

MEMORANDUM

State of Alaska

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

TO: PIH Distribution

DATE: September 18, 2025

TELEPHONE NO: 907-269-0550

E-MAIL: galen.jones@alaska.gov

FROM: Galen Jones, P.E.
Project Manager

SUBJECT: PIH Specifications Memo
Glenn Highway & Hiland Road
Interchange Improvements
0A16055/CFHWY00917

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 Sections 501, 508, 510, 606, 622, 646, 669, 701, 722, and 731 are attached to this memo for review.

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	*

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

DIVISION 400 ASPHALT PAVEMENTS AND SURFACE TREATMENTS		
402	Tack Coat	*
408	Hot Mix Asphalt Pavement - Type VH	*

DIVISION 500 STRUCTURES		
501	Structural Concrete	Added new pay item for Spall Repair and Removal of Concrete, Sidewalk
507	Bridge Barriers and Railing	*
508	Waterproofing Membrane	Added language for waterproofing membrane
510	Removal of Concrete Bridge Deck	Added new pay item for Bridge Deck Repair, CS

DIVISION 600 MISCELLANEOUS CONSTRUCTION		
603	Culverts and Storm Drains	*
604	Manholes and Inlets	*
606	Guardrail	Revised C606-21.1231-1 to add language for transition posts and rail
607	Fences	*
608	Sidewalks	*
609	Curbing	*
611	Riprap	*
614	Concrete Barrier	*
615	Standard Signs	*
618	Seeding	*
619	Soil Stabilization	*
620	Topsoil	*
622	Rest Area Facilities	Added language for shelter
631	Geotextile for Subsurface Drainage and Erosion Control	*
634	Geogrid Soil Reinforcement	*
640	Mobilization and Demobilization	*
641	Erosion, Sediment, and Pollution Control	*
642	Construction Surveying and Monuments	*
643	Traffic Maintenance	* Will be developed during TMP
644	Services to be Furnished by the Contractor	* Construction please advise
645	Training Program	*
646	CPM Scheduling	Added pay item for Schedule Price Adjustment
647	Equipment Rental	*
651	Control of Work – Supplemental Requirements	*
652	Prosecution and Progress – Supplemental Requirements	*
660	Signals and Lighting	*
661	Electrical Load Centers	*
669	Automated Traffic Recorders	Added pay item for Automatic Vehicle Classification
670	Traffic Markings	*
682	Utility Potholing	*

DIVISION 700 MATERIALS		
701	Hydraulic Cement and Supplementary Cementitious Materials	Replaced 701-2.08 and added 701-2.10 Concrete Patch Material
702	Asphalt Materials	*
703	Aggregates	*
705	Joint Materials	*
706	Concrete and Plastic Pipe	*
707	Metal Pipe	*
708	Paints	*
709	Reinforcing Steel and Wire Rope	*
710	Fence and Guardrail	*
711	Concrete Curing Materials and Admixtures	*
712	Miscellaneous	*
714	Preservatives for Timber	*
716	Structural Steel	*
722	Bridge Railing	Replaced 722-2.01 Bridge Railing
724	Seed	*
725	Fertilizer	*
726	Topsoil	*
727	Soil Stabilization Material	*
729	Geosynthetics	*
730	Sign Materials	*
731	Waterproofing Membrane	Replaced Table 731-1 Spray-Applied Waterproofing Membrane
740	Signals and Lighting Materials	*

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

SECTION 501 CONCRETE FOR STRUCTURES

Special Provision

501-1.01 DESCRIPTION. Add the following: Repair spalled and deteriorated concrete areas as shown on the plans and as directed by the Engineer.

501-2.01 MATERIALS. Add the following:

Concrete Patch Material	Subsection 701-2.10
Strand Couplers	Subsection 721-2.05

CFHWY00917

Standard Modification

501-2.02 COMPOSITION OF MIXTURE – JOB MIX DESIGN.

Replace Table 501-4 with the following:

**TABLE 501-4
AIR CONTENT REQUIREMENTS**

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

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

HSM20.23-21.1231

CONSTRUCTION REQUIREMENTS

Special Provision

501-3.13 PRECAST CONCRETE MEMBER. Add the following:

- Existing Decked-Bulb Tee Repair. Mark area for repair based on extent of delaminated or spalled concrete. Obtain the Engineer's approval after marking and prior to other work. Outline the edges of the repair area with ¼ inch deep saw cuts. Chip all deteriorated and loose concrete from girder. Contain and dispose of waste generated from repair operations.

Install mechanical couplers according to the manufacturer's written instructions on damaged or severed strands prior to patching. A damaged strand is any strand in which an individual wire is broken or has measurable section loss. Extend repair areas as required to install couplers. Maintain at least 1 inch of clear cover over mechanical couplers. Increase patch thickness to accommodate clear cover over mechanical couplers if needed.

Do not use construction joints within patched areas. Clean concrete surfaces to be repaired and prestressing steel of surface laitance, curing compound and other foreign materials before fresh concrete patch material is placed.

Submit weight and dimension information for preloading vehicles to be used for preloading at least 15 days prior to beginning repairs. Information should include vehicle make, model, anticipated axle weights, longitudinal and transverse axle dimensions, tire sizes and anticipated gross vehicle weight. Weigh vehicles to be used for preloading in the configuration to be used for repair procedure. Include individual axle weights as well as gross vehicle weight for all vehicles used for preloading. Field measure longitudinal length between centerline of axles. Field measure axle and tire widths as well as distance between tires on axles. The Engineer may adjust placement of preloading vehicles as a result of either individual axle scale weights or gross vehicle scale weights that vary from submitted anticipated weights by more than five percent or axle dimensions that vary by more than five percent from submitted vehicle dimensions. The Engineer may reject vehicles for preloading use that vary in weight or axle dimensions such that they will overload the repair. Apply preloading to girder according to the plans and as directed by the Engineer. Submit plan for removal order of preloading from bridge so as not to damage repair.

Place patch material within 24 hours of cleaning patch area. Do not apply patch material before girder preloading is in correct placement and approved by the Engineer. Place and cure patch material according to the manufacturer's written instructions.

Do not move preloading vehicles until concrete patch material has reached a compressive strength, determined from informational field tests, of at least 4,000 psi. Test the strength of the patch material in accordance with ASTM C109.

Add the following Subsection 501-3.20 Concrete Spall Repair:

501-3.20 CONCRETE SPALL REPAIR. Repair existing concrete surfaces that are located and specified by the Engineer with concrete patch material. Use the concrete patch material in accordance with the manufacturer's instructions.

Finish the repair smooth and level with the surrounding existing concrete. Ensure the existing reinforcing cover as shown on the Plans is maintained in the repair areas.

501-4.01 METHOD OF MEASUREMENT. Add the following:

Removal of Concrete, Sidewalk. Measured by the volume of material based on surface area and thickness of concrete sidewalk removed.

501-5.01 BASIS OF PAYMENT. Add the following to the first paragraph:

Payment for existing prestressed girder repair will be made under 501.0007.0000. Payment includes all labor for repair, patch material, mechanical couplers for prestressing strands, containment of waste, preloading vehicles and scale weights for preloading vehicles. All repairs on an individual girder will be paid for as a single item.

Payment for concrete spall repair will be full compensation for all labor, equipment and materials required to complete the concrete spall repair in accordance with the Contract.

Payment for removal of concrete, sidewalk at the contract unit price and includes full compensation for labor, equipment and materials associated with removal of concrete, sidewalk.

PAY ITEM		
Item Number	Item Description	Unit
501.2001.____	Spall Repair	LS
501.2021.____	Removal of Concrete, Sidewalk	CF

CFHWY00917

SECTION 508 WATERPROOFING MEMBRANE

Special Provision

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

CONSTRUCTION REQUIREMENTS

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

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

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

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

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

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

CFHWY00917

**SECTION 510
REMOVAL OF CONCRETE BRIDGE DECK**

Standard Modification

510-3.04 HYDRODEMOLITION.

Replace the sixth paragraph of 510-3.04, item 2. Concrete Removal. with the following:

Provide night work lighting according to 643-3.10.

HSM20.24-21.1231

Special Provisions

510-5.01 BASIS OF PAYMENT.

Add the following pay item:

PAY ITEM		
Item Number	Item Description	Unit
510.2001.____	Bridge Deck Repair	CS

CFHWY00917

Special Provision

Replace Section 606 with the following:

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/CFHWY00917

Remove and dispose of damaged transition posts.

C606/CFHWY00917

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

C606-21.1231-1/CFHWY00917

Thrie-Beam Guardrail	Subsection 710-2.04
Symmetric and Asymmetric W-Thrie Beam	
Transition Section	Subsection 710-2.04
Connection Hardware	Subsection 722-2.01
Bridge Railing Elements	Subsection 722-2.01

C606/CFHWY00917

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.

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 AWP 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.

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.

When salvaging guardrail insert the appropriate M & O Station specific to the project in place of NA

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.

When salvaging crash cushions insert the appropriate M & O Station specific to the project in place of NA

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.

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.

C606-21.1231-1/CFHWY00917

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, including the Guardrail Connection plate.

C606/CFHWY00917

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/CFHWY00917

**SECTION 622
REST AREA FACILITIES**

Special Provisions

622-1.01 DESCRIPTION. Add the following numbered item 9.:

9. Shelter

Add the following Subsection 622-2.13 Shelter:

MATERIALS

622-2.13 SHELTER. Shelter is supplied by the Municipality of Anchorage (MOA) Public Transportation Department (PTD). The Contractor shall contact the MOA PTD to pick-up the shelter type shown on the Plans.

The Contractor shall provide installation materials including, but not limited to, concrete footings, anchor bolts, and any other mounting hardware required for the complete installation of the shelter.

CONSTRUCTION REQUIREMENTS

Add the following Subsection 622-3.08 Shelter:

622-3.08 SHELTER. The Contractor is solely responsible for loading, transporting, unpacking, and assembly of shelter. The Contractor shall load and transport the MOA PTD supplied shelter to the site. Contractor shall assemble and install shelter in accordance with the details shown in the Plans and the manufacturer's specifications.

The Contractor shall be responsible for protection of their work during transportation and installation and shall repair and replace all furnishings damaged or destroyed within the scope of the Work, regardless of cause.

622-5.01 BASIS OF PAYMENT. Add the following:

622.2020.____ Shelter,____. The contract price includes all work, materials, and equipment needed to install each unit complete in place. Concrete footings, anchor bolts, and any other mounting hardware required for installation is subsidiary.

Add the following Pay Item:

PAY ITEM		
Item Number	Item Description	Unit
622.2020.____	Shelter, ____	Each

CFHWY00917

**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

646-5.01 BASIS OF PAYMENT.

Add the following:

Pay Item 646.2000.____ Schedule Price Adjustment:

[Additional detail to be provided at next submittal]

PAY ITEM		
Item Number	Item Description	Unit
646.2000.____	Schedule Price Adjustment	CS

CFHWY00917

Special Provision

Add the following Section:

**SECTION 669
AUTOMATED TRAFFIC RECORDERS**

669-2.01 MATERIALS.

#. Precast Concrete Products Subsection 550-2.03

669-3.01 CONSTRUCTION REQUIREMENTS.

#. 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.

669-5.01 BASIS OF PAYMENT.

- Replacing failed equipment, equipment components and repairing failed workmanship is subsidiary to 669 Pay Items.

C669-21.0701

[Additional detail to be provided by Highway Data]

PAY ITEM		
Item Number	Item Description	Unit
669.2007._____	Automatic Vehicle Classification	LS

CFHWY00917

**SECTION 701
HYDRAULIC CEMENT AND SUPPLEMENTARY CEMENTITIOUS MATERIALS**

Special Provision

Replace Subsection 701-2.08 with the following:

701-2.08 POST-TENSIONED GROUT. Reserved.

Add the following Subsection 701-2.10 Concrete Patch Material:

701-2.10 CONCRETE PATCH MATERIAL. Use pre-packaged concrete formulated for repair and patching of concrete structures in aggressive exposures. Concrete may be extended with aggregate according to the manufacturer's written recommendations and instructions.

Provide concrete patch material that meets the requirements of ASTM C928 and Table 701-2. Use water that meets the requirements of Subsection 712-2.01. Provide the manufacturer's recommended batching and installation procedures and minimum cure time.

Protect concrete from moisture during shipment and storage. Do not use concrete that has been manufactured more than 6 months before usage, unless the manufacturer retests and certifies the product meets the specified requirements.

Submit a quality control data sheet covering the chemical and physical tests conducted on the concrete patch material for the material in each shipment. Submit a Certified Test Report from an independent laboratory, audited by the Cement Concrete Research Laboratory that shows the material meets the property requirements.

**TABLE 701-2
CONCRETE PATCH MATERIAL**

Property	Requirements	Test Method
Compressive Strength	Min. 3000 psi after 1 day Min. 5000 psi after 28 days	ASTM C109
Bond Strength	Min. 2000 psi after 1 day	ASTM C882
Length Change	Max. 0.05% after 28 days	ASTM C157
Scaling Resistance	No Scaling (0 Rating) at 50 cycles	ASTM C672
Chloride Ion Permeability	Very Low (<1000 Coulombs) at 28 days	ASTM C1202

CFHWY00917

**SECTION 722
BRIDGE RAILING**

Special Provision

Replace Subsection 722-2.01 Bridge Railing with the following:

722-2.01 BRIDGE RAILING.

Steel Tube Bridge Rail Elements	ASTM A500, Grade B or Grade C
Thrie-Beam Bridge Rail Elements	AASHTO M 180, Class B, Type II
Bridge Rail Posts	ASTM A709, Grade 50
Bronze Bridge Number Plate	ASTM B98, UNS Alloys C65100 or C65500 or ASTM B584, UNS Alloy C92200
Cable Safety Railing Posts and Braces	AASHTO M181, Grade 1 or Grade 2, or ASTM A53
Cable Safety Railing Cable	1/4 inch galvanized wire rope with a minimum breaking force of 7,000 pounds
Machine Bolts, Cap Screws, Nuts and Washers	ASTM A307
High Strength Bolts, Buts and Washers	Subsection 716-2.03
Anchor Bolts and Rods	ASTM F3125, Grade A325 or ASTM A449, Type 1
Welded Studs	AASHTO M 169, Grade 1015 or 1020
Shims, Plates, Plate Washers, Angles, Sleeves, and Scuppers	ASTM A709, Grade 50
Guardrail Connection Plate	ASTM A709, Grade 50
Beveled Washers and Tapered Plate Washers	ASTM F436
Galvanize steel portions of railing after fabrication	AASHTO M 111 or AASHTO M 232 and Subsection 716-2.07

CFHWY00917

**SECTION 731
WATERPROOFING MEMBRANE**

Special Provision

731-2.01 SPRAY-APPLIED WATERPROOFING MEMBRANE. Replace Table 731-1 with the following:

**TABLE 731-1
SPRAY-APPLIED WATERPROOFING MEMBRANE**

Test	Requirements	Test Method
Adhesion to Concrete	100 psi min., with failure in concrete	ASTM D7234
Tensile Strength at Break	1500 psi min.	ASTM D638
Elongation at Break	130% min.	ASTM D638
Crack Bridging	Pass at 10 cycles of 1/8 inch when tested at -15°F	ASTM C1305
Interlayer Shear Strength	30 psi min.	AASHTO TP-114

CFHWY00917