MEMORANDUM

State of Alaska

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

TO: Julia Hanson, P.E.
PIH Distribution

DATE: September 5, 2025

TELEPHONE NO: 907-269-0753
E-MAIL: julia.hanson@alaska.gov

FROM: Susan Acheson, P.E.
Project Engineer

SUBJECT: PIH Specifications Memo
Seward Hwy MP 90-99 Pavement Preservation Phase 2 & Camp Road Culvert Repair
0A31066/CFHWY00850

This memo was prepared to summarize the proposed project changes to the 2020 Standard Specifications for Highway Construction, the Standard Modifications, Statewide Specials, and Central Region Specials for the above listed project.

Project specific specifications, including the following, are attached to this memo for review:

603 Culverts and Storm Drains

To see the Standard Specifications for Highway Construction 2020 edition please see the DOT&PF website:

http://dot.alaska.gov/stwddes/dcsspecs/index.shtml

To see the Standard Modifications, Statewide Specials, and CR Specials please see our ftp site for the latest edition.

http://www.dot.state.ak.us/creg/design/highways/specs/

Project Provisions

DIVISION 100 GENERAL PROVISIONS		
101	Definitions and Terms	*
102	Bidding Requirements and Conditions	*
103	Award and Execution of Contract	*
104	Scope of Work	*
105	Control of Work	*
106	Control of Material	*
107	Legal Relations and Responsibility to Public	*
108	Prosecution and Progress	*
109	Measurement and Payment	*
120	Disadvantaged Business Enterprise (DBE) Program	*

DIVISION 200 EARTHWORK		
201	Clearing and Grubbing	*
202	Removal of Structures and Obstructions	*
203	Excavation and Embankment	*
204	Structure Excavation for Conduits and Minor Structures	*

DIVISION 300 BASES		
301	Aggregate Base and Surface Course	*
306	Asphalt Treated Base Course	*

DIVISION 400 ASPHALT PAVEMENTS AND SURFACE TREATMENTS		
401	Hot Mix Asphalt Pavement	*
402	Tack Coat	*
406	Rumble Strips	*

DIVISION 500 STRUCTURES		
DIVISION 600 MISCELLANEOUS CONSTRUCTION		
603	Culverts and Storm Drains	Added language for Liner for Storm Drain to slip-line the Camp Road Culvert. See attached.

604	Manholes and Inlets	Added language for fish passage end treatment.
608	Sidewalks	*
611	Riprap	*
615	Standard Signs	*
618	Seeding	*
619	Soil Stabilization	*
620	Topsoil	*
639	Driveways	*
640	Mobilization and Demobilization	*
641	Erosion, Sediment, and Pollution Control	*
642	Construction Surveying and Monuments	*
643	Traffic Maintenance	Will update with work hours specific to this project as coordinated with Construction.
644	Services to be Furnished by the Contractor	* Construction please advise
645	Training Program	*
646	CPM Scheduling	*
647	Equipment Rental	*
651	Control of Work – Supplemental Requirements	Will update with project specific utilities and any utility work deemed necessary as part of this project.
652	Prosecution and Progress – Supplemental Requirements	*
654	Monitoring	* Construction please advise on $$$
670	Traffic Markings	*
682	Utility Potholing	*
683	Safety Observer	
690	Waterway	Will adjust once the parameters of the fish passage culvert have been determined.

DIVISION 700 MATERIALS		
701	Hydraulic Cement and Supplementary Cementitious Materials	*

702	Asphalt Materials	*
703	Aggregates	*
705	Joint Materials	*
706	Concrete and Plastic Pipe	*
708	Paints	*
710	Fence and Guardrail	*
712	Miscellaneous	*
724	Seed	*
725	Fertilizer	*
726	Topsoil	*
727	Soil Stabilization Material	*
729	Geosynthetics	*
730	Sign Materials	*

* No anticipated changes to the 2020 Standard Specifications for Highway Construction, Standard Modifications, Statewide Specials, or the current CR Specials.

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.

C603-25.0201

This work includes the installation of High Density Polyethylene (HDPE) Liner for Storm Drain in the culverts identified on the Plans. The Contractor shall install the Liner for Storm Drain as indicated on the drawings and specifications.

CFHWY00850

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

C603-25.0201

HDPE Liner for Storm Drain	Snap-Tite Culvert Lining System Manufactured by ISCO Industries
Grout	Per Manufacturer's Recommendations

CFHWY00850

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 D395. .625 inch x .02 inch, dry Type 1 regular-duty (magnetic, ferritic), galvanized Finish B (hot-dipped Grade 2 moderate coating, .18 oz./ft^2 surface or .0002 inch thick minimum. Push type seals, Style III (overlap), regular duty, galvanized Finish B (hot-dipped coating) by 1.75-inch minimum length and matched to strapping width.

CONSTRUCTION REQUIREMENTS

603-3.01. GENERAL. Excavate, bed, and backfill according to the requirements of Subsections 204-2.01 and 204-3.01, and the Plans.

Dewater ground water from work areas; construct and maintain temporary water diversion when working in waterways, and for facilities or structures with active drainage according to Section 204.

C603-25.0201

Provide a work plan for the Liner for Storm Drain as detailed in 603-3.05.

CFHWY00850

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.

C603-25.0201

Liner for Storm Drain

Pipe joints shall comply with ASTM D3212 Standard Specification for joint tightness. Extrusion welded joints shall not be allowed to join the liner pipe together to keep grout from leaking out during the grouting stage. Neoprene Cement shall not be allowed to create a seal at the joint to prevent grout from leaking out during the grouting stage.

CFHWY00850

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.

C603-25.0201

603-3.04 LINER FOR STORM DRAIN. For HDPE liner installation using the slip-lining method, the contractor shall provide a slip-lining supervisor with experience on at least ten successful pipe slip-liners within the past 5 years. Prepare a work plan and submit to the Engineer for approval at least ten days before beginning the work. Include the following in the work plan:

- Provide the name of the slip-lining supervisor to be present during installation and documented experience.
- Identify and provide all materials, specifications and submittals.
- Provide a detailed plan on how the HDPE liner will be installed within the existing culvert to prevent vertical and lateral movement during grouting.
- Provide grouting procedures to fill the annular void with grout materials, including grout injection locations, number, diameter and length of grouting tubes and venting.
- Detailed quality control plans to insure work is performed to meet the contract requirements to ensure the annular space is completely filled with grout.

Prepare the existing culvert to receive the HDPE liner. Clear and clean the existing culvert of all debris and deposits. Structural deterioration or deformation may have reduced the original diameter. Thoroughly inspect the culvert to determine the smallest diameter. Determine the appropriate diameter for the liner.

Size the liner to maintain a minimum flow rate equivalent to 100% of the existing culvert. Diameters listed in the bid schedule are the diameter of the existing pipe.

Develop a working area within the Right-of-Way and the area allowed by project permits. Construct temporary roadway embankment slopes as necessary to develop an adequate working area. Limited Right-of-Way, limited permitted area, and terrain may require partial excavation of the roadway prism and removal of existing culvert sections to provide sufficient area for proper liner alignment and insertion.

Install the liner following all manufacturer recommendations. Inspect the completed lining for any damage or faulty joints. Damaged lining shall be repaired or reinstalled as directed and all joints securely connected.

Construct a grouting seal at both ends of the culvert capable of withstanding the grouting pressure. Install grout ports and vent tubes at sufficient locations to ensure full grouting of the annular space. Where existing culvert sections have been removed to insert the liner, the HDPE liner may extend beyond the remaining culvert, in accordance with the manufacturer’s recommendations, and be directly bedded and backfilled.

Completely fill the annular space between the HDPE liner and the existing culvert with grout. Do not exceed the allowable grout pressure of 5 pounds per square inch during the grouting process. Regardless of the pressure, the contractor shall be solely responsible for any damage or distortion to the insertion pipe due to the grouting process. Field control tests, including unit weight (wet density) and compression tests shall be performed by the contractor and independently verified. Additionally, at the discretion of the Engineer, flow consistency tests (per ASTM C939) may also be requested.

Prevent flotation of the liner during the grouting process. Follow manufacturer recommendations to prevent flotation along all segments of the liner, including the central region of the culvert.

603-3.06 GROUT FOR ANNULAR VOID. Upon completion or partial completion of the slip-lining process, the annular void between the liner and the host pipe shall be filled with grout. Cellular concrete with a density between 40 and 80 pounds per cubic foot shall be used for grout. The cellular concrete shall be made using the preformed foam process using foam-generating equipment calibrated daily by the foam manufacturer to produce a precise and predictable volume of foam.

Submit mix design and test results to show the proposed cellular concrete mix strength is to equal or exceed a 28-day compressive strength of 200 pounds per square inch. Identify and provide all materials, specifications, and submittals for all additives required to be included in the grout to meet the design load and grout curing time criteria. The annular void shall be completely grout filled without deflecting the liner greater than 1.5 percent. A maximum annular void of 2 inches is permitted unless otherwise approved by Engineer.

603-3.07 CULVERT CLEANING. Clean culverts as necessary to install culvert extensions and culvert pipe lining. Culvert locations identified in the plans shall be cleaned of debris, trash and sediment. Cut back embankment and existing pipe as needed. Materials removed shall be disposed of in accordance with DEC regulations. Disposal of turbid water generated via the cleaning process shall be subject to appropriate environmental regulations.

CFHWY00850

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.

C603-25.0201

3. Liner for Storm Drain. The length of liner complete in-place and accepted.

CFHWY00850

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.

C603-25.0201

Liner for Storm Drain

Payment for the accepted quantity of Liner for Storm Drain as provided above shall be full compensation for all labor, materials, equipment, and other items necessary to complete the work of slip-lining the existing pipe as shown on Plans.

Providing a slip-lining supervisor, cleaning the existing storm drain pipe, excavation, and embankment to provide a working area if necessary, and grout will be considered subsidiary to Liner for Storm Drain.

The pipe work plan, stream diversion and erodible material stabilization with rock are subsidiary to Liner for Storm Drain. Vegetative stabilization for erodible material is paid for under Section 618. The rip rap rock embankment shall be paid under section 611. The pipe extension through the rip rap embankment shall be paid for under 603.2032.____.

CFHWY00850

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
603.2019.____	Liner for Storm Drain ___ Inch	LF
603.2032.____	Corrugated HDPE Pipe ___	LF
603.2033.____	End Section for Corrugated HDPE Pipe ___	Each

C603-25.0201/CFHWY00850