed areas. The removal operation shall follow within 50 feet of the planing machine.

Do not allow traffic to travel on surfaces that have an abrupt longitudinal planed edge greater than 2 inches. Place an asphalt pavement transition, 2 feet in width, adjacent to the edge and to gutters.

Where existing asphalt pavement overlays gutters adjacent to the area planed, remove the existing pavement.

Do not damage or disturb the existing curb, gutter, and edge of existing Portland cement pavement not designated for removal. Remove and replace damage caused by the Contractor's planing operation at the Contractor's expense.

Provide a capable planing machine:

1. Self-propelled and capable of milling at speeds from 0 ft to 40+ ft per minute.
2. Able to spray water inside the milling chamber to reduce dust.
3. Able to mill adjacent to a gutter without damaging gutter.
4. Automatic cross slope and depth control combined with automatic longitudinal grade control actuated by sonic or laser ski sensors.
5. Produce a "fine milled" textured surface with a tool spacing of 5/16 inch.
6. Able to uniformly maintain a planar surface across adjacent lanes (no elevation differential or ridges between adjacent passes).

Provide a small machine (producing a "fine milled" textured surface) to trim areas that are inaccessible to the larger machine at manholes, valve covers, curb returns, and intersections.

The Engineer may reject any machine that does not comply with the above noted requirements.

C202.3-20.0401

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

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 202.0001.____. Payment includes removing and disposing of the existing WIM slab and all associated components except for the existing CBA2 cabinet.

CFHWY01073

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

**SECTION 203
EXCAVATION AND EMBANKMENT**

Special Provisions

203-3.01 GENERAL.

Add No. 5 after the 11th paragraph:

5. within 50 feet of detection loops.

C203.4-15.0220-1

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 204
STRUCTURE EXCAVATION FOR CONDUITS AND MINOR STRUCTURES**

204-1.01 DESCRIPTIONS. Excavate and backfill for conduits (pipe culverts, structural plate pipe, pipe arches, storm drains, underdrains, and electrical conduits), headwalls, manholes, inlet boxes, and other minor structures.

Dewater ground water from work areas. Construct and maintain temporary water diversion when working in waterways, and for facilities or structures with active drainage.

Perform all pumping, bailing, draining, sheeting, bracing, and incidentals required for proper execution of the work.

204-2.01 MATERIALS. Use materials that conform to the following:

Selected Material	Subsection 703-2.07
Porous Backfill Material	Subsection 703-2.10

1. Structure Backfill and Bedding Material.

a. Selected Material, Type A.

- (1) Material passing the 1-inch sieve.
- (2) Material passing the 1/2-inch sieve for plastic conduits less than 8 inches in diameter.

b. Porous Backfill Material.

Uniform porous backfill material for underdrain conduit.

- (1) Material passing the 1-inch sieve for conduit 3-inch to 10-inch diameters.
- (2) Material passing the 2-inch-sieve for conduit 12-inch to 60-inch diameters.

2. Backfill Material: Selected Material Type C

In the roadbed structure use backfill material meeting the requirements of the roadbed structure, except use the structure backfill material and bedding as specified herein.

Use all suitable material from the project excavation for bedding, structure backfill, and backfill material before using material from another source.

204-3.01 CONSTRUCTION REQUIREMENTS. Clear and grub prior to starting excavation according to the requirements of Section 201.

Keep the work areas dewatered and divert water when working in a waterway or active drainage, Subsection 204-3.02.

Remove and dispose, Subsection 203-3.01, of unsuitable foundation material, including rock or other unyielding material, below the designed elevation as directed, except no less than 6 inches, and replace with approved material.

Place bedding material to a minimum thickness of 4 inches, except 6-inch minimum thickness for conduit over rock or unyielding material, and below electrical conduit, unless shown otherwise in the plans.

Place the bedding material to provide uniform support for conduit with the material in the middle one-third loosely placed and not compacted. Do not shape the bedding to the curvature of the round conduits. Shape the bedding for pipe arches, horizontal ellipse, and underpass shapes with spans exceeding 12 feet. Provide a minimum shaped width one-half the span of the pipe arch and underpass shapes and one-third the span of horizontal ellipse shape. Shape the bedding to the relatively flat bottom arc or fine-grade the foundation to a slight "V" shape.

Place minor precast concrete structures, other than conduits, on the 4-inch bedding/leveling course, of uniform stiffness and thickness with even compaction throughout.

Place the structure backfill over the bedding each side of the structure to 12 inches above the structure or the ground surface if less than 12 inches, except 6 inches above electrical conduit.

Place the structure backfill and backfill material in uniform layers not more than 6 inches deep. Do not create unbalanced loading with the placement of the structure backfill materials. When placing material against concrete, place the material according to the requirements of Section 550.

Compact the materials, each layer, without ponding or jetting to meet Subsection 203-3.04. In the haunch area, each side of the conduit, compact the material by firmly tamping into place.

Outside the roadbed structure, the Engineer may visually inspect and approve the excavation, bedding, structure backfill, backfill material, and compaction.

Support and protect existing conduits or utilities, not scheduled for removal or abandonment, when encountered in the excavation.

Remove all sheeting and bracing used in structure excavation upon completion of the work.

204-3.02 DEWATERING AND WATER DIVERSION. Submit a plan for work area dewatering and each waterway diversion, 14 days before related construction activities. Do not implement the plan without written approval. Include the permit requirements in the plan.

1. Do not exceed State of Alaska water quality standards.
2. Do not divert water from dewatering into a waterway.
3. Provide an approved disposal site for work area excess water. Maintain disposal site a minimum of 100 ft from waterway.
4. Prevent turbid water from directly entering waterways.
5. Do not divert water onto the roadway.

204-4.01 METHOD OF MEASUREMENT. Section 109. Use neat line method as follows:

Structure Excavation:

1. Masonry Structures (except conduit). Between vertical planes, 18 inches outside the base of the masonry sections for the depth required.
2. Conduit. Between parallel vertical planes located 18 inches outside the horizontal projection of the outside diameter of the conduit and to the depth shown on the Plans.

Structure excavation only measured below the limits of other classes of excavation. Structure's in embankment section, the natural ground line as cross-sectioned is the uppermost level of computation.

204-5.01 BASIS OF PAYMENT. The Contract price includes the placing and compacting of all backfill and bedding when the materials used are obtained from excavation, any clearing and grubbing required and not paid for under some other item, formation of any embankments made with surplus material from structure excavation, and disposal of all surplus or unsuitable excavation.

Culvert baffles, headwalls, temporary water diversion, dewatering and rewatering, and the removal of pavement are subsidiary to the conduit and minor structure Pay Items.

Additional excavation to provide for shoring, sheet piles, excavation shields or flattening the excavation slopes, is subsidiary.

When item 204.0001.____, 0002.____, or 0003.____ structure Excavation, does not appear in the bid schedule, structure excavation required to complete other items of work is subsidiary, except that excavation and disposal of unsuitable material required from below a plane 12 inches below the invert elevation of conduits and 12 inches below the bottom of structures is paid as extra work.

Any backfill or bedding material required whose source is other than project excavation is paid at the contract unit price for the materials being used, or as extra work if no unit price has been established.

Traffic control paid under Section 643 and Erosion, Sediment, and Pollution Control paid under Section 641.

PAY ITEM		
Item Number	Item Description	Unit
204.0001.____	Structure Excavation	CY
204.0002.____	Structure Excavation	Ton
204.0003.____	Structure Excavation	LS

C204-24.0501

DIVISION 300 — BASES

Blank Page

**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 (\pm 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

Special Provision

Replace Section 306 with the following:

**SECTION 306
ASPHALT TREATED BASE COURSE**

306-1.01 DESCRIPTION. Construct a plant-mixed asphalt treated base (ATB) course on an approved foundation to the lines, grades, and depths shown in the Plans. Recycled asphalt pavement (RAP) may be used in the mix as specified herein.

306-1.02 REFERENCE.

1. Section 401, Hot Mix Asphalt and Surface Treatments.

MATERIALS

306-2.01 ASPHALT BINDER. Conform to 702-2.01. If asphalt binder is not specified use PG 52-28.

The total asphalt binder content may be a combination of the asphalt binder specified and the residual asphalt binder in the RAP.

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 anti-strip added.

306-2.02 LIQUID ANTI-STRIP ADDITIVE. Use anti-strip agents in the proportions determined by ATM 414 and included in the approved JMD. At least 70% of the aggregate must remain coated when tested according to ATM 414. A minimum of 0.25% by weight of asphalt binder is required.

306-2.03 RESERVED.

306-2.04 RESERVED.

306-2.05 RESERVED.

306-2.06 ASPHALT RELEASE AGENT. Conform to Subsection 702-2.08.

306-2.07 AGGREGATES. Conform to Subsection 703-2.04. Type II, Class B (IIB) total combined aggregates.

Use a minimum of three stockpiles for crushed ATB aggregate (coarse, intermediate, and fine). Place RAP, blend material and mineral filler in separate piles.

306-2.08 RECYCLED ASPHALT PAVEMENT. Recycled asphalt pavement (RAP) may be used in the production of ATB. The RAP may be from pavements removed under the Contract, or from an existing stockpile. Conform to Subsection 703-2.16. Stockpile the material separately from the crushed aggregates. Perform one gradation and one asphalt binder content test for every 1000 tons of RAP or a minimum of 10 sets of tests whichever is greater.

306-2.09 JOB MIX DESIGN (JMD). Design the JMD according to the Alaska Test Manual (ATM) 417 using the design requirements of Table 306-1 and as specified herein. Recycled Asphalt Pavement may be used to supplement the aggregate and asphalt binder in the ATB.

**TABLE 306-1
ATB DESIGN REQUIREMENTS**

DESIGN PARAMETERS	CLASS "B"
ATB (Including Asphalt Binder)	
Stability, Pounds	1200 min.
Flow, 0.01 Inch	8 - 16
Voids in Total Mix, %	3 - 5
Compaction, Number of Blows Each Side of Test Specimen	50
Asphalt Binder	
Percent Voids Filled with Asphalt Binder (VFA)	65 - 78
Asphalt Binder Content, Min. %	5.0
Dust-Asphalt Ratio*	0.6 - 1.4
Voids in the Mineral Aggregate (VMA), %, Min.	
Type II	12.0
Recycled Asphalt Pavement (RAP)	
RAP, Max. %.	25

*Dust-asphalt ratio is the percent of material passing the No. 200 sieve divided by the percent of effective asphalt binder.

The JMD will specify the Target Values (TV) for gradation, the TV for asphalt binder content, the Maximum Specific Gravity (MSG) of the ATB, the additives, and the allowable mixing temperature range.

Target values for gradation in the JMD must be within the broad band limits shown in Table 703-4. For acceptance testing, ATB mixture will have the full tolerances in Table 306-2 applied.

Do not mix ATB produced from different plants for testing or production paving. ATB from different plants will be rejected.

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

1. A letter stating the location, size, and type of mixing plant, the proposed gradation for the JMD including gradations for individual virgin aggregate (aggregate) stockpiles and the RAP stockpile. Provide supporting process quality control information; including the blend ratio of each aggregate stockpile, the RAP stockpile and the RAP asphalt binder content. For mixes with RAP, provide JMD gradation with and without RAP. Provide calibration data if ATM 406 is used for RAP process control.
2. Representative samples of each aggregate (coarse, intermediate, fine, blend material and mineral filler, if any) and RAP required for the proposed JMD. Furnish 100 lbs of each intermediate and/or coarse aggregate, 200 lbs of fine aggregate, 25 lbs of blend sand, and 200 lbs of RAP.
3. Three separate 1-gallon samples, minimum, of the asphalt binder proposed for use in the ATB. 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 (MSDS).

4. One sample, of at least 1/2 pint, of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current MSDS.

The Engineer will evaluate the material and the proposed gradation using ATM 417 and Table 306-1 ATB Design Requirements.

The mix, the materials and proposed gradation meeting the specification requirements will become part of the Contract when approved, in writing, by the Engineer.

Failure To Meet Specification Requirements

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

1. The results do not achieve the requirements specified in Table 306-1
2. The asphalt binder source is changed
3. The source of aggregate, aggregate quality, gradation, or blend ratio is changed
4. The source of RAP is changed

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

Payment for ATB will not be made until the new JMD is approved. Approved changes apply only to ATB 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 306-5.01.

306-2.10 PROCESS QUALITY CONTROL. Sample and test materials for quality control of the ATB according to Subsection 106-1.03. Submit, at the "pre-paving meeting", Subsection 306-3.01, the JMD, and a documentation plan that provides a complete, accurate, and clear record of the sampling and testing results. When directed, adjust the plan and resubmit.

Failure to perform quality control forfeits the Contractor's right to a retest under Subsection 306-4.02.

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

CONSTRUCTION REQUIREMENTS

306-3.01 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, laydown, and compaction
 - c. Reserved
 - d. Procedures to produce consistent ATB
 - e. Procedures to minimize material and thermal segregation
 - f. Procedures to minimize premature cooling
 - g. Procedures to achieve ATB Density
 - h. Procedures for joint construction including corrective action for joints that do not meet surface tolerance requirements, irregularities
 - 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 ATB 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

306-3.02 CONTRACTOR QUALITY CONTROL. Perform quality control (QC) of ATM materials in accordance with Subsection 106-1.03.

306-3.03 WEATHER LIMITATIONS. Place ATB on a stable/non-yielding roadbed. Do not place ATB when the base material is wet or frozen, or when weather conditions prevent proper handling or finishing of the mix. Do not place ATB when the roadway surface temperature is colder than 40°F, or after September 15th without the Engineer's approval in writing.

306-3.04 EQUIPMENT, GENERAL. Use equipment in good working order and free of ATB buildup. Make equipment available for inspection and demonstration of operation a minimum of 24 hours before placement of production ATB.

306-3.05 ASPHALT MIXING PLANTS. Meet AASHTO M 156. Use an asphalt 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 asphalt plant and furnish copies of the calibration data to the Engineer at least 24 hours before ATB production.

When using recycled asphalt pavement material, mix the RAP with the aggregate before the aggregate enters the plant thereby adding the RAP combined with the aggregate to the asphalt treated base mixture at one time.

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

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 requirement for weighing equipment and are calibrated according to the manufacturer's instructions.

306-3.06 HAULING EQUIPMENT. Haul ATB 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 vehicle with covers attached and available for use. When directed by the Engineer, cover the ATB in the hauling vehicle(s).

Do not haul ATB on barges.

306-3.07 ASPHALT PAVERS. Use self-propelled asphalt pavers with heated vibratory screed assemblies to spread and finish ATB 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 ATB 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 ATB. 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 ATB 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.

306-3.08 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Use rollers designed to compact ATB and capable of reversing without shoving or tearing the mixture. Select rollers that will not crush the aggregate or displace the ATB.

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 rollers having a minimum operating weight of 3000 pounds per tire.

306-3.09 RESERVED.

306-3.10 PREPARATION OF EXISTING SURFACE. Prepare base surface according to the Contract.

Prior to placing the ATB, clean existing surfaces of loose material and uniformly coat contact surfaces of curbing, sawcut pavement, cold joints, gutters, manholes and other structures with tack coat material (Section 702) as specified here and in Section 402. Allow tack coat to break before placing ATB on these surfaces. Do not apply the tack coat material until the Engineer approves the existing surface.

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. Wash and/or sweep the paved surface clean and free of loose materials.

306-3.11 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.

306-3.12 PREPARATION OF AGGREGATES. Dry the aggregate so the moisture content of the ATB, 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 ATB, and the RAP when being used in the mix, 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. ATB containing soot or fuel is unacceptable (Subsection 105-1.11).

306-3.13 MIXING. Combine the aggregate, asphalt binder, and additives in the mixer in the amounts required by the JMD. Mix to obtain 98% coated particles when tested according to AASHTO T 195.

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

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

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

306-3.14 TEMPORARY STORAGE. Silo type storage bins may be used, provided the characteristics of the ATB 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 ATB on barges.

306-3.15 PLACING AND SPREADING. Use asphalt pavers to distribute ATB. Place the ATB 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 ATB surface immediately behind the paver for temperature uniformity. Contractor, immediately adjust laydown procedure to maintain a temperature differential of 25°F or less. Thermal images and thermal profile data will become part of the project record and shared with the Contractor.

Do not cover/place material over the asphalt treated base material until the ATB material throughout that section, as defined by the Paving Plan, is placed and accepted.

Do not place ATB 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 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 ATB in areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable.

Do not place ATB over bridge deck membranes, except as directed by the Engineer.

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

306-3.16 COMPACTION. Compact the ATB by rolling thoroughly and uniformly. In areas not accessible to large rollers, compact with mechanical tampers or trench rollers.

Prevent indentation of the mat. Do not leave rollers or other equipment standing on ATB that is not sufficiently cooled.

The Lower Specification Limit for density is 92% of the Maximum Specific Gravity (MSG) as determined by ATM 410 using a 6-inch diameter core. A mat area with density lower than 92.0% 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 of the approved JMD is used for the first lot of ATB. The MSG for additional lots is determined from the first subplot of each lot.

306-3.17 JOINTS. Place and compact the ATB to provide a continuous bond, texture, and smoothness between adjacent sections of the ATB.

Coordinate the joints in the ATB pavement layer with the layer of HMA pavement above. 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 the HMA pavement layer above from the joint in the ATB asphalt pavement layer immediately below by at least 6 inches.

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 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.

Remove to full depth improperly formed joints resulting in surface irregularities according to the corrective action plan.

306-3.18 SURFACE REQUIREMENTS AND TOLERANCE. The finished surface of all ATB 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 ATB 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 1/4-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 ATB 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 ATB to match the existing pavement. Use the same approved ATB. Place a minimum thickness of 2.0-inches.

306-3.19 REPAIRING DEFECTIVE AREAS. Remove ATB that is contaminated with foreign material, is segregated (determined visually or by testing), flushing, or bleeding asphalt. Remove and dispose defective ATB 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 ATB so that compaction, grade, and smoothness requirements are met.

306-3.20 ROADWAY MAINTENANCE. Inspect daily according to pavement inspection plan. Remove, and dispose of project materials incorrectly deposited on existing and new pavement surface(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.

306-3.21 RESERVED.

306-4.01 METHOD OF MEASUREMENT. Section 109 and the following:

1. Asphalt Treated Base.
 - a) By weighing. No deduction will be made for the weight of asphalt binder or anti stripping additive or cutting back joints.

2. Asphalt Binder. By the ton, 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 will be made for any asphalt binder more than 0.4% above the optimal asphalt binder content specified in the JMD.

Method 1: Percent of asphalt binder for each subplot multiplied by the total ATB weight represented by that subplot. The Engineer will use either ATM 405 or ATM 406 to determine the percent of asphalt binder. The same tests used for the acceptance testing of the subplot will be used for computation of the asphalt binder quantity. If no acceptance testing is required, the percent of asphalt binder is the target value for asphalt binder in the JMD.

Method 2: Supplier's invoices minus waste, diversion, and remnants. This procedure is an Engineer's option for projects where deliveries are made in tankers and the asphalt plant is producing ATB 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 ATB will be calculated using the target value for asphalt binder as specified in the JMD.

3. ATB Price Adjustment. By the fees specified in Subsections 306-4.02, and 5.01.

4. Asphalt Material Price Adjustment. Determined under Subsection 306-4.04.

306-4.02 ACCEPTANCE SAMPLING AND TESTING.

1. Asphalt Treated Base

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

A lot is normally 10,000 tons. The lot is divided into sublots of 1000 tons, each randomly sampled and tested for asphalt binder content, density, and gradation according to this subsection. The lot is evaluated for acceptance according to Subsection 306-4.03. 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 acceptance 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 subplot 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 acceptance will be based on the actual number of test results in the shortened lot. If there are less than 3 sublots, the ATB will be accepted for payment based on the Engineer's approval of the JMD, and placement and compaction of the ATB 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 acceptance will be based on the actual number of test results (excluding outliers) in the shortened lot.

If the bid quantity is between 3,000 to 10,000 tons, the quantity is considered one lot. The lot is divided into sublots of 1000 tons, and each randomly sampled and tested for asphalt binder content, density, and gradation according to this subsection.

ATB quantities of less than 600 tons remaining after dividing the Contract quantity into sublots will be included in the last subplot. ATB quantities of 600 tons or greater will be treated as an individual subplot.

For bid quantity less than 3,000 tons, ATB will be accepted for payment based on the Engineer's approval of a JMD and the placement and compaction of the ATB to the specified depth and finished surface requirements and tolerances.

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

- a. Asphalt Binder Content. ATB 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, except ATM 405 will not be used when RAP is included in the mixture.

- b. Aggregate Gradation. Aggregates tested for gradation acceptance will have the full tolerances from Table 306-2 applied. For ATB 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 mat core sample. 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.

Take core samples according to ATM 413 in the presence of the Engineer. Cut full depth core samples centered on the marks from the finished ATB 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 ATB 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 306-2.10 Process 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 to evaluate the material for acceptance. 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 evaluation. Except for the first lot, retesting for gradation or asphalt binder from the first subplot 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 will normally be 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 bid 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 ($[\text{acceptance} + \text{retest}]/2$) 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 ($[\text{acceptance} + \text{retest} + \text{referee}]/3$) equals the ATV. If the ATV fails to meet specifications, the Contractor pays for the referee test.

306-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. A mat area of finished surfacing that is contaminated with foreign material; is segregated (determined visually or by testing), has a lower density than specified, fails to meet surface tolerance requirements, is flushing or bleeding asphalt binder after compaction is complete, or in any other way determined to be defective is unacceptable according to Subsection 105-1.11. ATB, not meeting the specified limits noted in Table 306-2, is considered defective. Correct unacceptable work and materials according to Subsection 306-3.19 and as directed by the Engineer.

**TABLE 306-2
LOWER SPECIFICATION LIMIT (LSL) & UPPER SPECIFICATION LIMIT (USL)**

Measured Characteristics	LSL	USL
3/4-inch sieve 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.

Asphalt binder will be randomly sampled and tested in accordance with Subsection 306-4.02. Provide supplier process control test results with the delivery ticket for each load of asphalt binder to the Engineer before unloading asphalt binder at the project. No payment will be made without this documentation.

306-4.04 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/desmmaterials/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 = $[(IPP - IB) - (0.075 \times IB)] \times Q$

For a decrease exceeding 7.5%, deduction from contract = $[(IB - IPP) - (0.075 \times IB)] \times Q$

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.

306-5.01 BASIS OF PAYMENT. The following items, unless included as individual Pay Items, are subsidiary to the Section 306 Asphalt Treated Base Course related Pay Items as included in the bid schedule:

- Asphalt binder
- Liquid anti-strip additives
- Tack coat
- Joint adhesive
- Surface tolerance corrections
- Repairing defective areas
- Job mix design
- Density profiles, Subsection 306-2.10 Process Quality Control
- Removal and disposal of rejected ATB
- Work and materials associated with Subsection 306-3.06 Hauling Equipment
- Work and materials associated with Subsection 306-3.10 Preparation of Existing Surface
- Work and materials associated with Subsection 306-3.20 Roadway Maintenance

Item 306.2001.____. ATB, Price Adjustment, Type ____; Class __: is the sum of the price adjustment for the fees assessed. Deductions and fees assessed include:

- A fee of \$6000 is assessed for each mix design evaluation subsequent to the approved Job Mix Design.
- Failure to cut core samples within the specified period will result in a fee of \$100.00 per sample per day.
- Failure to backfill voids left by sampling within the specified period will result in a fee of \$100 per hole per day.
- Contractor retesting, referee sample testing and Contractor requested testing for visually inspected and rejected asphalt treated base failing to meet specifications will result in a fee being assessed for all costs associated with the test.

Item 306.2002.____. Asphalt Material Price Adjustment.

For each Section as included in Subsection 306-4.04 Asphalt Material Price Adjustment, item 1, 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		
Item Number	Item Description	Unit
306.0001.____	ATB	Ton
306.0002.____	Asphalt binder, Grade PG <u>##-## X</u>	Ton
306.2001.____	ATB, Price Adjustment, Type __; Class _	CS
306.2002.____	Asphalt Material Price Adjustment	CS

C306-25.1001

Blank Page

DIVISION 400 — ASPHALT PAVEMENTS AND SURFACE TREATMENTS

Blank Page

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

Special Provision

Add the following Section:

**SECTION 408
HOT MIX ASPHALT PAVEMENT – TYPE VH**

408-1.01 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 VH, except where noted otherwise.

408-1.02 REFERENCES.

1. Section 401 Hot Mix Asphalt Pavement. (HMA 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

408-2.01 ASPHALT BINDER. Conform to Subsection 702-2.01. If binder performance grade is not specified, use PG 64-40E.

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.

408-2.02 LIQUID ANTI-STRIP ADDITIVE. Use anti-strip agents in 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 408-2.02-1
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

408-2.03 JOINT ADHESIVE. Conform to Subsection 702-2.05.

408-2.04 JOINT SEALANT. Conform to Subsection 702-2.06.

408-2.05 WARM MIX ASPHALT. Conform to Subsection 702-2.07.

408-2.06 ASPHALT RELEASE AGENT. Conform to Subsection 702-2.08.

408-2.07 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.

408-2.08 RECYCLED ASPHALT PAVEMENT. Not allowed in connection with HMA Type **VH**.

408-2.09 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 for Table 408-1 for Type **VH** HMA.

**TABLE 408-1
HMA DESIGN REQUIREMENTS**

Design Parameters	
Design ESALs, Millions	0.3 to < 3
Rut Index, Max., ATM 419. mm	3
Asphalt Binder Content, Min. %	5.0
Liquid Anti-Strip Additive*, % Min.	0.3

* 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 include the proposed gradation for the JMD, gradation 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, of at least 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.

The Engineer will evaluate the material and the proposed gradation using ATM 417 or AASHTO R35 and the requirements of Table 408-1 for Type **VH** HMA, and establish the approved JMD which will become a part of the Contract.

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 408-1
 - 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 408-2.10 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 408-2.10.

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 408-5.01.

408-2.10 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 408-3.01, 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 408-4.02

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 408-3.04. 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 408-5.01 for payment of test strips.

CONSTRUCTION REQUIREMENTS

408-3.01 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, adjust 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. Reserved
 - 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

408-3.02 CONTRACTOR QUALITY CONTROL. Perform quality control (QC) of HMA materials in accordance with Subsection 106-1.03.

408-3.03 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, or after September 15th without the Engineer's approval in writing.

408-3.04 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 and test strip HMA.

408-3.05 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.

408-3.06 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.

When directed by the Engineer cover the HMA in the hauling vehicle(s).

408-3.07 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.

408-3.08 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.

408-3.09 RESERVED.

408-3.10 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 408-3.17. 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.

408-3.11 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.

408-3.12 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.

408-3.13 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.

408-3.14 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.

408-3.15 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° 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.

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

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.

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.

408-3.16 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 93.0% 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 subplot of each lot.

408-3.17 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 subplot, seal the surface of the longitudinal joints with joint sealant within that subplot 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 408-4.03.

408-3.18 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 408-4. 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 408-4.03.3.

408-3.19 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.

408-3.20 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.

408-4.01 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.
 - b. By the final HMA surface area.
2. Asphalt Binder. By weight, as follows:

Method 1 is 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 subplot multiplied by the total HMA weight represented by that subplot. 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 subplot 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 type.
4. Temporary Pavement. Per Section 401.
5. Leveling Course. Per Section 401.
6. HMA Price Adjustment. Calculated by quality level analysis under Subsection 408-4.03.1.
7. Longitudinal Joint Density Price Adjustment. By the linear foot of top lift longitudinal joint under Subsection 408-4.03.2.
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 408-4.03.3.
10. Asphalt Material Price Adjustment. Determined under Subsection 408-4.04.
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 408-3.10, 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 408-3.10(1), measured according to Section 109.
14. Repair Unstable Pavement. By the surface area of pavement repaired according to 408-3.10(2), measured according to Section 109.
15. Asphalt Binder Price Adjustment. Determined under Subsection 408-4.03.4.

408-4.02 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 408-4.03.1. 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 subplot 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 408-2 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 conveyor 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 408-3.02 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 subplot 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 ($(\text{acceptance} + \text{retest})/2$) 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 ($(\text{acceptance} + \text{retest} + \text{referee})/3$) equals the ATV. If the ATV fails to meet specifications, the Contractor pays for the referee test.

408-4.03 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 408-2, or as shown below. The TV is the specification value shown in the approved Job Mix Design.

**TABLE 408-2
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, %	93.0	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:

$$\text{CPF} = \frac{[f_{3/4 \text{ inch}} (\text{PF}_{3/4 \text{ inch}}) + f_{1/2 \text{ inch}} (\text{PF}_{1/2 \text{ inch}}) + \dots + f_{ac} (\text{PF}_{ac})]}{\Sigma f}$$

Table 408-3 gives the weight factor (f) for each test property considered.

**TABLE 408-3
WEIGHT FACTORS**

Property	Type VH Factor "f"
3/4-inch sieve	4
1/2-inch sieve	5
3/8-inch sieve	5
No. 4 sieve	4
No. 8 sieve	4
No. 16 sieve	4
No. 30 sieve	5
No. 50 sieve	5
No. 100 sieve	4
No. 200 sieve	20
Asphalt Content, %	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:

$$\text{HMA Price Adjustment} = [\text{Lowest Pay Factor}^* - 1.000] \times (\text{tons in lot}) \times (\text{PAB})$$

*Lowest Pay Factor, CPF or DPF

$$\text{PAB} = \text{Price Adjustment Base} = \$140.00 \text{ per ton.}$$

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 408-3.18. 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: $SPA = PAB \times PQ \times SF$,
where:

SPA = Pavement Smoothness Price Adjustment

PAB = Price Adjustment Base = \$140.00 per ton

PQ = Top layer HMA quantity, tons

SF = Smoothness Factor (Table 408-4)

**TABLE 408-4
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 408-3.18

Method 2: $SPA = PAB \times PQ \times SF$,

where:

SPA = Pavement Smoothness Price Adjustment

PAB = Price Adjustment Base = \$140.00 per ton

PQ = Top layer HMA quantity, tons

SF = Smoothness Factor = $0.120 \times RR - 0.020$; SF not to exceed 0.050

RR = Roughness Reduction = $(\text{Initial IRI} - \text{Final IRI}) / \text{Initial IRI}$

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 408-3.18.

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 408-4.03-1 Asphalt Binder Pay Factors.

**TABLE 408-4.03-1
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	$G^*/\text{Sin}\delta, \text{kPa}^{-1}$	≥ 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	$G^*\text{Sin}\delta, \text{kPa}$	≤ 4711	4712–5000	5001–5289	5290–5578	5579–5867	> 5867
	PG 52-40 E, PG 58-34 E	$G^*\text{Sin}\delta, \text{kPa}$	≤ 5700	5701–6000	6001–6300	6301–6600	6601–7000	> 7000
CS ^(a.4 & 5)	All Grades ^(a.4)	BBR, <i>S</i> , MPa	≤ 247	248–300	301–338	339–388	389–449	≥ 450
	All Grades ^(a.5)	BBR, <i>m</i>	≥ 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, $G^*/\text{Sin}\delta, \text{kPa}^{-1}$

(2) MSCR: PG, Select the highest pay factor corresponding to, either $J_{NR\ 3.2}$ or % Rec_{3.2} values

PAV

(3) DS, PG, $G^*\text{Sin}\delta, \text{kPa}$

(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.

408-4.04 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 = $[(IPP - IB) - (0.075 \times IB)] \times Q$

For a decrease exceeding 7.5%, deduction from contract = $[(IB - IPP) - (0.075 \times IB)] \times Q$

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.

408-5.01 BASIS OF PAYMENT. The following items, unless included as individual Pay Items, are subsidiary to the Section 408 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 408-2.10 Process Quality Control
- Repair work and materials when planing equipment breaks through existing pavement – Subsection 408-3.10 Preparation of Existing Surface
- Work and materials associated with Subsection 408-3.06 Hauling Equipment
- Work and materials associated with Subsection 408-3.20 Roadway Maintenance

Test Strips: Subsection 408-2.10 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 408.2008.____, 408.2009.____, 408.2010.____ and 408.2021.____ 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 408.2008.____ HMA Price Adjustment, Type __. 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 408.2008.____ HMA Price Adjustment, Type __, does not apply to the following:

- Driveway and approach HMA.
- HMA contract quantity is less than 1500 tons.

Pay Item 408.2009.____. Longitudinal Joint Density Price Adjustment. The total price adjustment.

Pay Item 408.2010.____. Pavement Smoothness Price Adjustment. The total price adjustment.

Pay Item 408.2015.____ Asphalt Material Price Adjustment.

For each Section as included in Subsection 408-4.04 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 408.2021.____. Asphalt Binder Price Adjustment. The sum of the price adjustments for each material lot.

PAY ITEM		
Item Number	Item Description	Unit
408.2001.____	HMA, Type __	Ton
408.2004.____	Asphalt Binder, Grade PG ##-## X	Ton
408.2007.____	Liquid Anti-Strip Additives	CS
408.2008.____	HMA Price Adjustment, Type __; Class __	CS
408.2009.____	Longitudinal Joint Density Price Adjustment	CS
408.2010.____	Pavement Smoothness Price Adjustment, Method _	CS
408.2014.____	Joint Adhesive	LF
408.2015.____	Asphalt Material Price Adjustment	CS
408.2020.____	HMA, Fiber Reinforced, Type VF	Ton
408.2021.____	Asphalt Binder Price Adjustment	CS

C408-25.0101

Blank Page

DIVISION 500 — STRUCTURES

Blank Page

**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% \pm 0.5%
A-A	6.0% \pm 0.5%
P	3.50% minimum ¹ and Super Air Meter (SAM) number \leq 0.20 ¹
DS	Not required

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

HSM20.23-21.1231

**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

Blank Page

DIVISION 600 — MISCELLANEOUS CONSTRUCTION

Blank Page

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./ft² 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 604
MANHOLES AND INLETS**

Special Provisions

604-1.01 DESCRIPTION.

Add the following:

For the purpose of this Section, "Utility" is the Anchorage Water and Wastewater Utility (AWWU), and the "Representative" is the Utility's **CONFIRM AWWU REPRESENTATIVE WITH UTILITIES PRIOR TO CERTIFICATION.**

Sanitary Sewer and Storm Drain Facilities – Condition Inspections and Item Replacement

Sanitary Sewer Facilities:

Coordinate with the Engineer and Utility; and participate in a pre-construction condition inspection, and a post-construction condition inspection of the sanitary sewer facilities.

Storm Drain Facilities:

Coordinate with the Engineer and participate in a pre-construction condition inspection of the storm drain facilities.

The pre-construction inspections may identify additional items, manhole metal frames, covers, lids, catch basin inlets and grates, to be repaired and or replaced. Make repairs and or replace additional facility items as directed by the Engineer.

C604.1-20.0615-1

604-2.01 MATERIALS.

Replace "Precast Concrete Manhole Sections Subsection 712-2.05" with the following:

Precast Concrete Products

Subsection 550-2.03, 712-2.05

C604.2-21.0601

604-3.01 CONSTRUCTION REQUIREMENTS.

Add the following:

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.

Sanitary Sewer and Storm Drain Facilities – Condition Inspections and Item Replacement

Contractor furnishes the required traffic control, including personnel to assist, while performing inspections.

The Contractor forfeits all right to assert pre-existing damage if the Contractor fails to participate in the inspections.

Make repairs and install the replacement facility items as shown in the Plans.

Sanitary Sewer Facilities:

During inspections the Utility Representative, the Engineer and the Contractor will observe each facility's location and condition. The Engineer will indicate the additional facility items to be replaced.

Provide 3 days advance written notice to the Utility scheduling a pre-construction inspection of the facilities. Conduct this inspection before pavement removal begins. Contact the Utility representative to determine where to send the written notice, (907) _____.

The Utility furnishes the sanitary sewer manhole frames and covers. Contact the Utility Representative to schedule the pick-up of the furnished materials. Allow 3 working days from the time contact is made to pick-up of the materials.

Salvage the replaced manhole frames and covers. Coordinate with, and deliver to the Utility the salvaged materials.

Provide written notice to the Utility scheduling a post-construction inspection of the facilities, after the paving operations are complete and 3 days in advance of the inspection.

Provide the Engineer a copy of the written notices.

Storm Drain Facilities:

Contact the Engineer, a minimum of 15 days in advance, to schedule a pre-construction inspection of the storm drain facilities. Conduct this inspection before pavement removal begins.

During inspections, the Engineer and Contractor will observe each facility's location and condition. The Engineer will indicate the additional facility items to be replaced.

Contractor furnishes the storm drain manhole frames and lids; and catch basin inlets and grates.

Storm drain materials and sanitary sewer materials not wanted by the Utility are the property of the Contractor. Dispose of construction and demolition materials according to Subsection 202-3.06.

604-5.01 BASIS OF PAYMENT.

Add the following:

Pay Items 604.0012.____, Item 604.0014.____, and Item 604.0015.____ include full compensation for labor, equipment, and incidental materials for installation, complete-in-place after final paving as accepted by the Engineer, including but not limited to:

- inspections
- removal and disposal of existing manhole metal frame and cover/lid; and catch basin inlets and grates
- repairs and installing the replacement materials
- adjusting the facility item down prior to the planing operation
- adjusting the facility item up prior to the paving operation

Repairs to facilities damaged or rendered inoperable, after the pre-construction inspection and before the final inspection, are the responsibility of the Contractor and no additional payment will be made.

All traffic control required for the inspections will be paid under the 643 Pay Items.

Except as being paid under Pay Item 604.0012.____, .0014.____, and .0015.____, existing manholes being adjusted by raising or lowering the frame or ring casting 12" or less – comply with Subsection 604-3.01, paragraph beginning, "adjust existing manhole or inlet ..." The corresponding Pay Item for this adjustment is 604.0004.____ Adjust Existing Manhole.

C604.1-20.0615-1

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

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

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 _____ NA _____ . 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

606-4.01 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

SECTION 608 SIDEWALKS

608-1.01 DESCRIPTION. Construct, or retrofit asphalt, or concrete sidewalks.

Sidewalk Section 608 includes "sidewalks", pathways, medians, curb ramps, miscellaneous on-grade concrete, and asphalt surfaces not addressed elsewhere in the specifications.

608-1.02 REFERENCES.

- | | | |
|----|-----------|---|
| 1. | ACI 303 | Cast-In-Place Architectural Concrete Practice |
| 2. | PCA PA124 | Finishing Concrete Slabs with Color and Texture |
| 3. | PCA SP021 | Color and Texture in Architectural Concrete |

608-1.03 SUBMITTALS – EXPOSED AGGREGATE, COLORED CONCRETE, PAINTED HMA AND PATTERN IMPRINTED CONCRETE AND HMA. Provide complete submittals (3 printed copies, except samples as specified below), to the Engineer for review and approval, at least 21 days before beginning construction of concrete and asphalt items. 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. Receive approval before beginning production.

Submit shop drawings, product data, specifications, certifications; manufacturers and installer's resumes, and samples as specified in Section 401, 501, 503, 608 and herein.

1. Shop Drawings, Product Data, Specifications, and Certifications.
 - a. Exposed aggregate finish: manufacturer's chemical surface retarder.
 - b. Integral concrete colorant: manufacturer's color chart, and chipset. Indicate color additive numbers and required dosage rates as part of the concrete mix submittal, Subsection 501-3.01.
 - c. Manufacturer's concrete pattern imprinting system.
 - d. Manufacturer's fabricated HMA pattern imprinting tool - shop drawings.
 - e. Methyl Methacrylate for coating HMA.
 - f. Other when requested by the Engineer.
2. Resumes.
 - a. Manufacturer.

Concrete. Provide documentation for five years of successful product performance, with a minimum of five completed projects and including but not limited to:

- Manufacturer's colorant, hardener, color cure, release agent, and sealer
- Batch Plant's mixing of manufacturer's colorants and other additives, and product delivery
- Manufacturer's pattern imprinting system

HMA. Provide documentation of two years and three projects successfully fabricating pattern imprinting tools and successful product performance applying MMA in similar applications to this Project.

b. Installer.

Concrete and HMA. Installer(s) with 2 years' experience and 3 successfully completed projects of similar configuration and method of installation.

In addition:

- 1) For projects with concrete integral colorant and or pattern imprint system, provide a minimum of one project using the proposed manufacturer's colorant and pattern imprint system.

3. Manufacturer's.

All manufacturers, listed and other, are required to submit for review and approval. Manufacturers of concrete colorant and pattern imprinting systems:

<u>Bomanite Corporation</u> P.O. Box 599 Madera, CA 93639 Ph: 303.369.1115 Fax: 303.291.0282 Email: bomanite.com	<u>Brickform, division of Solomon Colors, Inc.</u> 11061 Jersey Blvd. Rancho Cucamonga, CA 91730 Ph: 800.483.9628 Email: brickform.com	<u>Davis Colors</u> 3700 East Olympic Blvd. Los Angeles, CA 90023 Ph: 800.356.4848 Fax: 323.269.1053 Email: daviscolors.com	<u>L.M. Scofield Company</u> 6533 Bandini Blvd. Los Angeles, CA 90040 Ph: 323 720.3000 Fax: 323.720.3000 Email: Scofield.com
---	---	--	---

4. Pattern Imprinting, Coloring Concrete, and HMA Painting Plans.

Provide pattern imprinting, concrete coloring, and HMA painting plans to the Engineer for review and approval. Include the following, at a minimum, to achieve a final product that accurately represents, to scale, colored concrete, painted HMA and the pattern imprinted concrete and HMA (including the joints) elements:

- a. the sequence and schedule of operations,
- b. the proposed method of pattern imprinting,
- c. the method of coloring the concrete,
- d. the method of applying the MMA coating/paint to the HMA.

5. Exposed aggregate, Colored Concrete and Painted HMA and Pattern Imprinted Concrete and HMA Sample(s).

Provide one sample, equal to the width of the item, 6 ft x 6 ft maximum, 4 ft x 4 ft minimum, of each item for review by the Engineer. Demonstrate exposing the aggregate, the addition of colorant to the concrete, painting the HMA and pattern imprinting the concrete and HMA on each sample provided. Receive written approval of the sample prior to beginning production work.

Retain samples of binder(s), sand(s), aggregate(s), and color additive, used in the sample for comparison with the item production materials. Keep sample through completion of related work for use as a quality standard for finished work. Keep the sample through Project completion when requested by the Engineer.

608-2.01 MATERIALS. Use materials that conform to the following:

1. Concrete

Bed Course Material.....	Subsection 703-2.03
Joint Fillers	Subsection 705-2.01
Joint Sealers.....	Subsection 705-2.02
Concrete	Section 550, Class B
Acid Wash	Muriatic or Phosphoric
Admixtures.....	AASHTO M 194 Chemical Admixtures [†] ASTM C 494 Standard Specification for Chemical Admixtures for Concrete [†]
Curing Agents.....	ASTM C 309, Liquid Membrane-Forming Compounds for Curing Concrete [†]
Expansion Joints	AASHTO M-33 Preformed Expansion Joint Filler for Concrete (Bituminous Type)
Integral Color Agent	ASTM C 979 Standard Specification for Pigments for Integrally Colored Concrete
Reinforcing Steel	Section 503

[†] Compatible with colorant manufacturer.

Provide concrete for slabs according to Section 501, ACI 303R, 303.1, this specification and the material manufacturer's and supplier's written instructions.

Maximum slump 4-inch, except 8-inch maximum if using super plasticizers or mid-range water reducers. Mix used for sample(s) shall be the same as the production mix(s).

Concrete - Exposed Aggregate Finish. Provide aggregate from a single source. Keep aggregate for exposed aggregate finish separate from other project aggregate.

Concrete – Colored. Color concrete using an integral color, with a surface hardener, a color cure, a release agent, and a sealer compatible with colorant(s).

Concrete - Pattern Imprinted. Use a manufactured system designed to provide the pattern specified and a release agent compatible with the colorant.

2. Asphalt (HMA)

Bed Course Material	Subsection 703-2.03
Asphalt Binder, PG 52-28	Subsection 702-2.01
Aggregate, Type II or III	Subsection 703-2.04
Mix Design Requirements (ATM 417)	
Marshall Stability, pounds, min.	1000
Percent Voids, Total Mix	2-5
Compaction, Blows/side.....	50

Coating/Paint:

Material - Methyl Methacrylate (MMA).....	Subsection 712-2.17 (MMA only)
Color.....	Federal Standard 595, color 30111 (Brick Red)

3. Detectable Warnings

Cast iron detectable warning plates with truncated dome pattern, a slip resistant surface, and with handle or flange on bottom or approved equal. Detectable warning plates shall be coated with yellow polymer soaked finish. Detectable warnings shall be manufactured according to the 2006 U.S. DOT ADA Standards for Transportation Facilities.

CONSTRUCTION REQUIREMENTS

608-3.01 CONCRETE SIDEWALKS. Excavate to the required depth and to a width necessary to install and brace the forms. Shape and compact the foundation to a firm, even surface conforming to the section shown on the Plans. Replace soft and yielding material with approved material. Compact bed course material according to Subsection 203-3.04.

Use full depth forms made of wood or metal. Use forms that are straight, free from warp, and strong enough to resist the pressure of the concrete without springing. Coat forms with an approved form-release agent. Brace and stake the forms so that they maintain their position until their removal.

Thoroughly moisten the foundation immediately before placing the concrete.

Finish the surface according to Section 550-3.05. Do not plaster the surface. Edge all outside slab edges and all joints to a 1/4 inch radius.

Make expansion joints to the dimensions and spacing shown on the Plans and fill with the type of preformed expansion joint fill specified.

Divide the sidewalk into specified sections using dummy joints formed by a jointing tool or other acceptable means. Make dummy joints 1/3 the depth of the concrete and approximately 1/8 inch wide.

Form construction joints around all appurtenances such as manholes, utility poles, buildings, or bridges, extending into and through the sidewalk. Install preformed expansion joint filler 1/2 inch thick in construction joints. Extend the expansion joint material the full depth of the walk.

Apply joint sealer evenly to completely seal all joints.

Cure the concrete according to Section 550-3.06. During the curing period, exclude all pedestrian and vehicular traffic. Exclude vehicular traffic for additional time as directed.

The Engineer will test the finished surface with a 10-foot straightedge. Variations of more than 1/4-inch from the edge of the straightedge across or along the sidewalk surface, except at grade changes, are unacceptable. Portions of the sidewalk surface and pedestrian ramps less than 10 feet in width, or length may be tested using a shorter straightedge.

Exposed Aggregate, Colored Concrete and Painted HMA and Pattern Imprinted Concrete and HMA

Match the Project work to the approved sample. Significant differences in appearance (texture, color, pattern, or other) between adjacent panels/sections of work, from the approved sample including adjacent panels/sections similar to the approved sample yet significantly different to each other, as judged by the Engineer, will result in removal and replacement of the deficient panel(s)/section(s) of work.

Take all precautions to avoid damaging new and existing, concrete and asphalt.

Prevent surrounding materials from being discolored by the concrete and HMA and the HMA MMA coating (curbs, gutters, and other). When directed by the Engineer, in writing, remove stains and coatings on other concrete and or HMA, resulting from your work.

Where HMA paving is against; exposed aggregate finish, colored, pattern imprinted; colored and pattern imprinted concrete, place the concrete prior to asphalt paving. Do not place the HMA pavement until the concrete has cured sufficiently to prevent damage from the paving operation.

Acceptance of corrective work requires the Engineer's written approval. Repair all new and existing damaged concrete and HMA, including the removal of surface contaminants, to the satisfaction of the Engineer. The Engineer will not provide written approval until all damaged concrete and HMA is repaired.

1. Slab Types.

TABLE 608-3.01-1
SLAB TYPE REQUIREMENTS ^{a, b}

Type ^c	Description	Finish ^{d, e, f}	Added Color ^g	Added Pattern ^g	t ^h Inches	Reinforcing ⁱ (bar spacing each way)
a. & b.	Typical	Broom	—	—	4, 6	—
I	Broom	Broom	—	—	4	4x4 – W2.9xW2.9
					6	#5@12" O.C.
					8	#6@12" O.C.
II	Exposed Aggregate	Aggregate	—	—	4	4x4 – W2.9xW2.9
					6	#5@12" O.C.
III	Colored	Broom	Color Manufacturer	—	4	4x4 – W2.9xW2.9
					6	#5@12" O.C.
IV	Pattern Imprinted	Coordinate	—	Pattern Manufacturer	4	4x4 – W2.9xW2.9
					6	#5@12" O.C.
V	Colored & Pattern Imprinted	Coordinate	Color & Pattern Manufacturer		4	4x4 – W2.9xW2.9
					6	#5@12" O.C.

a. Sealer and Hardener: provide for all slabs.
b. Transition the slab at approaches as shown in the plans.
c. Type a. & b.; Pay Items 608.0001.____, are the "Typical" concrete sidewalk.
d. Broom: provide a medium broom finish.
e. Aggregate: provide a uniform color slightly darker than the typical uncolored slab with a uniform reveal according to ACI 303.1.
f. Coordinate: coordinate and provide finish as required by pattern imprint system manufacturer.
g. Color and Pattern: provide color and or pattern similar to that noted and available from the listed manufacturer(s). Provide color and pattern from the same manufacturer or provide from different manufacturers with a certification from each permitting warranted use of their product with the product of the other manufacturer. Use a release agent as approved by the manufacturer(s).
h. t: provide the slab thickness, denoted as "t"
i. Reinforcing: Provide welded wire fabric in sheets not rolls. Lap joints 1 1/2 mesh minimum.

2. Joints.

Lay out joints as shown or noted in the Plans and Specifications, if not shown or noted provide:

- a. Control Joints. Maximum spacing equals 12 ft. (also referred to as, "dummy joints")
- (1) the joint configuration should create a square or rectangle with the long side no more than 1.5 times the short side,
 - (2) space the control joint matching the width of the slab,
 - (3) at corners and intersections, align the joints parallel to the edge(s) of the intersecting slab.
 - (4) locate the joints equally spaced between the: ends/edges of slab, slab corners, slab intersections or a combination of one and another.
- b. Expansion Joints. Maximum spacing equals 36 ft.

Touch up pattern and finish edges with hand tools immediately after placing concrete and as directed by the manufacturer(s) and Engineer.

608-3.02 ASPHALT SIDEWALKS. Place bed course material in layers. Compact it according to Subsection 203-3.04.

Place asphalt material on the compacted bed course in one or more courses as indicated on the Plans. Compact it uniformly to required depth. Use a power roller of an acceptable type and weight. In areas inaccessible to the roller, use other approved methods.

608-3.03 CURB RAMPS. Construct curb ramps according to the details and the locations shown on the Plans. Follow the construction requirements of Subsection 608-3.01. Install detectable warnings.

Measure curb ramp slopes with a 24-inch electronic level. Calibrate and operate the level according to the manufacturer's instructions.

Provide the slab Type as identified here and elsewhere, Type a & b. Refer to 608-3.01.1 Slab Type, Table 608-3.01-1 Slab Type Requirements for further information.

608-3.04 DETECTABLE WARNINGS. Construct detectable warnings according to the details and the locations shown on the Plans. Install detectable warning plates by embedding plate flanges into cast-in-place concrete construction so there are no vertical changes in grade exceeding 0.25 inch or horizontal gaps exceeding 0.5 inch. Align pattern on a square grid in the predominate direction of travel. Install the same type of detectable warning plate throughout the project.

Detectable warnings shall be installed according to the 2006 U.S. DOT ADA Standards for Transportation Facilities.

608-3.05 ASPHALT – PATTERN IMPRINTED AND PAINTED. Construct pattern imprinted and painted HMA according to Subsection 608-3.02 Asphalt Sidewalks and as noted herein.

1. **Pattern.** Fabricate the imprint tool pattern to match standard brick dimensions in a running bond configuration with a slightly wider joint/indent spaced similar to the concrete expansion Joint.
2. **Painting.** Prepare the asphalt surface and apply the coating/paint according to the MMA manufacturer's instructions. Apply coating (MMA) completely covering the asphalt surface including pattern imprint. Do not fill the pattern indentation, with MMA, flush with the top surface. Leave a 1/8", smooth, concave painted/coated surface between bricks (joint).

608-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Sidewalk by area of finished surface, weight of material placed, and lump sum as included in the bid schedule. Ramps are included in the measurement unless included as a separate measured and paid item.

HMA used for matching existing surfaces, such as paved parking lots behind a new sidewalk/pathway, will be included in the measurement of the related asphalt Pay Item.

608-5.01 BASIS OF PAYMENT.

Subsidiary to the Pay Items: excavation, backfill, reinforcement, expansion joint material, samples, asphalt binder, corrective work, and other related miscellaneous items.

Embankment and bed course materials will be furnished, placed, and paid under Sections 203 and 301, respectively.

Curb Ramp when included in the bid schedule includes ramp runs, backing curbs, flares, landings to provide a single street-level access and detectable warnings, except detectable warnings are paid separately when included as an item in the bid schedule.

PAY ITEM		
Item Number	Item Description	Unit
608.0001.____	Concrete Sidewalk, 4 inches thick	SY
608.0001.____	Concrete Sidewalk, 6 inches thick	SY
608.0002.____	Asphalt Sidewalk	Ton
608.0006.____	Curb Ramp	Each
608.0007.____	Curb Ramp, Retrofit	Each
608.2002.____	Asphalt Pathway	Ton
608.2004.____	Asphalt Medians	Ton
608.2006.____	Asphalt Pathways and Medians	Ton
608.2007.____	Asphalt, (Sidewalk, Plaza, etc., __ Inches Thick)	SY
608.2008.____	Asphalt Pattern Imprinted and Painted, (Median, etc., __ Inches Thick)	SY
608.2010.____	Concrete Sidewalk Wall, (Type __; slab __ in; Wall __ in; Ht __ ft)	LF
608.2011.____	Concrete Sidewalk Retaining Wall, (Type __; Slab __ in; Wall __ in; Ht __ ft)	LF
608.2012.____	Concrete Sidewalk Barrier Wall, (Type __; Slab __ in; Wall __ in; Ht __ ft)	LF
608.2013.____	Concrete, Type I, __ inches thick, Broom Finish, (median slab, etc.)	SY
608.2013.____	Concrete, Type II, __ inches thick, Exposed Aggregate Finish, (median slab, etc.)	SY
608.2013.____	Concrete, Type III, __ inches thick, Colored, (median slab, etc.)	SY
608.2013.____	Concrete, Type IV, __ inches thick, Pattern Imprinted, (median slab, etc.)	SY
608.2013.____	Concrete, Type V, 6 inches thick, Colored and Pattern Imprinted, median with colored and pattern concrete top	SY
608.2014.____	Concrete Medians	SY
608.2015.____	Concrete Stairway	LS
608.2032.____	Detectable Warning Tile	SY

C608-20.1130-1

**SECTION 609
CURBING**

Special Provisions

609-2.01 MATERIALS.

Replace "Precast Concrete Curb Subsection 712-2.04" with the following:

Precast Concrete Products Subsection 550-2.03, 712-2.04

C609.2-21.0601

Add the following Subsection 609-3.06 Bumper Curbs:

609-3.06 BUMPER CURBS. Concrete Parking Bumper shall conform to Subsection 609-3.03, Precast Concrete Curb, and the Plans.

609-5.01 BASIS OF PAYMENT.

Add the following:

Concrete Parking Bumper is for each complete installation.

PAY ITEM		
Item Number	Item Description	Unit
609.2003._____	Concrete Parking Bumper	Each

C609.1-00.0201-2

Special Provision

Replace Section 610 with the following:

**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.

DELIVERY OF SALVAGED SIGNS TBD – QUANTITY MAY BE SO LOW (2 SIGNS) COORDINATION NOT WORTH IT.

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 7 th 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	0.60 lbs.
	Arctared – Red Fescue	0.45 lbs.
	Wainwright - Slender Wheatgrass	0.37 lbs.
	Annual Ryegrass	<u>0.08 lbs.</u>
		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 ft².

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 ADNRC 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 Subsection 727-2.02
 - 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 manufacturer's 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 627 WATER SYSTEM

Special Provisions

627-1.01 DESCRIPTION.

Add the following:

Add the following:

For the purpose of this Section, "Utility" is the Anchorage Water and Wastewater Utility (AWWU), and the "Representative" is the Utility's **CONFIRM AWWU REPRESENTATIVE WITH UTILITIES PRIOR TO CERTIFICATION**.

Coordinate with the Engineer and Utility; and participate in a pre-construction condition inspection, and a post-construction condition inspection of the water system facilities.

The inspections may identify main valve boxes, the top section, the lid, and additional items, to be replaced. Replace additional facility items as directed by the Engineer.

627-3.01 GENERAL.

Add the following:

Contractor furnishes the required traffic control, including personnel to assist, while performing inspections.

The Contractor forfeits all right to assert pre-existing damage if the Contractor fails to participate in the inspections.

Install the replacement facility items as shown in the Plans.

During inspections the Utility Representative, the Engineer, and the Contractor will observe each facility's location and condition. The Engineer will indicate the additional facility items to be replaced.

Provide 3 days advance written notice to Utility scheduling a pre-construction inspection of the facilities. Conduct this inspection before pavement removal begins. Contact the Utility Representative to determine where to send the written notice, (907) _____ . Provide the Engineer a copy of the written notice.

The Utility furnishes the valve box top sections and lids. Contact the Utility Representative to schedule the pick-up of the furnished materials. Allow 3 working days from the time contact is made to pick-up of the materials.

If service connection locates are required, contact the Utility Field Services at (907) _____ .

Allow 3 working days from the time of the request to the time of locate.

Salvage the replaced valve box top sections and lids. Coordinate with, and deliver to the Utility the salvaged materials. Water system facility materials not wanted by the Utility are the property of the Contractor. Dispose of construction and demolition materials according to Subsection 202-3.06.

Provide a written notice to the Utility scheduling a post-construction inspection of the facilities, after the paving operations are complete and 3 days in advance of the inspection.

627-5.01 BASIS OF PAYMENT.

Add the following:

Pay Item 627.2011.____ includes full compensation for labor, equipment, and incidental materials for installation, complete-in-place after final paving as accepted by the Engineer, including but not limited to:

- inspections
- removal and disposal of existing valve box top sections and lids
- installing the replacement materials
- adjusting the facility item down prior to the planing operation
- adjusting the facility item up prior to the paving operation

Repairs to facilities damaged or rendered inoperable, after the pre-construction inspection and before the final inspection, are the responsibility of the Contractor and no additional payment will be made.

All traffic control required for the inspections will be paid under the 643 Pay Items.

PAY ITEM		
Item Number	Item Description	Unit
627.2011.____	Remove and Replace Water Valve Box and Lid	Each

C627.1-20.0801

**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 acknowledgement (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	<ol style="list-style-type: none"> 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. During Construction.

- 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:

- the Contractor has previously been notified and subsequent inspection reports repeat the same or similar error,
- multiple inspection reports are submitted after the submission due date and the same or similar errors are repeated on multiple overdue reports,
- 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

C641-24.0401

**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.

C642.1-15.0220-1

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.

ASSUMING NO PAVEMENT BREAKS TO BE ALLOWED FOR MORE THAN 48 HR ON SURFACES TO BE USED FOR TRAFFIC – CONFIRM PRIOR TO CERTIFICATION

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.

C643-25.1001

Traffic will be allowed to operate on a milled surface for four consecutive days.

CFHWY01073

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 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.

C643-25.1001

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 Sunday: 0530 hrs to 0800 hrs and 1630 hrs to 1900 hrs.**

CFHWY01073

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.

Lane restrictions, if allowed shall be conducted so that no more than a 5 minute accumulated stopped delay, 20 vehicles, or 1/8 mile (660 feet) of traffic is detained, whichever occurs first, before releasing the detained motorists. During paving operations, a 10 minute stopped delay, 40 vehicles, or 1/4 mile (1320 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.

C643-25.1001

Curb Ramps and Sidewalks. Sequence the work such that each area of sidewalk and all curb ramps are reconstructed and restored to full service within five (5) days following demolition of the existing sidewalk and curb ramps. Concrete demolition activities are to be completed between 0900 hrs and 1400 hrs. Maintain pedestrian routes (including sidewalks and curb ramps) in compliance with the Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG) throughout construction in all areas except as shown on the approved phasing plan. Access to every business shall be maintained.

Where the planned demolition/replacement of curb ramps makes complete circumnavigation of any city block impossible, no more than one ADA ramp per city block may be closed at any time. At intersections, two adjacent curb ramps may be closed at the same time. Do not close ramps that are located diagonally across any intersection at the same time. Pedestrian detours shall be the minimum practicable distance and shall not deviate from the shortest existing route by more than one city block.

WIM Removal. A three (3) day closure of Tudor Road will be allowed to provide for removal of the existing concrete Weigh-In-Motion (WIM) slab.

CFHWY01073

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.

Do not place final pavement markings until traffic has traveled over the seal coat or surface treatment for at least 15 days and no more than 21 days, as directed by the Engineer.

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 408.2001.00VH.
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
Temporary ADA Facilities		
ADA Pedestrian Rail	Lineal Foot	\$6.00
ADA Pedestrian Barrier	Lineal Foot	\$8.00
ADA Ramps and Hole Covers in Path	Square Foot	\$10.00
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

C643-25.1001/CFHWY01073

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

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:

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

**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 647 EQUIPMENT RENTAL

647-1.01 DESCRIPTION. This item consists of furnishing construction equipment, operated, fueled, and maintained, on a rental basis for use in construction of extra or unanticipated work at the direction of the Engineer. Construction equipment is defined as that equipment actually used for performing the items of work specified and shall not include support equipment such as, but not limited to, hand tools, power tools, electric power generators, welders, small air compressors and other shop equipment needed for maintenance of the construction equipment.

The work is to be accomplished under the direction of the Engineer, and the Contractor's operations shall at all times be in accordance with the Engineer's instructions. These instructions by the Engineer shall be to the Contractor's supervisory personnel only, not to the operators or laborers. In no case shall these instructions by the Engineer be construed as making the Department liable for the Contractor's responsibility to prosecute the work in the safest and most expeditious manner.

647-2.01 EQUIPMENT FURNISHED. In the performance of this work, the Contractor shall furnish, operate, maintain, service, and repair equipment of the numbers, kinds, sizes, and capacities set forth on the Bid Schedule or as directed by the Engineer. The operation of equipment shall be by skilled, experienced operators familiar with the equipment.

The kinds, sizes, capacities, and other requirements set forth shall be understood to be minimum requirements. The number of pieces of equipment to be furnished and used shall be, as the Engineer considers necessary for economical and expeditious performance of the work. The equipment shall be used only at such times and places as the Engineer may direct.

Equipment shall be in first class working condition and capable of full output and production. The minimum ratings of various types of equipment shall be as manufactured and based on manufacturer's specifications. Alterations will not be considered acceptable in achieving the minimum rating. Equipment shall be replaced at any time when, in the opinion of the Engineer, their condition is below that normal for efficient output and production.

Equipment shall be fully operated, which shall be understood to include the operators, oilers, tenders, fuel, oil, air hose, lubrication, repairs, maintenance, insurance, and incidental items and expenses.

647-2.02 EQUIPMENT OPERATORS AND SUPERVISION PERSONNEL. Equipment operators shall be competent and experienced and shall be capable of operating the equipment to its capacity. Personnel furnished by the Contractor shall be, and shall remain during the work hereunder, employees solely of the Contractor.

The Contractor shall furnish, without direct compensation, a job superintendent or Contractor's representative together with such other personnel as are needed for Union, State, or Federal requirements and in servicing, maintaining, repairing and caring for the equipment, tools, supplies, and materials provided by the Contractor and involved in the performance of the work. Also, the Contractor shall furnish, without direct compensation, such transportation as may be appropriate for the personnel.

647-3.01 CONSTRUCTION REQUIREMENTS. The performance of the work shall be according to the instructions of the Engineer, and with recognized standards and efficient methods.

The Contractor shall furnish equipment, tools, labor, and materials in the kinds, number, and at times directed by the Engineer and shall begin, continue, and stop any of the several operations involved in the work only as directed by the Engineer.

Normally, the work is to be done when weather conditions are reasonably favorable, 6 days per week, Mondays through Saturdays, except holidays.

The Engineer will begin recording time for payment each shift when the equipment begins work on the project. The serial number and brief description of each item of equipment listing in the bid schedule and the number of hours, or fractions thereof to the nearest one quarter hour, during which equipment is actively engaged in construction of the project shall be recorded by the Engineer. Each day's activity will be recorded on a separate sheet or sheets, which shall be verified and signed by the Contractor's representative at the end of each shift, and a copy will be provided to the Contractor's representative.

647-4.01 METHOD OF MEASUREMENT. Section 109.

Hourly Rental Rate: Includes the equipment rate plus the operating costs including: furnishing, travel time, operating, maintaining/servicing and repairing the equipment along with the costs incidental to the equipment and its' operation.

647-5.01 BASIS OF PAYMENT. Payment is for the time that fully operational equipment is engaged in the performance of the work directed by the Engineer. Time not paid for includes: idle periods, maintaining/servicing and repairing the equipment, making change-overs of equipment parts, and time to travel to and from the project. Payment will only be for time supported by certified payroll.

Furnishing and operating equipment that is heavier, has larger capacity, or greater power than specified will not entitle the Contractor to extra compensation.

Pay Item 647.2000.____ Wide Pad Dozer, 65-HP Minimum: paid at the rate of **\$250/hour.**

Pay Item 647.2002.____ Backhoe, 4WD, 1 CY Bucket, 75-HP Minimum, 15 ft Depth: paid at the rate of **\$300/hour.**

PAY ITEM		
Item Number	Item Description	Unit
647.2000.____	Wide Pad Dozer, 65-HP Minimum	CS
647.2002.____	Backhoe, 4WD, 1 CY Bucket, 75-HP Minimum, 15 ft Depth	CS

C647-16.1103-2

Special Provision

Add the following Section:

**SECTION 651
CONTROL OF WORK – SUPPLEMENTAL REQUIREMENTS**

651-1.01 DESCRIPTION. Supplemental requirements for Section 105, Control of Work.

651-1.02 RELATED SECTIONS. Section 105, Control of Work

651-1.03 UTILITIES. Request locates from the utilities having facilities in the area.

Use the Alaska Digline, Inc. "Locate Call Center" for the following utilities.

ALASKA DIGLINE, INC.

Locate Call Centers:

Anchorage	278-3121
Statewide	(800) 478-3121

Delete from the list below, companies not applicable to the project.

Call Centers will notify the following:

- Alaska Communications Systems (ACS)
- Anchorage Water & Wastewater Utility (AWWU)
- AT & T Alascom (AT&T)
- Chugach Electric Association (CEA)
- ENSTAR Natural Gas (ENS)
- GCI Communication Corp. (GCI)
- Municipality of Anchorage Signal & Street Maint.
- State of Alaska DOT&PF Anchorage Street Lights (DOT&PF)

State Facility Utilities: before beginning work, contact the Central Region Maintenance & Operations Office at (907) 269-0760 to obtain the District Superintendent's phone number where the project is located, and request locates.

Utility Work by Others.

Utility work is not anticipated for this project, however; if utility work is added to the project the Contractor shall give the Utility, through the Engineer, 15 calendar days advance written notice regarding the dates when the utility owner is required to begin and end operations.

651-1.04 COOPERATION BETWEEN CONTRACTORS. The following state owned projects may be under construction concurrently with this project.

Project Name:	Project No.:
CONFIRM PRIOR TO CERTIFICATION	

Coordinate traffic control, construction, and material hauling operations with the prime contractor of the above projects to minimize impact on the traveling public, and to minimize conflicts with the work being performed under the other contracts.

C651-23.0601-1

Special Provision

Replace Section 652 with the following:

**SECTION 652
PROSECUTION AND PROGRESS – SUPPLEMENTAL REQUIREMENTS**

652-1.01 DESCRIPTION. Supplemental requirements for Section 108. Prosecution and Progress.

652-1.02 RELATED SECTIONS. Section 108, Prosecution and Progress.

652-1.03 PROSECUTION AND PROGRESS. In Subsection 108-1.03:

- Replace the last sentence in the 1st paragraph with: "Submit the following at the Preconstruction Conference:"
- Replace No. 1 with: "A Critical Path Method (CPM) Schedule is required, in a format acceptable to the Engineer, showing the order the work will be carried out, and the contemplated dates the Contractor, subcontractors, and utilities will start and finish each of the salient features of the work, including scheduled periods of shutdown. Indicate anticipated hours of operations and periods of multiple shift work. Revise the proposed schedule promptly. Promptly submit a revised CPM Schedule if there are substantial changes to the schedule, or upon request of the Engineer."

652-1.04 LIMITATION OF OPERATIONS. In Subsection 108-1.04:

- Add: "Limit ground disturbed by construction activities and not permanently stabilized between all roadways combined, at any specific time, to a maximum of 5,000 feet parallel to the roadway(s), unless additional length is approved. Stabilize disturbed ground according to Section 641 Erosion, Sediment, and Pollution Control."

C652-24.0610

**SECTION 660
SIGNALS AND LIGHTING**

Special Provisions

660-2.01 MATERIALS.

Add the following:

Precast Concrete Products

Subsection 550-2.03

C660.2-21.0601-1

660-3.01 GENERAL.

Add No. 10:

10. Failed Equipment and Workmanship. For the term of the Contract, from initial equipment installation through final acceptance, Subsection 105-1.16, when directed, promptly replace failed equipment, equipment components and repair failed workmanship.

Add the following:

Salvage decommissioned reusable traffic signal equipment, components/materials and deliver to the local Maintenance & Operations station within 72 hours of removal. Decommissioned components damaged as part of the salvage effort must be replaced with new components at no additional cost.

C660.1-21.0601-1

Standard Modification

660-3.04 JUNCTION BOXES.

Replace item 1 with the following:

1. 300 ft maximum for any conduit run containing either:
 - a. One single cable, plus one bare or insulated equipment grounding conductor (EGC); or
 - b. Two or fewer single pair No. 12 AWG (or smaller) loop lead-in cables, plus one bare or insulated EGC.

HSM20.16-20.1130

660-4.01 METHOD OF MEASUREMENT.

Add the following:

Pay Item 660.2000.____ Temporary Electrolier.

By each electrolier and foundation furnished, installed, and maintained as directed by the Engineer.

Replace Subsection 5.01 with the following:

660-5.01 BASIS OF PAYMENT. Payment Includes labor, equipment, and materials required to provide fully functional traffic signals and lighting systems, permanent and temporary, using new equipment. Remanufactured or rebuilt equipment will not be permitted.

Subsidiary to each Pay Item including but not limited to (Except when included as a separate Pay Item):

- (1) General construction requirements,
- (2) Bonding and grounding,
- (3) Bored Casings,
- (4) Completing tests,
- (5) Conductors,
- (6) Conduit,
- (7) Dewatering excavations,
- (8) Excavation, trenches in rock or soil, bedding, backfill for foundations, conduits, components,
- (9) Foundations including concrete to complete foundations,
- (10) Junction-boxes including adjustment to final grade,
- (11) Labeling conductors,
- (12) Maintaining temporary and existing electrical systems,
- (13) Minor routing changes directed by the Engineer
- (14) Preparing as-built
- (15) Removal and disposal of existing/new unused foundations, conduit, conductors, and J-boxes,
- (16) Removing, repairing and replacing improvements
- (17) Removal of signs and reinstallations required to install foundations, conduits, and J-boxes,
- (18) Repairing damage to finishes on new equipment
- (19) Salvaging reusable equipment and materials and delivering to the local Maintenance and Operations station including but not limited to existing signal structure
- (20) Wiring
- (21) Replacing failed equipment, equipment components and repairing failed workmanship.

660 Pay Items do not include: roadway planing, roadway paving, drainage structures, erosion, sediment and pollution control, signing, striping and pavement markings, traffic control, and components of the traffic signal communication system.

Pay Item 660.0001.____ Traffic Signal System Complete, (location).

1. Signal structures
2. Traffic controller assemblies including the assembly testing and preparation, vehicle and pedestrian indications, video detection systems, inductive loop detection, emergency vehicle preemption systems, auxiliary and test equipment, on-site manufacturer assisted start up and training when called for in the Plans.
3. Work associated with installing loop detectors and conduit crossings, including: Except when a separate Pay Item is used, saw cutting, asphalt removal, aggregate base course, tack coating, and installing new hot mix asphalt.

Pay Item 660.0003.____ Highway Lighting System Complete, (location).

1. Lighting structures.

Pay Item 660.2008.____ Traffic Loop Replacement. Replace the loop detectors, piezoelectric sensors, RWIS or other data sensors inside the specified planing depth that are damaged during the planing operation (Section 202) at a rate of \$1,250 each.

Pay Item 660.2000.____ Temporary Electrolier.

1. Work to have plans and materials approved.
2. Temporary electrolier including the structures, foundations, and load centers (as needed) and their removal. Moving the electroliers, assembly and operational installation, removing and replacing, and installing conductors (in conduit or direct bury only). Furnishing and installing temporary electrical load centers when existing load centers are not available for use.

3. Temporary electrolier will be paid on a contingent sum basis at the unit price of \$2400/each. The Engineer does not require a change order/directive for this Pay Item.

Payment will be made under:

PAY ITEM		
Item Number	Item Description	Unit
660.0001.____	Traffic Signal System Complete, _____	LS
660.0002.____	Flashing Beacon System Complete, _____	LS
660.0003.____	Highway Lighting System Complete _____	LS
660.0004.____	Sign Illumination System Complete, _____	LS
660.0005.____	Structure Illumination System Complete, (Pedestrian Undercrossing)	LS
660.0007.____	Temporary Signal System Complete, _____	LS
660.0008.____	Temporary Illumination System Complete	LS
660.0009.____	Bored Casing, ____-Inch Minimum Diameter	LF
660.0011.____	Traffic Loop	Each
660.0012.____	Underpass Lighting System Complete	LS
660.0013.____	Relocate Electrolier	Each
660.2000.____	Temporary Electrolier, _____	CS
660.2001.____	Signal and Lighting Salvage, _____	LS
660.2002.____	Pedestrian Lighting, _____	LS
660.2003.____	Traffic Signal System Modifications, _____	LS
660.2004.____	Adjust Junction Box	Each
660.2005.____	Junction Box, Type ____	Each
660.2008.____	Traffic Loop Replacement	CS
660.2031.____	Signal System Timing and Adjustments _____	CS

C660.1-21.0601-1

SECTION 669 AUTOMATED TRAFFIC RECORDERS

669-1.01 DESCRIPTION. This work shall consist of reconstruction, refurbishing, and installation of Automated Traffic Recorder (ATR) stations.

ATR consists of inductive loop and piezoelectric sensors connected to a traffic counter. In each traffic lane, two inductive loops are separated by a specific travel distance and buried beneath the pavement. Two piezoelectric sensors are located adjacent each inductive loop, embedded in the pavement surface. Lead wires run in underground conduit from the sensors to a type CBA2 cabinet located at the side of the road. Inside the type CBA2 cabinet, the lead wires connect to the traffic counter. The traffic counter detects the presence and speed of passing vehicles from inductive loop signals. The traffic counter detects axle number and center-to-center axle spacing from piezoelectric signals. Presence, speed and axle passage information is processed by the traffic counter to classify the number and type of vehicles, which is stored for later retrieval. ATRs are operated and maintained by personnel of the Highway Data Section (HDS); main office located at 2200 E. 42nd Ave., Anchorage, phone (907) 269-0876.

ATR stations may be equipped with a Temperature Data Probe (TDP), which consists of temperature sensors connected to a datalogger. Sampled conditions may include air temperature, pavement profile temperatures and subgrade profile temperatures. Temperature sensors send voltage signals to the datalogger. Sensor voltage levels are processed by the datalogger to yield temperature information, which is stored for later retrieval.

The locations of traffic detection sensors and cabinets, shown on the Plans are approximate and the Engineer shall establish the exact locations in the field after consultation with the DOT/PF HDS.

669-1.02 REGULATIONS AND CODE. Use materials and workmanship that conforms to the standards of the Underwriter's Laboratories, Inc. and the National Electrical Safety Code and local safety code requirements, where applicable.

Use electrical equipment that conforms to the standards of the National Electrical Manufacturer's Association, where applicable.

669-2.01 MATERIALS. Unless otherwise stated, provide new materials that meet the following requirements:

1. Wiring. Subsection 660-3.05, Wiring. Use single wire conductors and cables that have clear, distinctive and permanent markings on the outer surface throughout the entire length giving the manufacturer's name or trademark, insulation type-letter designation, conductor size, voltage rating and the number of conductors if a cable. Home run label all wires and cables in each junction box and cabinet; for example, W1SLA (for wire) and GaSLA (for cable) as shown on the Plans.
2. Conduit. Subsection 660-3.03, Conduit. Use galvanized rigid metal for conduits, except for PVC conduit forming the inductive loops. Provide grounding bushings with plastic-sleeves to minimize the potential for insulation damage during wire pulls.
3. Junction Boxes. Subsection 660-3.04, Junction Boxes. Label the covers of all junction boxes used for loops or sensor wires 'TRAFFIC'. Label the covers of all junction boxes used to provide electrical service to ATR installations 'ELECTRIC'. Keep junction boxes for 120V/240V electrical service completely separate from junction boxes containing loop or sensor wiring.
4. Terminal Blocks. Mount Terminal Blocks to match orientation of the roadway. Use terminal blocks with nickel, silver or cadmium plated brass binder-head screw terminals. Use barrier type terminal blocks rated 600 VAC at 20 Amps, sized for 12-18 AWG wire with removable shorting bars in each position and with integral type marking strips.

5. Presence Loops. Use UL listed IMSA specification #51-5-1984 single conductor PVC nylon with tube jacket, type THHN, #14 AWG conductors for detector presence loops.

Use twisted pairs of 18 AWG stranded tinned copper wire for multiple pair loop lead-in cable. Each twisted pair shall have its own 20AWG tinned copper drain wire. An aluminum foil shield shall surround each individual bundle of twisted pair and drain wire. Multiple pair loop lead-in cable shall have an overall PVC or PE outer jacket.
6. Electrical Load Centers. Use NEMA Type 3R Electrical Load Centers and provide a 120/240V 100 amp single-phase, three-wire-circuit electrical service.
7. Style CBA1 Cabinets. Cabinets shall meet or exceed a UL 50, NEMA Type 3R rating. Provide the cabinet type shown in the plans. Construct the cabinet and hinged door from 5052-H32 or better unpainted sheet aluminum alloy with a minimum thickness of 1/8 inch and a smooth grain finish on the exterior. Corbin #2 Key Lock. One (1) adjustable shelf. Drip Shield. Interior has four (4) instruct channels for installing adjustable shelves. Grounding points included on body and door. Door latching mechanism is a single point PowerGlide padlocking handy system which secures the door in the middle. A door stay is included at the bottom of the door with three positions: 90, 120, and 180 degrees. Ensure that welds are neatly formed and free of cracks, blowholes and other irregularities. Ensure inside and outside edges of the cabinet are free of burrs. Design the cabinet with a sloped top to prevent the accumulation of water on its top surface.
8. Style CBA2 Cabinets. Cabinets shall meet or exceed a NEMA Type 3R rating. Cabinets shall be third party certified as an assembly. Style CBA2 cabinets shall meet the following requirements:
 - a. Cabinet Dimensions. The cabinet shall be as shown in Plans.
 - b. Cabinet Construction. Construct the cabinet and door from 5052-H32 or better unpainted sheet aluminum alloy with a minimum thickness of 1/8 inch and a smooth grain finish on the exterior. Ensure that welds are neatly formed and free of cracks, blowholes and other irregularities. Ensure inside and outside edges of the cabinet are free of burrs. Design the cabinet with a sloped top to prevent the accumulation of water on its top surface.
 - c. Door. Use double flanged door opening on four sides to prevent dirt and liquids from entering the enclosure when the door is opened. Provide a door restraint to prevent door movement in windy conditions. Provide a cabinet door that encompasses at least 80% of the cabinet frontal surface area and is hinged on the right side when facing the cabinet. Furnish the door with a gasket that satisfies the physical properties found in UL508 table 21.1 and forms a weather tight seal between the cabinet and the door. Use a hinge that is continuous and made of stainless steel or at least 2.2 mm thick aluminum. Securely weld the hinge along a quarter, or more, of its length or bolt the cabinet using stainless steel bolts and non-slip nuts.
 - d. Latch/Lock. Use a 3 point draw roller type latching mechanism. Use either stainless steel or cadmium plated, Type II Class 1 or better center catch and pushrods. Use rollers with a minimum diameter of 3/4 inch and made of nylon. Furnish a stainless steel operating handle with a 3/4 inch shank. Use a Corbin #2 lock keyed lock that matches existing HDS cabinets. Furnish two keys with each lock.
 - e. Ventilation. Provide ventilation using louvered vents in the front door with a removable air filter. Ensure louvers satisfy the NEMA rod entry test for 3R ventilated cabinets. Provide filters that cover the vents and are held firmly in place with bottom and top brackets and a spring-loaded top clamp. Vent exhaust air out between the top of the cabinet and the door.

- f. Shelves. Mount adjustable equipment shelves on "C" factory mounting channels inside of cabinet and support them on both sides. Mount 2 vertical channels on both sides of the cabinet and on the back, for a total of 6 inside each CBA2 cabinet. Construct shelves from 5052-H32 or better sheet aluminum alloy with a minimum thickness of 1/8 inch. Provide a shelf with a minimum depth of 10 inches. Ensure that shelves are adjustable to within 4 inches of the bottom and to within 8 inches of the top of the cabinet.
- g. Keyboard Tray. Mount a retractable tray as shown in the Plans.
- h. Circuit Breaker Panel. Ensure the circuit breaker panel conforms to the UL67 and NEMA PB1 standards. Use a MLO, single-phase, 3 wire configuration circuit breaker panel rated at 70 Amp (minimum) 120/240 Volts, in a NEMA Type 2 enclosure with separate neutral and ground buses. Unless shown otherwise in the Plans, or described herein, provide two 20 amp single pole type circuit breakers with a minimum short-circuit interrupting rating of 10,000 AIC. Circuit breaker #1 will serve the utility and equipment receptacles, and circuit breaker #2 will serve the thermostatically controlled outlet, cooling fan, and cabinet light.
- i. Transient Voltage Surge Protection. Provide transient voltage surge protection, rated at a minimum 500 Volts at 3000 Amps integral to the circuit breaker panel, or integral to each individual circuit breaker.
- j. Interior Light. Provide a fluorescent, 120-volt single-tube lamp interior light fixture rated at 13 watts minimum with ballast that will start the lamp at temperatures of 0°F. Provide a single pole, illuminated toggle switch, mounted inside of the cabinet door to control the light.
- k. Cooling Fan. Provide a thermostatically controlled fan in the top of the cabinet that operates at a settable high temperature limit and exhausts air through a filtered and hooded vent at the top front of the cabinet. Set an integral thermostat at a temperature lower than the thermostat noted in Item "m" below so that the auxiliary thermostat controls the fan, and not any integral thermostat.
- l. Thermostatically Controlled Outlet. Ensure that a thermostatically controlled single duplex outlet operates at a settable low temperature limit.
- m. Thermostats. Provide remote bulb-type thermostats with SPDT contacts, rated for 16 amps @ 120 VAC for combined motor and resistive loads, for the thermostatically controlled outlet and cooling fan. Use Tradeline T6031A1029 (equal or better), White-Rogers, Johnson Controls, or Sunne brand thermostats. Ensure the thermostats for the "Thermostatically Controlled Outlet" have a contact that closes on lowering temperature and set at 50°F. Provide a thermostat for the "Cooling Fan" that has a contact that closes on rising temperature and set at 90°F. Mount sensing bulbs as shown on the Plans.
- n. Conduit, Raceway and Layup. Provide EMT, liquid tight metal flex or metal clad conduit for wiring in 120V equipment including circuit breaker panel boards, lights, vent fans, and power receptacles. Terminate other low voltage wiring on terminal blocks and neatly train within the cabinet using wiring duct or ties.
- o. Certification. The Cabinet Assembly consists of the cabinet itself and high voltage (greater than 24 volts) components that are permanently installed, including the circuit breaker panel, receptacles, light and fan as shown on the Plans or described herein. Obtain certification that the cabinet and associated permanently installed equipment, as a unit, complies with recognized applicable national standards through an authorized local or national testing agency or fabrication shop that complies with ANSI Z34.1-1987 "Third- Party Certification Programs for Products, Processes, and Services", including but not limited to; Electrical Testing Laboratories (ETL), Underwriters Laboratories (UL), Canadian Standards Association (CSA), Electro Test Incorporated (ETI), or other

certified testing agency recognized by the Labor Standards & Safety Division of the State of Alaska Department of Labor.

9. Precast Concrete Products – Subsection 550-2.03
10. Automated Volume and Classification Count Equipment.
 - a. Housing: Weather resistant cast aluminum (powder coat) with carrying handle.
 - b. Weight: Less than 15lbs.
 - c. Size: 7inx13.5inx6in
 - d. Display: 20-Character by 4-Line
 - e. Inputs: 16 Piezo/8 Loop inputs
 - f. Data Storage: 2GB-16 GB; User-set memory rollover
 - g. Study Periods: 1-60 minute intervals
 - f. Classification: FHWA 15-category classification or a user set classification table
 - g. Communications: RS232 serial comms from 300 to 115K baud with 9 Pin female port, USB capable
 - h. Power: Up to 31 days per charge; On/Off switch

1. Piezoelectric Sensor, Class II. Locate piezoelectric sensor lengths and lane locations as shown in the plans.

- a) Center Core. 16 gauge, flat, braided, silver plated copper wire.
- b) Piezoelectric Material. Highly compressed piezoelectric copolymer, P(VDF-TrFE).
- c) Outer Sheath. 0.406 mm thick brass, CDA-260, ASTM B 587-88.
- d) Final Dimensions. ¼ inch wide x 1/16 inch thick; ±0.13 mm.
- e) Insulation. Insulation resistance between core and shield: > 500M ohms.
- f) Piezoelectric Coefficient: ≥ 20 pC/N – nominal.
- g) Passive Signal Cable. RG 58 type with an underground/direct burial rated outer jacket. The OD of the cable is 1/5 inch. The nominal capacitance of the cable is 89 pF/m.

THIS SUBSECTION TO BE UPDATED TO REFLECT PRESSURE SENSOR SPECIFICATIONS INSTEAD OF STANDARD PIEZO LANGUAGE – FURTHER COORDINATION WITH HIGHWAY DATA AND CONTRACTS REQUIRED TO DETERMINE IF SPECIFIC PRODUCT OR PERFORMANCE SPEC TO BE USED FOR THIS PROJECT

669-3.01 CONSTRUCTION REQUIREMENTS.

1. Wiring.
 - a. Referenced Requirements. Subsection 660-3.05, Wiring.
 - b. Termination. Terminate unused pairs at junction boxes within splices. Terminate unused pairs in terminal blocks at cabinets. Terminate and solder conductors, including unused spares to "spade" type terminal lugs at terminal blocks.
 - c. Relief. Provide at least 2 feet of slack cable for wiring in each junction box and at least 6 feet of slack cable available in the equipment cabinet before the terminal block.
 - d. Labeling. Label wiring in junction boxes and at terminal blocks.
2. Conduit.
 - a. Referenced Requirements. Subsection 660-3.03, Conduit, or as indicated on the Plans.
 - b. Pull Cords. Leave nylon pull cords in all conduits larger than 1 inch and in spare conduits.
 - c. Bushings. Ensure that plastic or plastic-sleeved bushings are in place before wire pulls are performed.
3. Junction Boxes.
 - a. Referenced Requirements. Subsection 660-3.04, Junction Boxes, or as indicated on the Plans.
 - b. Voltage Limitation. Junction boxes used for ATR installations shall not contain wiring of systems at or greater than 24 V or conduits carrying wiring of systems at or greater than 24 V.
4. Terminal Blocks.
 - a. Terminal Block Placement. Mount terminal blocks within cabinets so that terminals are easily accessible from the front of the cabinet.
 - b. Labeling. Clearly label terminal blocks and wire pairs on the block.
 - c. Termination. Terminate and solder conductors, including unused spares to "spade" type terminal lugs
5. Presence Loops.
 - a. Placement Design Adherence. The Plans are not schematics; installation of the presence loops shall closely conform to the location and layout of conduit runs shown in the Plans. The contractor shall notify the Project Engineer 14 days prior to saw cutting the pavement for approval of the site layout.
 - b. Presence Loop Dimensions. Unless otherwise noted on the plans, form presence loops using four turns of wire, making 6 feet square with a tolerance of ± 1 inch.
 - c. Presence Loop Dimensions for On-Ramps and Off-Ramps. Form presence loops in On-Ramps and Off-Ramps using four turns of wire, making a rectangular 8 feet wide and 6 inch long with a tolerance of ± 1 inch.
 - d. Lead-in Conduit. Place lead-in conduits straight and perpendicular to the centerline of the road from the edge of pavement to the presence loops.

- e. Presence Loop Alignment. Center presence detector loops in the traffic lane with a tolerance of ± 1 inch.
 - f. Presence Loops in Asphalt.
 - I. Loop Placement. Locate presence loops 16 feet from leading edge to leading edge unless otherwise noted on the Plans with a tolerance of ± 1 inch. Align presence loops in adjacent lanes within a tolerance of ± 1 inch.
 - II. Compaction tests. Compaction test requirements are at the discretion of the Engineer.
6. Piezoelectric Sensors.
- a. Manufacturer's Recommendations: Install piezoelectric sensors according to AVC equipment and piezoelectric sensor manufacturer's recommendations. The piezoelectric sensor manufacturer's representative or a piezoelectric sensor manufacturer-certified installation technician must observe and approve piezoelectric sensor installations.
 - b. Placement Design Adherence. The Plans are not schematics; install the piezoelectric sensors as close as possible to the locations and layouts of conduit runs shown in the Plans.
 - c. Saw cut Requirement. Install piezoelectric sensors in saw cut slots in final pavement. "Block outs" are not allowed.
 - d. Coaxial Cable. Run coaxial cables to the equipment cabinet without splices. Terminate on the specified terminal block, with at least 6 feet of slack cable available in the equipment cabinet before the terminal block.
 - e. Lead-in Conduit. Install lead-in conduits from edge of pavement to the piezoelectric sensors straight and perpendicular to the centerline of the road. Install and cap lead-in conduits for piezoelectric sensors at the sensor end with tape or sealant before paving. Extend lead-in conduits beyond the edge of the pavement. Completing lead-in conduit runs to junction boxes and cabinets may be done before or after paving.
 - f. Piezoelectric Sensor Placement. Center each piezoelectric sensor in the travel lanes between sensors adjoining inductive loops unless otherwise noted on the Plans or directed by the Engineer. Install piezoelectric sensors with a tolerance of ± 1 inch.
 - g. Piezoelectric Sensors in New Asphalt. Install piezoelectric sensors in new asphalt pavement only after three days of normal traffic has passed over the final paving.

Cabinets.

- a. Cabinet Placement and Orientation. Install cabinets out of the Clear Zone with the doors facing away from the road. Unless the orientation is otherwise noted on the plans.
- b. Conduit Entry. Install conduit entries for above-ground enclosure through the bottom of the enclosure. No conduit runs shall be cut through the sides or top of above-ground enclosure.
- c. Style CBA2 Cabinets Mounting. Mount style CBA2 cabinets on 4 inch GRMC or DN100 galvanized pipe and support with reinforced concrete foundations as shown on the Plans.

Utilities.

- a. Electrical. Provide and install the Load Center as required per the Plans, specifications and the requirements of the appropriate Electrical Utility. Provide and install wiring from the load center to the equipment in the cabinet. Request inspection of the Load Center by the Department of Labor, Division of Mechanical Inspection (DOL/DMI). After approval of the load center by the DOL/DMI, inform the Engineer as to when electrical service is needed at the load center, with sufficient time to enable the HDS to schedule the installation with the Electrical Utility before commissioning of the equipment. The HDS will make arrangements in writing with the Electrical Utility to establish billing accounts. The Electrical Utility will provide service to the Load Center upon request of the Engineer.
 - b. Asphalt Pavement Roughness. No transverse seams, joints or roughness within 50 feet of any inductive loops placed in asphalt pavement section is allowed. Test the finished surface of the asphalt with a straightedge 10 feet long. Ensure that the surface does not vary more than ¼ inch from the lower edge of the straightedge within 50 feet of sensors at the ATR installations. At the Engineer's discretion, run an inertial profiler or a profilograph equipped with a chart recorder down each wheelpath of each lane for a distance of 50 feet before and after each ATR installation. HDS will supply the profilograph for the Contractor's personnel to operate. Ensure that the asphalt surface as recorded by the chart recorder does not vary more than ¼ inch in 10 feet.
 - c. Field Inspection. Notify the Engineer in writing a minimum of 3 working days in advance (excluding Saturday, Sunday and State or Federal Holidays) before installing conduit/wiring, inductive loops, bending plate equipment, piezoelectric cable, axle sensors, and cabinets. The Engineer shall be present to approve the installation before backfill placement and paving. At the Contractor's expense, correct and allow the Engineer to re-inspect unacceptable installations for completeness prior to backfill placement and paving. The Contractor shall be required to excavate, remove, and replace all installations backfilled or paved without prior approval by the Engineer at the Contractor's expense.
 - d. Communications. Provide and install the phone line from the NID service box to the cabinet and connect to modem to ensure DSL connection. At ATR locations to be provisioned with cellular modems, provide Sierra Wireless RV50 configured for AT&T as the service provider.
1. **Failed Equipment and Workmanship.** For the term of the Contract, from initial equipment installation through final acceptance, Subsection 105-1.16, when directed, promptly replace failed equipment, equipment components and repair workmanship.

669-3.02 ACCEPTANCE TESTING. Perform acceptance testing on ATR installations.

1. General Tests. Perform tests for the ATR installations according to subsection 660-3.01, Installation Details.
2. AVC Acceptance Tests.
 - a. Scope and Governance. In addition to the General Tests, perform Acceptance Tests on AVC installations. AVC acceptance tests govern acceptance or rejection of the AVC installation.
 - b. Manufacturer Participation. Observe acceptance tests and assist the AVC counter manufacturer's representative, or an AVC counter manufacturer-certified installation technician.
 - c. Highway Data Section Participation. Before beginning AVC Acceptance Tests, notify the HDS. Notify in writing, through the Engineer, a minimum of 3 working days before

proposed testing (excluding Saturday, Sunday and State or Federal Holidays). Notification includes descriptions of the proposed test vehicles. A representative of the HDS approves descriptions of the proposed test vehicles in writing before testing and be on-site during final acceptance testing. Provide a tabulated listing of each vehicle's gross weight and measured axle spacing to the HDS representative before testing. The HDS representative must approve scheduling of data sampling and testing for each lane.

- d. Results Certification. The Highway Data Manager or designated representative shall certify in writing when the installation has met the accuracy requirements of the acceptance tests.

- e. Acceptance Test Procedure. Perform the Acceptance Tests as follows:

Acquire a set of test data for the AVC sensor array. Obtain test data by passing test vehicles over the AVC sensors in each lane. Test data consists of 10 valid samples per lane, for each of 3 test vehicles. Test data samples will include FHWA class designation and computed axle spacing for each sensor pass.

To be considered valid, obtain sample data under the following conditions:

The test vehicle must maintain good lane discipline while traversing the entire sensor array.

- I. The test vehicle must maintain a constant speed, between 40 mph and the maximum speed limit, while traversing the entire sensor array.
 - II. Acquire data for a particular lane using the same group of 3 test vehicles.
 - III. Sample data from successive sensor passes of each test vehicle. Data may not be omitted or included out of order for any 10 samples.
 - IV. Sensor passes for the 3 classes of vehicles may be intermixed.
 - V. Sensor passes for multiple lanes may be acquired simultaneously.
- f. Accuracy Requirements. The Automated Vehicle Classifier must meet the following requirements separately in each lane:
- I. The AVC system correctly assigns FHWA class designation for 9 out of 10 successive sensor passes of each vehicle class.
 - II. The AVC system computes axle spacing to within 6 inches of the actual measurements, for 9 out of 10 successive sensor passes of each vehicle class.
- g. Test Vehicles. Provide, and make arrangements for; test vehicles and drivers as needed for the acceptance testing.

The group of three test vehicles shall consist of one each of the following:

- I. A two axle, six wheel, single unit vehicle (FHWA Class 5)
- II. A three axle, ten wheel, single unit vehicle (FHWA Class 6)
- III. A five axle, eighteen wheel, single trailer vehicle (FHWA Class 9), with high-cube-rated (HCR) trailer

- h. Class 5 Vehicles. Class 5 vehicles shall meet the following requirements:
 - I. Spacing between steering and drive axles of 14 feet to 23 feet
 - II. Weight on the steering axle between 2,200 lb and 12,000 lb
 - III. Weight on the driving axle between 7,000 lbs and 18,000 lb.
- i. Class 6 Vehicles. Class 6 vehicles shall meet the following requirements:
 - I. Spacing between steering axle and the drive axle group of 13 feet to 23 feet
 - II. Spacing between the drive axles of 4 feet to 6 feet
 - III. Weight on the steering axle between 6,000 lb. and 12,000 lb
 - IV. Weight on the drive axle group between 20,000 lb. and 37,500 lb...
- j. Class 9 Vehicles. Class 9 vehicles shall meet the following requirements:
 - I. Spacing between the steering axle and the drive axle group of 13 feet to 23 feet
 - II. Spacing between the drive axles of 4 feet to 6 feet
 - III. Spacing between the drive axle group and the trailer axle group of 25 feet to 45 feet
 - IV. Spacing between the trailer axles of 4 feet to 6 feet
 - V. Weight on the steering axle between 6,000 lb. and 12,000 lb.
 - VI. Weight on the trailer axle group between.20,000 lb. and.37,500 lb
- k. Vehicle Loading. Ensure that three-test vehicles are loaded with non-shifting material to a minimum of 50% of legal load during testing.
- l. Tire Inflation. Ensure that tires on the three-test vehicles are inflated to recommended pressures during testing.
- m. Weighing Method. The gross weight of each test vehicle and the weight of each test vehicle's axle groups shall be determined by weighing on a static scale at a scale house operated by the State of Alaska Department of Commerce, Division of Weights and Measures.

An axle group is defined as any two axles whose centers are within 8 feet of each other. The Class 5 and Class 6 test vehicles each have two axle groups. The Class 9 single trailer test vehicle has three axle groups.

669-3.05 DELIVERABLES. Submit deliverables to the HDS before final approval of the work or as otherwise called for herein.

- 1. Materials Submittal.
 - a. Format and Contents. Provide a Materials Submittal of proposed equipment and materials for the ATR installations. The Materials Submittal shall consist of three collated copies of an equipment and materials portfolio. Each identical portfolio shall contain information of sufficient detail to determine the suitability of the equipment and materials proposed.

- b. Table of Contents. Each portfolio shall include a table of contents listing each item's intended uses, item description, product name, manufacturer, model or part number and reference to associated information within the portfolio.
 - c. Reference Drawings. The Materials Submittal shall include a detailed shop drawing of each equipment cabinet showing the location of mounted components.
 - d. Delivery Interval. Deliver Materials Submittal for review and approval of the Highway Data Supervisor within thirty days following award of the Contract.
 - e. Liability. The State of Alaska will not be liable for any materials purchased, labor performed, equipment used or delay to the work before equipment and materials have been reviewed and approved.
2. As-Built Plans.
- a. Prepare four complete sets of as-built plans, which will be current with the construction. These as-built plans shall detail construction changes made to the ATR design and include the following information on the appropriate sheets:
 - I. Location and depth of inductive loops, piezo sensors, conduit runs and scales.
 - II. Locations of equipment cabinets and junction boxes.
 - III. Station and offset of junction boxes
 - b. Present three sets of as-built plans to the Engineer, and affix one set to the inside of the cabinet door at the appropriate Automated Traffic Recorder Installation in a waterproof, clear plastic holder.
 - c. Redlines of full size construction plans will be acceptable as-builts.
3. Photographs.
- a. Provide digital photos documenting sensor installations on usb, cloud based sharing software, or via email.
 - b. The photographs shall show the inductive loops and conduit in place before covering with gravel and pavement for asphalt pavement sites, or before covering with epoxy compound for concrete pavement sites. The photographs shall include:
 - I. Two or more overall views of each ATR installation showing placement of the inductive loops.
 - II. One or more views of each loop showing the loop and the conduit to the nearest junction box.
 - III. One or more views of each piezo sensor conduit showing the coaxial cable, saw cut, and conduit to the nearest junction box
 - IV. One or more views of each temperature sensor showing the lead cables, saw cut, and conduit to the nearest junction box
4. Test Results. Written or printed copies of the final results of tests, signed by the Contractor, shall be provided to the Engineer before acceptance of the Automated Traffic Recorder Installation.
5. Manuals. Provide to the Highway Data Manager installation, repair, and operation manuals for Automated Traffic Recording equipment supplied by the Contractor.

6. Materials.

- a. Provide to the Highway Data Manager any ATR equipment, sensors, and epoxy grout remaining after installation.
- b. Palletize the Deliverable Materials.
- c. Group the contents of each pallet by like items.
- d. Attach to each pallet a sealed plastic pouch containing complete copies of Material Safety Data Sheets that apply to the contents of that pallet.
- e. Provide an itemized list of Deliverable Materials. For each item, the list shall detail:
 - I. Item description: including nature of the item, brand name, manufacturer name, model number, type number and serial number.
 - II. Item condition
 - III. Item quantity
- f. Provide complete copies of Material Safety Data Sheets that apply to the Deliverable Materials. Attach Material Safety Data Sheets after the last page of the Deliverable Materials list.

669-4.01 METHOD OF MEASUREMENT. Section 109.

Automated Traffic Recorder sites will be measured Lump Sum.

669-5.01 BASIS OF PAYMENT.

The Contract unit price for Automated Traffic Recorder installations shall be full compensation for furnishing all equipment, labor and subsidiary materials required for completion of a site for which there is no specific item in the Plans is subsidiary to the 669 item. This includes but is not limited to:

- backfill materials,
 - seeding,
 - topsoil,
 - removal of structures and obstructions,
 - structural excavation for conduits and minor structures,
 - work in support of utilities as specified in Subsection 105-1.06,
 - as-built plans,
 - providing the manufacturer's representative,
 - acceptance testing,
 - j-boxes,
 - CBA cabinets,
 - portable heater and cooling fan,
 - tilt poles,
 - rigid conduit,
 - load centers,
 - demolition of CBA cabinet foundations and associated utility lines/conduits/appurtenances,
 - loops,
 - piezoelectric sensors,
 - radar sensors,
 - TDP's,
 - surface temperature probes,
 - ambient air sensors, and
 - other ATR equipment or work as shown on the plans.
- Wet cutting with a concrete saw for piezoelectric sensor installations.
 - Replacing failed equipment, equipment components and repairing failed workmanship.

WITHHOLDING. To ensure full compliance under this Section, twenty percent (20%) of the billings for each 669 item shall be withheld until written acceptance of the site has been received from the Highway Data Manager.

PAY ITEM

Item Number	Item Description	Unit
669.2003.____	Automated Traffic Recorder	LS

CFHWY01073

Special Provision

Replace Section 670 with the following:

**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 ft²/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 prestripping 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.

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 60 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 60 mils.

(b) Gore Markings:

Apply diagonal gore markings to yield a thickness of 60 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 125 mils. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 125 mils.

(2) Other Markings.

(a) Transverse and Symbol Markings:

Groove the area for inlaid markings to a depth of 125 mils. Apply marking for symbols, arrows, stop bars, railroad symbols, and cross walks to yield a thickness of 250 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. $\pm 1/8$ 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 Striping. Keep the center of the stripe within planned alignment.
7. Double Striping. $\pm 1/4$ 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:

**SECTION 682
UTILITY POTHOLING**

682-1.01 DESCRIPTION. Expose subsurface utilities using a vacuum-extract truck. Record the location of the utility(s). Backfill the pothole and dispose of waste materials.

682-2.01 MATERIALS.

Backfill Material:	Aggregate Base Course, Grading D-1	Section 703
Asphalt Patch Material:	Hot Mix Asphalt Type II, Class B	Section 401

682-3.01 CONSTRUCTION. Submit the utility potholing schedule to the Engineer and utility companies not less than 7 days before starting potholing.

Deliver the vacuum-extract truck to the job-site with the debris tank empty.

Expose the subsurface utilities. Log the as-built information, subsection 682-3.02. Backfill the pothole immediately after the Engineer accepts the logged data. Backfill the first 6 inch lift using the excavated material, compact the material. Backfill the balance of the pothole using Aggregate Base Course, Grading D-1, compact the material. In paved areas, use Hot Mix Asphalt Type II, Class B to patch over the pothole, match the thickness of the surrounding pavement.

Dispose of excavations off-site. Before beginning potholing, provide to the Engineer a certificate, signed by the owner or owner's representative, identifying the disposal site and acceptance of the project potholing excavations.

Utilities damaged by the potholing operation require the Engineer to be immediately notified. The Contractor is responsible for the repairs and the associated costs. Contact and coordinate repairs with the utility owner.

682-3.02 AS-BUILTS. Create a utility pothole log, as-built, recording for each pothole: the date of potholing operation, utility type and size, station, offset, elevation, groundwater, and other pertinent data. Survey the utility location using the project horizontal and vertical control; comply with the requirements of Section 642. Submit the completed log to the Engineer within two working days following the completion of the pothole excavation.

682-4.01 METHOD OF MEASUREMENT. The pay unit, contingent sum, is measured by the hour of work performed.

682-5.01 BASIS OF PAYMENT. Pay Item No. 682.2000. ____ is paid at \$450/hour for the work to pothole; expose the utility(s), backfill the hole, patch disturbed pavement and dispose of excavations. The paid time includes the work; labor, and the fully operated vacuum truck or combination of vacuum truck and other Engineer approved equipment engaged in potholing at the area(s) identified in the Plans and/or identified by the Engineer. The paid time includes the time to empty the vacuum truck of excavation material, including the travel time, from this project only, to a certified disposal site.

Travel time to and from the project, idle time, maintenance and repairs (labor, material and time) are incidental and not included in the measured time.

As-built, utility pothole log, per subsection 682-3.02, will be paid under Section 642.

Potholes for the Contractor's information and potholes not accepted by the Engineer will not be paid for by the Department.

Payment will be made under:

PAY ITEM		
Item Number	Item Description	Unit
682.2000._____	Vac-Truck Pothole	CS

C682-14.0101-1

DIVISION 700 — MATERIALS

Special Provision

Add the following:

Products identified by name in the list below are Iron or Steel Products, Manufactured Products, or Construction Materials. 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 BABA Act, or from providing the Non-Compliant Minimal Use & De Minimis Register Form 25D-60 and the Certificate of Domestic Materials 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".

HSP20.11B-25.1030

Blank Page

**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:

- 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

HS20.40-22.0501

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 VH 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 VH
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	-	-	-	8 ^a

a. Hard Aggregate that meets the Nordic Abrasion values specified may be obtained from, but not limited to, the following sources:

- MS 52-068-2, located at MP 217 on the Parks Highway near Cantwell
- Alaska Lime Co, Jim Caswell, located at MP 216.5 on the Parks Highway near Cantwell
- CalPortland plants located in Dupont Washington
- Jack Cewe Ltd located in Coquitlam British Columbia, Canada

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 VH 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 VH
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:

<u>Sieve</u>	<u>Percent Passing by Weight</u>
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 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.

C710.4-25.1105

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 6-inch w-beam panels, and mid-span splice connection to run of rail.
 - a. Parallel Terminals. Provide the RoadSystems, Inc. MASH MSKT W-Beam terminal with the following characteristics:
 - (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 x 6-inch x 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.

HSP20.12-25.1105

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.

C710.4-25.1105

**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 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)
 $C_{\text{Factor}} = .01$ 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/yd² and a limiting shear stress of 0.45 lb/ft².
- 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/yd².
- 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, $\pm 5\%$
- 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/yd² and a minimum limiting shear stress of 1.5 lb/ft². 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; copolymer 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

APPENDIXES

Blank Page

APPENDIX A
CONSTRUCTION SURVEY REQUIREMENTS

Blank Page

APPENDIX B
MATERIAL CERTIFICATION LIST

Appendix:

- Number appendixes for 1st page of each appendix to begin on a right hand, odd numbered page and a blank page on the following page.
- If an appendix does not include title content keep the appendix with the same letter titled "Reserved", delete the other appendix with the same letter.
- If an appendix has title content delete the like lettered appendix with the title "Reserved".

Blank Page

