Seldon Rd Extension Phase II: Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)
Project No.: 0001723/CFHWY00562

PS&E Review

PS&E REVIEW COMMENTS are due on June 18, 2025. The review meeting will be held at **9:00 AM** on June 24, 2025 in the **Main** conference room. **Please E-mail comments, using the comment form, to Ryan Norkoli (ryan.norkoli@alaska.gov) and Chris Bentz (chris.bentz@alaska.gov).**

*****Electronic Copy available on the internet at the following location:**
dot.alaska.gov/creg/design/highways/PS&E_Review/CFHWY00562/

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

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

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MEMORANDUM State of Alaska

Department of Transportation and Public Facilities

TO: See Distribution

DATE: May 27, 2025

TELEPHONE: 269-0423

FROM: **Ryan Norkoli, P.E.**

SUBJECT: **Seldon Rd Extension Phase II: Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)**
Project No. 0001723/CFHWY00562
PS&E Review

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

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

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

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

IRIS Project No. CFHWY00562
IRIS Activity: 062P (or your sections activity code)
IRIS Template: TTPJ001
IRIS Phase: T02015

Wasilla, Alaska

Seldon Road Extension Phase II Windy Bottom/Beverly Lake to Pittman Road

PIH Review Meeting (August 16, 2023) - Responses to Comments

PROJECT NO. 0001723/CFHWY00562

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
1	1	J Carleton	H9	Precon. Admin. (EE)	Request the use of the load center summary (panel schedule) template found in model space of the 02-ARC_FLASH_SHOCK_HAZARD_LABELING.dwg file, which can be downloaded at the file path below. This template includes information fields such as the panel short-circuit current rating and which entity is responsible to maintain the load center.	lschneller	LC summaries revised.
2	2	J Carleton	H9	Precon. Admin. (EE)	Load Center "1": The 240V breaker for the PEC circuit A5 is a 2-pole, 15A breaker.	lschneller	Breaker changes to 2-pole.
3	3	J Carleton	H10	Precon. Admin. (EE)	Southcoast Region had some major issues with AEL lighting fixtures recently. Due to a manufacturer's defect, phosphors in the LED lenses of some Autobahn LED cobra head style fixtures were burning off over time, resulting in the light fixtures emitting an undesirable blue-purple color.	lschneller	Light fixtures changed to three manufacturers other than AEL.
4	4	J Carleton	H21	Precon. Admin. (EE)	Can you please provide a panel schedule for the panelboard that supplies power to relocated lights E1 and E2?	lschneller	Panel schedule added.
5	5	J Carleton	H21	Precon. Admin. (EE)	Since the whole raceway segment will be new, recommend using 2" RMC and a multi-conductor cable for circuit LC-16 and Conduit C. Where practicable, I'd prefer to use cables that have overall PVC jackets instead of individual conductors.	lschneller	Revised to jacketed cable.
6	6	J Carleton	H21	Precon. Admin. (EE)	Flashing beacon controller: can you please provide information about the flasher power circuit overcurrent protection? Likely the device trip rating is 15A or 20A but would like to have this verified. Also, recommend changing the beacon controller symbol on the plan to match the legend on sheet A3.	lschneller	Circuit breaker information added and symbol revised.
7	7	J Carleton	H21	Precon. Admin. (EE)	Recommend removing the underground power cable splice in junction box 2 and instead show the power cable splices to be made in the fused disconnects, accessible at the pole handholes.	lschneller	Circuiting revised which eliminated splice.
8	8	J Carleton	H21	Precon. Admin. (EE)	Construction Note 1: Suggest clarifying that a new cable will be routed between the breakaway fused disconnects in relocated luminaire at Sta. 4+19.5, 19.5LT and in the existing luminaire to the west. (To make sure underground splices are not made.)	lschneller	Note clarified to reflect circuit connection in existing pole.
9	9	J Carleton	H21	Precon. Admin. (EE)	Construction Note 2: Suggest clarifying that all the conductors in the whole Conduit B raceway segment (both existing and new conduit sections) will be new. I believe this is the intent but want to make sure the construction contractor doesn't misinterpret.	lschneller	Note revised to clarify new cables full length.
10	10	J Carleton	H21	Precon. Admin. (EE)	Construction Note 5: Recommend calling for a new 3C #8 cable for the entire length of Conduit D between the beacon controller and the relocated flashing beacon so as not to add an underground splice to the circuit.	lschneller	Cables revised to replace entire length.
11	11	J Carleton	H22	Precon. Admin. (EE)	At the Seldon Rd and Wyoming Dr intersection, can we add a spare conduit between j-boxes 6 and 9, and a spare conduit between j-boxes 9 and 7?	lschneller	Spare conduits added.
12	12	J Carleton	H23	Precon. Admin. (EE)	Conduit Note A: the circuit call-out should read "CA2" instead of "AA2".	lschneller	Circuits revised.
13	1	I Kelsey	E1 & F10	ENV	The proposed installation of culvert pipe P10-2 is located in a waterway which contains high-value resident fish species. ADF&G has indicated the culvert will need to meet fish passage standards as stated in the applicable inter-agency MOA. Additionally, construction below the ordinary high-water mark in fish-bearing waters will require issuance of and adherence to the terms and conditions of a fish habitat permit from the ADF&G Habitat Section.	Skari	Culvert design is consistent with ADF&G MOA and a habitat permit will be obtained before construction.
14	2	I Kelsey	E1	ENV	Placement of fill, riprap, and/or dredging, & excavation activities within jurisdictional waters or wetlands of the U.S. is anticipated to require issuance of and adherence to the terms and conditions of USACE Nationwide Permit 23.	Skari	We will pursue a NWP for this project in coordination with DOT and USACE.
15	3	I Kelsey	F6, F10 & F11	ENV	Unmapped floodplains intersect the project in several areas. Construction activities classified as encroachments within unmapped floodplains may require issuance and adherence to the terms and conditions of a MSB floodplain encroachment permit.	Skari	Coordination has taken place with MSB regarding existing floodplains and has been documented in the LHS.
16	4	I Kelsey	N/A	ENV	Permit applications should be submitted 6-9 months prior to project certification.	Mspicer	Draft permit applications have been initiated.
17	1	Matthew Hebnes	1	Utilities	Please add Item 682 Utility Potholing	jgoodman	Added pay item
18	2	Matthew Hebnes	1	Utilities	Please confirm the elevation of all utility crossings meet the required heights per Table 1130-1 AK Highway Preconstruction Manual 1140.31.	Skari	Overhead crossings are in conflict with design and will be relocated in some manner.
19	3	Matthew Hebnes	1	Utilities	Redline requests sent to AT&T, City of Wasilla, ENSTAR, GCI, MEA, and MTA.	Skari	Thank you

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20	4	Matthew Hebnes	1	Utilities	ENSTAR, MTA, and MEA facility conflicts with proposed project. Utility relocation anticipated.	Skari	We agree and have coordinated with DOT utility section.
21	5	Matthew Hebnes	A3	Utilities	Add Roadway Obliteration and Pavement Removal to legend.	mhidalgo	Added.
22	6	Matthew Hebnes	F01	Utilities	UE ends abruptly. Survey existing utility and identify on the plan set.	skari	We have completed additional utility survey and extended the limits of utilities depicted.
23	7	Matthew Hebnes	F13	Utilities	G and UE end abruptly. Survey existing utility and identify on the plan set.	skari	We have completed additional utility survey and extended the limits of utilities depicted.
24	8	Matthew Hebnes	F14	Utilities	FO ends abruptly. Survey existing utility and identify on the plan set.	skari	We have completed additional utility survey and extended the limits of utilities depicted.
25	9	Matthew Hebnes	F26	Utilities	FO ends abruptly. Survey existing utility and identify on the plan set.	skari	We have completed additional utility survey and extended the limits of utilities depicted.
26	1	Elliot Smith	1	Hydrology	Strive to maintain no less than 5 feet (10 ft desirable) between culvert ends for future maintenance activities.	skari	Adjusted culvert ends for additional clearance with 5 feet minimum.
27	2	Elliot Smith	A02	Hydrology	Where does Alaska Standard Plan D-07.00 apply?	Skari	Deleted.
28	3	Elliot Smith	A02	Hydrology	Delete reference to Alaska Standard Plan D-09.00. Central Region manages culvert marker posts exclusively by CR standard provisions, see Special Provision CR603-20.0615R. See also Alaska Standard Plans Index Modified for Central Region: https://dot.alaska.gov/creg/design/highways/AutoCAD/RegionalDetails/20220930_ASP_Index.pdf	Skari	Deleted.
29	4	Elliot Smith	B01	Hydrology	Increase width of flat bottom ditch from 4 feet to 6 feet.	Skari	The width of the ditch bottom is 4 feet, sized for 4-wheelers and is consistent with Seldon from Church Road to Windy Bottom.
30	5	Elliot Smith	B01	Hydrology	Confirm stationing for each respective typical section.	Skari	Sections and ranges have been adjusted.
31	6	Elliot Smith	E01	Hydrology	Hydrologic and Hydraulic Summary Table. (1)Revise Design Highway Water Elevations from depths to elevations relative to the project's datum. (2)For HW/D computations, both Headwater, HW and Culvert diameter, D are measured relative to the top of streambed in a buried culvert. Confirm the culvert is hydraulically sized to satisfy the HW/D requirements in the Alaska Highway Drainage Manual. (3)Revise a to at in the additional backwater statement	jgoodman	1) Elevations revised to project datum. 2) Confirmed HW/D 3) Corrected spelling error
32	7	Elliot Smith	E01	Hydrology	Note 1. Suggest revising void fill material to Selected Material, Type B, or a well-graded blend of salvaged streambed material.	Skari	Revised to utilize Selected Material, Type B for infill voids.
33	8	Elliot Smith	E01	Hydrology	Will streambank revegetation efforts be required? Suggest coordinating now with ADF&G Mat-Su Area Manager Habitat Biologist. If streambank revegetation efforts are incorporated into the project, use Section 690 Waterway specifications.	Skari	Shallow incised nature of creek limits revegetation needs. May modify as necessary in coordination with ADF&G habitat permit.
34	9	Elliot Smith	F02	Hydrology	Armor the cut-to-fill slope transitions where concentrated flow will discharge a ditch and traverse down the embankment's toe. An example of this condition occurs at Sta 19+50 Lt	Skari	Deleted this pipe. Other instances not noted.
35	10	Elliot Smith	F06	Hydrology	If cover allows, upsize culvert P6-1 to 36 inches. May require special ditching, confirm culvert outlet would daylight and still have positive drainage downstream.	jgoodman	Minimum cover cannot be maintained with a 36" diameter pipe
36	11	Elliot Smith	F27	Hydrology	Confirm a culvert isn't warranted under the pathway at Sta. 29+50.	skari	Added pathway culvert in this location
37	12	Elliot Smith	F10	Hydrology	Replace the culvert underneath Beverly Lake Rd downstream of Pipe P10-2. Connect the riprap apron channel improvements between the two culverts.	Skari	Culvert under Beverly Lake Road is adequate to handle flow and satisfy AHDM requirements. The Beverly Lake road is outside of the project limits.

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38	13	Elliot Smith	Y-3	Hydrology	Section 611 on the PIH Specifications Memo insinuates a geotextile filter is forthcoming for the riprap aprons. Suggest using a granular filter considering the fish bearing environment.	Skari	Good point. Will replace with a granular filter material.
39	1	Kristina Huling	-	PLA	FYSA: Other segments of the Bogard/Seldon corridor are in the process of being nominated for funding. As part of the greater alignment of the whole road, their improvements will also affect this segment currently in design expanding Seldon further west to Pittman Road. The DOT owned portion of Bogard between Trunk Road and the Bogard/Seldon Roundabout has been nominated for a combination of CTP and HSIP projects and funding. The CTP PEB (project evaluation board) has been delayed and so we won't know until September or possibly later if the CTP nominated segments (Earl Drive to Engstrom Roundabout) will receive funding or not. Two HSIP projects have been approved for program eligibility. They are: Bogard Road between Trunk Road and Engstrom Road, and Bogard Road between the Seldon/Bogard Roundabout and Greyling Street.	Skari	Thank you for this information.
40	2	Kristina Huling	-	PLA	The frontage/Pittman and Seldon intersection and plan is confusing. This is not a technical comment just that I'm finding it difficult to understand how Seldon is connecting at Pittman and the entire four-way intersection that is being developed there.	Skari	Seldon Road transitions directly into the current Pittman alignment. The frontage road allows for a t-intersection across from the newly constructed north leg of Pittman.
41	3	Kristina Huling	F01 / F32	PLA	What trailhead is it that parking lot being built for? Is it new or previously existing? Is it for the separated pathway along Seldon?	Skari	The parking is overflow parking for Meadow Lake Elementary School activities that was requested by the MSBSD and agreed to by MSB Public Works. It is new and is situated next to the new Seldon pathway, although its intended purpose is for use by the school. The MSBSD is responsible for its maintenance.
42	1	Josh Pettijohn/ Julia Fleming	1	RW	It's our understanding that we will be acquiring Parcel 2. Alignment and slope limits should be sent to RWE if finalized.	Skari	Done
43	2	Josh Pettijohn/ Julia Fleming	A02	RW	It is my understanding that we are ROW mapping for this project. Please include the R-Sheets in the "Index" table and remove General Note # 2.	Skari	ROW mapping is not part of this project. Stantec is under contract with the MSB to produce ROW maps.
44	3	Josh Pettijohn/ Julia Fleming	A02	RW	Recommend showing all F sheets on the sheet layout.	Skari	All have been added.
45	4	Josh Pettijohn/ Julia Fleming	A03	RW	Looks like the wrong .ctb is being used- items in the utilities column are printing in color. Please address.	Skari	Plotting issues have been addressed.
46	5	Josh Pettijohn/ Julia Fleming	C01	RW	Please add "LS", SY", "LF", "LB", "MGAL", "CY", "CS", "LS", "CS", "HR", and "EA" as seen on the Estimate of Quantities tables to the Abbreviations table on sheet A2.	mhidalgo	Added.
47	6	Josh Pettijohn/ Julia Fleming	C01	RW	Top right table is using different font. Use same throughout.	mhidalgo	Corrected.
48	7	Josh Pettijohn/ Julia Fleming	D01,D02	RW	Please add the units of measure to the "Offset" columns in all tables of this sheet if there are numerical values in the cells.	mhidalgo	Added
49	8	Josh Pettijohn/ Julia Fleming	D01	RW	Was the "Lum Sum" as seen at the bottom of the "Offset" column in the "201.0001.000 – Removal of Structures and Obstructions" table, meant to read "Lump Sum"?	mhidalgo	Corrected to "ALL REQ'D"
50	9	Josh Pettijohn/ Julia Fleming	E01	RW	Please ensure that the "Seldon Road" label in the "Plan View" diagram is not obscured by the flow arrow.	mhidalgo	Not obscured.
51	10	Josh Pettijohn/ Julia Fleming	E01	RW	Is the culvert stationing located on the "Plan View" diagram incorrect? (It seems to proceed from station 0+00 to 1+00 to 150+00)	jgoodman	Corrected

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52	11	Josh Pettijohn/ Julia Fleming	E01	RW	Please add the units of measure to the “INV. EL.” values located in the vertical profile.	jgoodman	Added
53	12	Josh Pettijohn/ Julia Fleming	E03	RW	Please add the units of measure to the elevation and offset values seen in the largest diagram.	jgoodman	Added
54	13	Josh Pettijohn/ Julia Fleming	F01-F32	RW	Please thoroughly review F-Sheets for items/labels needing masking or rearranging to ensure legibility and clarity. (Found many instances where corrections should be made)	mhidalgo	Cleaned up for legibility.
55	14	Josh Pettijohn/ Julia Fleming	F01-F32	RW	Noticed several structures and utility structures that are located within the acquired ROW. Identified each of them and notified our property management group. Should these structures be added to the “Removal of Structures and Obstructions” table on Sheet D1?	jgoodman	Some structures and other features were removed through MSB acquisitions and removed from base drawings after survey confirmation. Remaining features requiring removal or abandonment were added to removal tables
57	16	Josh Pettijohn/ Julia Fleming	F01	RW	It may be appropriate for the borough to dedicate ROW for the frontage road and possibly for the trailhead parking across the school lot. At minimum, a TCP would be necessary for the work area needed for the trailhead parking area. Slopes for the pathway are outside of the ROW in the 4+00 RT area. Permanent slopes for the pathway should be within the ROW.	skari	ROW dedication will be up to the MSB.
58	17	Josh Pettijohn/ Julia Fleming	F01	RW	Is the “Underground Gas Line Marker” text (located approximately 200’ north of STA 10+00) necessary to include in the plan sheets?	skari	Frozen.
59	15	Josh Pettijohn/ Julia Fleming	F01. H21	RW	Please include the ROW boundary to the north of the current alignment of Pittman Road.	mhidalgo	Added.
59	18	Josh Pettijohn/ Julia Fleming	F02, F11, F16	RW	It is standard DOT&PF practice to show Public Use Easements (PUE) as ROW in our F sheets. PUEs that have been acquired for this project are being shown as ROW, but existing PUEs are not being shown at all (11+00 LT to 15+25 LT [see recorded document 2014-007156-0] & 18+20 RT [Bk283 Pg226]). Please show all PUEs as ROW.	skari	PUEs shown as ROW
60	19	Josh Pettijohn/ Julia Fleming	F02	RW	Slopes outside ROW at Fullers Place approach (17+50 RT). Please address.	skari	Addressed slope limits.
61	20	Josh Pettijohn/ Julia Fleming	F02, F03	RW	Why is only a portion of West Zehnder Road delineated to be obliterated? Will it also be obliterated between the proposed road (19+50 RT) and the proposed approach at 22+50 RT? What is the design plan for the remainder of the West Zehnder Road corridor?	skari	Zehnder will remain for driveway access to gravel pit to the west and residential access to the east.
62	21	Josh Pettijohn/ Julia Fleming	F02	RW	Is the “School/Arrow Sign” text (located approximately 150’ northwest of STA 12+00 necessary to include in the plan sheets? Please add the symbol associated with said “School/Arrow Sign” to the Legend on Sheet A3.	skari	Extraneous text frozen
63	22	Josh Pettijohn/ Julia Fleming	F03	RW	Based on aerial imagery, it looks like there are two existing driveways off Zehnder Road that aren’t being shown in the topo basemap. The proposed driveway approach as shown at “Z” 0+00 doesn’t appear to match the existing location of the driveway in the imagery, and the approach for the driveway serving the corner lot to the east isn’t being paved at all. Can we match into the existing approaches for these two lots? TCPs may be necessary for this work.	skari	All driveways have been accounted for.
64	23	Josh Pettijohn/ Julia Fleming	F04	RW	Please change the scaling of the “Trail” label to be consistent with other labels and use leaders to point to the trail.	skari	Frozen.
65	24	Josh Pettijohn/ Julia Fleming	F06	RW	Is the “Underground Gas” text (located approximately 100’ south of STA 66+50) necessary to include in the plan sheets? If it is, the text needs to be scaled appropriately to be consistent with other labels and leaders.	skari	Extraneous text frozen
66	25	Josh Pettijohn/ Julia Fleming	F09	RW	Slopes are outside ROW at Beverly Way (98+60 RT). Please address.	skari	Adjusted to be within ROW
67	26	Josh Pettijohn/ Julia Fleming	F09	RW	Is the “SCP” symbol north of STA 98+00 necessary to include in the plan sheets? If not, please remove.	skari	Will freeze extraneous text
68	27	Josh Pettijohn/ Julia Fleming	F09	RW	Please add the “LWE” (Low Wire Elevation) symbol (located along North Beverly Lake Road) to the Abbreviations table on Sheet A3.	skari	Added

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
69	28	Josh Pettijohn/ Julia Fleming	F10/ F18	RW	Slopes are on the ROW at 113+75 RT. Can this be constructed without a TCE?	skari	yes. Slopes willl be drawn in with transition to existing road.
70	29	Josh Pettijohn/ Julia Fleming	F11	RW	Please move “Windy Bottom Rd.” label further south to ensure visibility of graveled street (This sheet shows the graveled street of Windy Bottom Rd terminates near the “W” of Windy. I believe it continues).	skari	Done.
71	30	Josh Pettijohn/ Julia Fleming	F11	RW	Slopes are on the ROW at the 119+10 & 120+25 areas. Can this be constructed without additional work area, or will a TCE be necessary? Slopes are over the ROW at 121+50 RT. Please address.	skari	TCEs will not be necessary.
72	31	Josh Pettijohn/ Julia Fleming	F13	RW	Please add street name to the corridor easterly of the “P13-1” label.	skari	Added W Zehnder Circle
73	32	Josh Pettijohn/ Julia Fleming	F13	RW	Please add the symbol located approximately 50’ south of STA 13+00 to the legend on Sheet A3.	skari	Underground gas line marker in legend.
74	33	Josh Pettijohn/ Julia Fleming	F14	RW	Consider adjusting the scale of the vertical profile stationing labels to prevent over-crowding.	skari	Adjusted the orientation for clarity.
75	34	Josh Pettijohn/ Julia Fleming	F14	RW	Please adjust the scale of the “Monroe Circle Plan and Profile” in the Title Block to be consistent with the previous and subsequent scaling.	skari	Done.
76	35	Josh Pettijohn/ Julia Fleming	F16	RW	If the topographic base-map was turned off for this sheet, I would recommend turning it back on for visualization purposes.	skari	The topo is displayed but has few features.
77	36	Josh Pettijohn/ Julia Fleming	F18	RW	Please spell out “Lake” instead of “LK” on Beverly Lake Rd.	skari	Done.
78	37	Josh Pettijohn/ Julia Fleming	F24	RW	Does the symbol as seen above PI Stationing 26+56.14 serve a purpose in the drawing? If it does, please add the symbol to the Legend on Sheet A3.	skari	Revised to domestic water well in legend.
79	38	Josh Pettijohn/ Julia Fleming	F24	RW	Show ROW lines on this sheet.	skari	Added
80	39	Josh Pettijohn/ Julia Fleming	F25	RW	Please add the units of measure to the “Offset” and “Elev” columns in the Cul-De-Sac Layout table.	skari	Added
81	40	Josh Pettijohn/ Julia Fleming	F25	RW	Suggest putting this sheet in the G sheets and using the same title block/sheet layout map as the other sheets.	skari	Added to G Sheets with border.
82	41	Josh Pettijohn/ Julia Fleming	F31	RW	Slopes are over the ROW on the bottom plan view where the frontage road matches into Fuller. Please address.	skari	Addressed slope limits.
83	42	Josh Pettijohn/ Julia Fleming	G01, G02	RW	Please add the units of measure on all offset and elevation values on these sheets	skari	Added
84	43	Josh Pettijohn/ Julia Fleming	G02	RW	Please remove the stray line to the north of Seldon Road on the bottom-half of the sheet.	skari	Removed
85	44	Josh Pettijohn/ Julia Fleming	H03, H05	RW	Only two of the diagrams on Sheet H3 (“Section A – A” and “Type II Junction Box”) have “NTS” below their respective titles. Is there a reason for this? Only one of the diagrams on Sheet H5 (“End of Mastarm Detail”) has “NTS” below its respective title. Is there a reason for this? Recommend consistency, unless there is purpose.	skari	Deleted NTS
86	45	Josh Pettijohn/ Julia Fleming	H03, H05	RW	For some reason, there are some labels/hatching/linework that are colored orange. What is the reason for this?	skari	Removed colored text.
87	46	Josh Pettijohn/ Julia Fleming	H22	RW	Please add a north arrow to the diagram on the left.	skari	North arrow added.
88	47	Josh Pettijohn/ Julia Fleming	H23	RW	Please add north arrow.	skari	North arrow added.

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89	1	Norkoli	A1	RE	Why does title include (MSB)?	Skari	We have been asked to retain the MSB reference in the title by the PM.
90	2	Norkoli	A2	RE	Following ASP's are listed but not used in CR: D-09.00, L-03.11, and S-20.11	Skari	Removed
91	3	Norkoli	B01	RE	Sections show limits of clearing extend beyond limits of topsoil and seed. After clearing will the area be stable or will it need seed to stabilize surface soil?	Skari	Yes. The relatively flat topography will also limit runoff velocities.
92	4	Norkoli	B01	RE	All Sections: show a leader with following call-out "Selected Material, Type B, As Required". This makes no sense in any instance when conditions are not described for what surface the Type B will be placed on – how was a project quantity determined, or was it? Will unclassified Excavation provide all needed Type B material? Note that the import pay item included in this project is Borrow, Type A, while Sheet D0 shows an apparent Borrow, Type B need of 20,000 CY.	Skari	Modified typical section for clarity on where subbase material is called out. Will be utilizing Type C material where Type B had been called out previously. Quantites were calculated. Unclassified excavation will provide all Type C material required.
93	5	Norkoli	B02	RE	Two sections included on this sheet are provided on sheet B1, show information in a single location.	Skari	All structural sections are on B1
94	6	Norkoli	C01	RE	1. Verify Construction Section wants Riprap measured CY instead of Ton 2. In CR we only use one Approach Pay item regardless of public/residential/etc. Use Item No. 639.2000.0000 Approach 3. Need to add item 643.0023.0000 Traffic Price Adjustment	Skari	1) Tons 2) Using single aproach item 3) Added
95	7	Norkoli	F01 and F Sheet	RE	Why is a hatch shown to redefine 'Roadway Obliteration'? Sheet A3 shows the standard hatch for Roadway Obliteration	Skari	Used A3 hatch for obliteration
96	1	PJS	A01	TD	Where does the AADT of 6,874 come from and what growth rate was used to project future AADT? 2022 data from the Drakewell site https://alaskatrafficdata.drakewell.com/publicmultinodemap.asp shows Seldon near Church Rd at 3980 AADT. Please verify.	skari	AADTs were taken from the MSB 2025 LRTP model and the annual growth rate thru the design year is 1.3%.
97	2	PJS	A02	TD	Remove L-03.11 and S-20.11 from ASP list. These are replaced by CR Regional Details.	skari	Removed
98	3	PJS	C01	TD	670.0010.0000 – Suggest switching to 670.2000.0000 per CR Special Provisions.	skari	Revised to 670.2000.0000
99	4	PJS	D02	TD	Salvage Sign summary table – suggest moving to H sheets after new sign summary table for consistency with other projects.	jgoodman	Moved
100	5	PJS	E05 / D01	TD	Suggest adding detail for base plate showing whether it should be installed flush with pathway surface or recessed. Verify with maintaining agency on their preference. Also how will these be paid? Only see fixed bollard item. Should that be 606.2002.0000?	skari	Added note for flush mounting. Changed pay item to reflect removable type.
101	6	PJS	H08	TD	Notes missing. Please use most up to date detail found on FTP site.	mhidalgo	Detail updated
102	7	PJS	H10	TD	Please use luminaire performance criteria and luminaire standards table templates found in the model space of the H1 detail from the FTP site.	lschneller	Luminaire criteria and standards tables udpated.

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
103	8	PJS	H10	TD	Verify roadway classifications based on IES RP-8-14. Believe Seldon should be major or collector depending on verified AADT; Pittman should be a collector; and Wyoming, Beverly, and Monroe should be local. Average illuminance values listed in the tables on H10 are below IES recommended values for these intersection classifications. Traffic Design would like to review the AGI files at the next submittal.	skari	Illumination criteria listed on H10 are based on Partial (Isolated) Intersection Lighting with Seldon being classified as a Major roadway and R3 pavement classification. An 0.8 fc minimum value was obtained from Table 12-2 of RP-8-22 and we have updated that value so that it follows RP-8-14. Table 9 of RP-8-14 indicates 0.9 fc for this application, and we have revised the criteria accordingly.
104	9	PJS	H11	TD	Signs 2 and 3 missing sign blocks	mhidalgo	Added one sign, one removed
105	10	PJS	H11	TD	Does Meadow Lakes Elementary have a dedicated School Zone? If so, what are the limits? According to sign 6, it would appear the entrance to the school at ~1+00 is not within the School Zone?	skari	The beacons and signage have been relocated to bracket the dedicated school zone. Begins at 15+75 and ends at approximately 8+00
106	11	PJS	H11	TD	According to MSB walk zone inventory from 2014 (https://matsugov.us/docs/general/16869/msb-srts_final-inventoryrecommendations_final_14y12m02d_smaller.pdf), this is the walk zone for Meadow Lakes Elementary. Is a new walk plan being developed with the addition of the pedestrian facilities from this project? What about students coming from the south/west of the crosswalk at Seldon and Pittman?	skari	We have followed the guidance of MSB SRTS plan with reduced speed limits and relocated flashing beacons. There will be no crosswalk at the intersection of Seldon and Pittman. A pathway does not exist coming from the southwest and is anticipated with another project.
107	12	PJS	H11	TD	Sign 16 – Should this be a right arrow instead of left?	skari	Removing the sign with motorists traveling north on Pittman not carrying the same speed as previous configuration.
108	13	PJS	H11	TD	Sign 18 – Typically, DOT&PF does not include cardinal directions on advance D3 signs.	skari	It is the name of the road.
109	14	PJS	H11	TD	Sign 19 – Block is upside down	skari	Corrected orientation.
110	15	PJS	H16	TD	Are the parking lots not going to have any striping?	skari	Must coordinate with MSBSD on overall parking lot striping preference
111	16	PJS	H17	TD	Sign 2 – W11-8A is an outdated sign and should not be used. Believe W11-8 is sufficient without a plaque.	skari	Deleted, sign no longer needed
112	17	PJS	H17	TD	Sign 4 – W16-9P has the wrong block. Also verify size. Believe height should be 24”.	skari	Sign deleted
113	18	PJS	H17-H20	TD	Sign thickness column seems unnecessary with note 3 on H1.	skari	Sign thick column was removed
114	19	PJS	H17-H20	TD	Stop signs for side roads intersecting Seldon and Pittman should be 36”x36” per MUTCD 2B.04 paragraph 7. (signs 11, 12, 17, 24, 29, 30, 35) Also reorder table so signs appear as they will be installed with D3 signs above the stop signs	skari	Stop sign sizes updated
115	20	PJS	H18	TD	Sign 18 – Believe this sign should be a D3-2	skari	D3-201 per ASDS

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116	1	Merle Sena	B01	C	What are the limits for Grubbing? The second typical is unclear.	skari	Grubbing includes everything within the slope limits.
116	2	PJS	H18	TD	Sign 20 – W16-9P height should be 24"	skari	Deleted
117	2	Merle Sena	B01	C	Could we add "Cut" or "Fill" to the typical sections to delineate them better?	jgoodman	Added.
117	3	PJS	H21	TD	Where is the existing LC information for E1, E2, and the flashing beacon?	lschneller	LC summary added for panel serving E1 and E2. Flashing beacon LC information added to note.
118	3	Merle Sena	B01	C	On structural section detail call outs, can we use normal dashed ellipse instead of solid circle that looks like a culvert?	jgoodman	Yes, modified the detail.
118	4	PJS	H21	TD	Suggest including CR Detail for School Beacon in planset	skari	Will be relocating existing beacons.
119	4	Merle Sena	X	C	Add updated 642 Survey Spec to specials. See project, Parks Hwy Bridge Replacements: Montana Ck, Sheep Ck, and Goose Ck. No. 0A41034/Z589760000	Skari	Updated per request
120	5	Merle Sena	X	C	Add Item 642.2006.0000 Contactor Furnished Engineering Tools.	jgoodman	Added pay item
121	6	Merle Sena	X	C	Add Item 644.2007.0000 Vehicle (LT/SUV) - 3 EA.	jgoodman	Added pay item
122	7	Merle Sena	C01	C	Round Asphalt Pathway quantity to whole number.	mhidalgo	Done.
123	8	Merle Sena	B02	C	Is a 2" layer of HMA and no ATB sufficient for Pittman in that section?	skari	Modified Pittman section to match Seldon Road. New Pittman embankment sections have variable soil quality (west end of project).
124	9	Merle Sena	X	C	Remove Item 618.0003.0000. Make Water for Seeding subsidiary to Item 618.0002.0000 Seeding	jgoodman	Removed
125	10	Merle Sena	D0	C	Assuming Unclassified Ex as 70% useable Select B material seems high based off new alignment going through large areas of swamp. We sometimes don't even see 70% useable Select B material on urban projects	skari	Will utilize a Select Type C material excavated from the west end of the project.
126	11	Merle Sena	F1	C	Why are we not extending Seldon BOP to approx. 0+00 to encompass building a new entrance to the school? Seems like we should since we are replacing the approach culvert at 1+00RT and building the new Trailhead Parking Area? We will have that whole area blown up with all the work there between the culverts, pathway, Trailhead Parking Area, frontage roads, demo'ing existing school approaches, etc.	skari	The BOP was extended to the west, beyond the school driveway.
127	1	O. LeCrov	General	TS	Has a maintenance agreement been developed for the project? How are maintenance responsibilities divided between DOT and MSB at each end? Frontage Road? Pathway? Trailheads? Lighting?	skari	Yes, an MOA with the MSB is in place. All new facilities are responsibility of the MSB constructed by the project.
128	3	O. LeCrov	B02	TS	Cross sections show same station ranges. Revise as required.	skari	Distinguished the sections at cut and fill
129	4	O. LeCrov	D01 / D02	TS	Bollard, Chainlink Fence, and Driveway Gate locations not clear. Where are these proposed? Outside clear zone? Outside DOT ROW?	skari	All station and offset provided in summary tables based in N Fuller Place alignment. Outside DOT ROW
130	5	O. LeCrov	H09	TS	Identify existing/proposed load center owners.	skari	Added on summaries
131	6	O. LeCrov	H11	TS	What is the schools circulation plan following construction? Will the existing southbound LT lane on Pittman be utilized for school drop off and pickup? Or will all pickup and drop off traffic be rerouted to the new intersection with Pittman?	Skari	The primary entrance access to the school is the Pittman driveway, although drop off can occur via the frontage road. All traffic exiting the school will use the Pittman intersection.

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
132	7	O. LeCrov	H11	TS	Crosswalk not part of MSB walking plan. Remove or provide ped signal consistent with ATM hierarchy of crossing treatments for roadway volume, speed (45+), and number of lanes. Ped signal will require revision of walking plan and MSB maintenance agreement.	Skari	Modified with relocated flashing beacons and signage consistent with MSB SRTS and ATM.
133	8	O. LeCrov	H11	TS	Confirm future RT traffic volumes warrant dedicated RT lane. Decelerating RT'ing traffic in through lane may help traffic calming adjacent to school.	skari	Volumes satisfy warrant for the RT turn
134	9	O. LeCrov	H11	TS	No existing 20 MPH school zones on Pittman. Support addition with this project per MSB SRTS recommendations.	skari	20 MPH school zone signage added per MSB SRTS.
135	10	O. LeCrov	H11	TS	Install ped-scale Stop Signs and Pathway Ends plaques at the south terminus of the pathway, as well as other locations throughout the project limits where pedestrians will be expected to utilize the shoulder after departing the pathway.	Skari	Added stop and pathway ends
136	11	O. LeCrov	H11	TS	Add D3-1 signs on Post 12	mhidalgo	Added Street names (new post 5)
137	12	O. LeCrov	H11	TS	Sign 19 block orientation incorrect.	mhidalgo	Corrected orientation
138	13	O. LeCrov	H15	TS	Sign 37 block orientation incorrect.	mhidalgo	Corrected
139	14	O. LeCrov	H16	TS	Has MSB adopted a name for the frontage road? If so, sign accordingly and add D3-1 signs be added to Posts 41, 44, and 45.	Skari	Yes, directed to use N Fuller Place
140	15	O. LeCrov	H16	TS	Consider adding "Traffic from Right/Left Does not Stop" Plaques under R1-1 signs for Posts 44 and 45. Example configuration at Alyeska Highway and Arlberg.	Skari	Added
141	16	O. LeCrov	H21	TS	Project appears to require the relocation of 2 flashing beacons if school zone limits are revised per Sign 5 location shown on H11.	Skari	Both flashing beacons have been relocated consistent with ATM guidelines.
142	1	KEP,RGH, DGC	A01	PD&E	Isn't everything outside of Anchorage Municipality considered "Rural"? I question the Functional Class.	skari	The arterial designation is consistent with the speed and function of the roadway and approved planning documents. Don't disagree with the rural nature of the road and typical.
143	2	KEP,RGH, DGC	A01	PD&E	Map lines are busy and are hard to distinguish: Consider changing Lt type for lakes and streams to lake and pond lt type in A3.	skari	Modified for clarity.
144	3	KEP,RGH, DGC	B01	PD&E	Include hatch for "Selected material, Type B"	mhidalgo	Added for all material types.
145	4	KEP,RGH, DGC	B01	PD&E	Consider placing all structural sections on B1.	mhidalgo	Done.
146	5	KEP,RGH, DGC	B01	PD&E	Please indicate on the Typical Sections what material is going below Structural Sections in fill areas.	skari	Done. Shown on structural sections.
147	6	KEP,RGH, DGC	B01	PD&E	Pathway shoulder slope dimensions and slope: See AASHTO 2012 Bicycle Facilities guide for multiuse pathway recoverable slopes and width guidance (see section 5-5).	skari	Adjusted pathway shoulder slopes
148	7	KEP,RGH, DGC	B01	PD&E	Delete repeated "Seldon Road sta "S" 2=69.48 to "S" 122+25". Incorporate "Cut" and "Fill" into the title for each typical. Or combine the typicals and show cut on the left and fill on the right per HDC guidance.	jgoodman	Distinguished the sections with the titles.
149	8	KEP,RGH, DGC	B02	PD&E	Unclear what "Lines" mean under Approach Roads title. Consider removing the list of alignment abbreviations in this title as it should be clear what is considered an approach road in other areas of the planset.	skari	Removed and made generic for approach roads.

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150	9	KEP,RGH, DGC	C01	PD&E	Consider breaking out Clearing 201.0001 and Clearing and Grubbing 201.0003 onto two items and quantities. Defer to Construction.	jgoodman	Changed to Clearing and Grubbing
151	10	KEP,RGH, DGC	C01	PD&E	Round quantities up using standard DOT&PF rounding conventions.	jgoodman	Corrected rounding conventions
152	12	KEP,RGH, DGC	C01	PD&E	Consider using 639.2000.0000 Approach pay item as it is more widely used in Central Region. It does not appear that a project in CR has used 639.0002.0000 yet.	jgoodman	Will use the 639.2000.000 approach pay item. Previous
153	13	KEP,RGH, DGC	C01	PD&E	What material are the pipes? I see that it is not identified in the pay item or in the pipe tables on the F sheets.	Skari	CMP or CPEP at the contractor's discretion and approved on the QPL. Larger fish passage pipe specified as CMP.
154	14	KEP,RGH, DGC	E01	PD&E	Why give a skew for the pipe? The F sheet already gives station, offset, and elevations. That seems like enough to construct it properly.	jgoodman	No skew provided.
155	15	KEP,RGH, DGC	E02	PD&E	Add 10:1 transition into full depth structural section.	skari	Added.
156	16	KEP,RGH, DGC	E03	PD&E	Show Seldon Road, or direction of Seldon Road to help orient where the trailhead is located on the project.	mhidalgo	Added
157	17	KEP,RGH, DGC	E03	PD&E	Not clear what the nothing and eastings are called out for as they are not attached to an alignment or any dimensions.	mhidalgo	Northings and eastings eliminated.
158	18	KEP,RGH, DGC	F01	PD&E	Add alignment bearings. (Typ)	mhidalgo	Will add missing alignment bearings
159	19	KEP,RGH, DGC	F01	PD&E	Consider removing abbreviation “S” from Seldon Alignment and having no abbreviation for the main project alignment.	skari	With required station equation to extend alignment west, the abbreviation provides added clarity.
160	20	KEP,RGH, DGC	F01	PD&E	Alignment stationing has designating abbreviation in some locations but not all locations. Make consistent.	mhidalgo	Updated for consistency.
161	21	KEP,RGH, DGC	F01	PD&E	The “-“ in front of some offsets and, on other pages, grades, seems unconventional. Consider removing.	mhidalgo	Revised styles for consistency
162	22	KEP,RGH, DGC	H11	PD&E	Consider using RRFP or HAWK crossing treatments for school zone crossing of 80’ traversing 3 lanes of 50 mph roadway.	skari	MSB SRTS plan do not call for a school crossing. It has been deleted from the plans.
163	23	KEP,RGH, DGC	H11	PD&E	On posts with signs mounted back to back (such as post 11), consider showing blocks for all signs, and displaying those sign blocks back to back with each other.	mhidalgo	All signs are shown.
164	24	KEP,RGH, DGC	H11	PD&E	Add street name to post 17.	mhidalgo	Added Street names (new post 10)
165	25	KEP,RGH, DGC	H15	PD&E	Add street name to post 37.	mhidalgo	Added Street names (new post 29)

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
166	26	KEP,RGH, DGC	H17	PD&E	All 12" D3-1 signs should be framed, per HDC guidance.	mhidalgo	Corrected
167	27	KEP,RGH, DGC	H17	PD&E	Remove Thickness from Sign Summary Table as this information is given on H1.	mhidalgo	Removed
168	28	KEP,RGH, DGC	H17	PD&E	Post 7 – Why is this sign post different from other S1-1 signs?	mhidalgo	Will revise to match
169	1	Jonathan Tague	A02	C	Note 4 – Clearing limits should be extended as much as possible. It improves sight distance, reduces moose collision, and reduces ice and snow lingering on the pavement reducing maintenance costs. Would it be possible to go 30' beyond the toe or to ROW, whichever is less?	skari	A significant portion of the project abuts established residential parcels sensitive to noise and visual impacts of the new arterial. The additional clearing will intensify those impacts.
170	2	Jonathan Tague	B01	C	Top typical section – show 2:1 backslope on RT side of pathway.	skari	Removed backslope on fill condition.
171	3	Jonathan Tague	B02	C	Suggest adding 1' gravel shoulder to Approach Roads typical, since the pavement is so narrow. Vehicles tend to leave the edge of pavement more often and push ABC down the slope, eroding the edge of pavement.	skari	Modified the section to provide for a gravel shoulder.
172	4	Jonathan Tague	D01	C	Item 201.0001 – I don't see houses, wells, septics, etc. listed. Are these going to be removed prior to the construction project? If the houses in conflict on F2 have already been removed, then remove them from the base map.	skari	Updated list and plan based on subsequent field survey
173	5	Jonathan Tague	E01	C	I doubt it will be possible to fill voids in the riprap after placement, since there will only be 34" left. Suggest allowing the Contractor to pre-mix the material. Another option may be pumped sand slurry if pre-mixing is not acceptable.	skari	Allowed for the option of pre-mixing materials that are inside the pipe.
174	6	Jonathan Tague	F	C	If the stations are not included for an alignment which is not the focus of the sheet, then the centerline should also no be shown. It adds to clutter without a benefit.	mhidalgo	Will remove where applicable
175	7	Jonathan Tague	F01	C	It seems like there is a lot more traffic on Pittman than Seldon. Is it really the best configuration to have Pittman traffic have to make a hard turn?	skari	Traffic projections in the design year indicate traffic from the north leg of Pittman being approximately 1/2 that of Seldon. A Pittman stop sign is the best option.
176	8	Jonathan Tague	F02	C	Keep obliterate hatch consistent through the plans.	mhidalgo	Corrected to match A3.
177	9	Jonathan Tague	F02	C	Labeling Zehnder Rd on this sheet would help orienting.	mhidalgo	Labeled Zehnder Rd
178	10	Jonathan Tague	F02	C	P2-1 appears to be a smaller diameter under the pathway. Is it supposed to be smaller or is this a drafting error.	skari	Pipe deleted
179	11	Jonathan Tague	F12	C	Looks like a driveway is labelled at Pittman Rd at the top of the sheet.	mhidalgo	Pittman Road label will be deleted
180	12	Jonathan Tague	F20	C	Zoom out on plan view. You should be able to see the cut/fill lines for the alignment being shown.	mhidalgo	Shifted viewport to show cut and fill lines for the "T" line depicted.
181	13	Jonathan Tague	F24	C	Consider adding bollard across pathway access near 'F' 26+00 LT.	skari	Removed pathway access due to grade issues.
182	14	Jonathan Tague	F25	C	Culvert shown on F3 and F14 is not shown here.	mhidalgo	Added
183	15	Jonathan Tague	F32	C	Tangent table would be more accurate than "Line" table.	mhidalgo	Renamed table
184	16	Jonathan Tague	G02	C	Suggest removing elevations where Beverly Way ties into Beverly Lake Rd and insert "Match Existing".	skari	Removed elevations.

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
185	17	Jonathan Tague	H	C	Suggest raising the speed limit to 50mph between end of this project and Church Rd.	skari	Removing existing lower speed signs near Windy Bottom. Seldon is signed 50 mph east of Windy Bottom so it is 50 mph to Church Rd from EOP.
186	18	Jonathan Tague	H13	C	There are some longer tangent on either side of Wyoming Dr that seem like passing could be allowed.	skari	Will consider adding if warranted in final plans
187	19	Jonathan Tague	H21	C	Conduit notes: verify C conductor is supposed to be the 3-1c#8 indicated instead of 1-3c#8 for typical lighting.	lschneller	Cabling revised to 1-3c#8.
188	1	I. Bryce M.Miller	B01-B02	MAT	D1 Doesn't need to be 4", 2" is sufficient.	skari	The D-1 thickness is based on structural section mechanistic design
189	2	I. Bryce M.Miller	E01	MAT	Apron Section B-B shows culvert flush with geotextile, is this intentional?	jgoodman	Replaced geotextile with filter material.
190	3	I. Bryce M.Miller	F26	MAT	Pipe P26-1 Seems to have been placed above existing and planned finished grade	skari	Now sheet F25
191	4	I. Bryce M.Miller	D0	MAT	Earthwork Summary should indicate where along Seldon the Select B is going to be found.	skari	Added comment for usable excavation location.
192	5	I. Bryce M.Miller	D0	MAT	Earthwork Summary indicates all usable excavation will meet Select B (less than 10% P200's). Don't think this is correct looking at the geotech info. Is it supposed to be Select C?	skari	Usable excavation test pits vary in quality by location. Usable excavation quantity has been changed to Select Type C.
193	6	I. Bryce M.Miller	B01	MAT	Roadway Section: Should Select B be changed to Select C?	skari	We have changed the material to type C
194	7	I. Bryce M.Miller	B02	MAT	Recommend reconsidering only 18 inches of Sel A under side streets and parking lot. There was some very frost susceptible in some areas. Geotech Recs should address side streets. Especially the frontage road near BOP that requires deep cut into OG. Is the hill waste from the adjacent lot development?	skari	Increased the structural section of parking lot and Pittman Road, specifically. N. Fuller place cuts into higher quality material that is a higher topographic high, not a waste area.
195	8	I. Bryce M.Miller	F1-F11	MAT	How does the area between ML and Pathway drain? Many pathway pipes are smaller than adjacent ML pipes (they should be at least the same size if not larger). Profile of pathway is independent of ML, with many transitions between cut and fill. A lot of pipes will be needed to prevent impoundment between the ML and path.	skari	Profile grades will dictate ditch flow. Pipes have been added and moved as necessary to address drainage.
196	9	I. Bryce M.Miller	401	MAT	401 Pavement: Recommend requiring joint heater for HMA cold joints. The 8 ft shoulder + 12 lane = 20ft total width. This might be paved in single pull or it might be paved in 2-10 ft pulls. If paved with 2 pulls the cold joint will be located in wheel path. Cheap insurance to guarantee good joints is to require an infrared joint heater.	skari	Added a note on A2 and special to 647 on equipment specification
197	10	I. Bryce M.Miller	F27-F31	MAT	Provide ML stationing for reference.	mhidalgo	Added
198	11	I. Bryce M.Miller	F1-F11	MAT	Add Pathway stationing for reference	mhidalgo	Added.
199	12	I. Bryce M.Miller	F27-F31	MAT	Add cut/fill lines for pathway between ML and pathway	skari	In nearly all cases, the ML and pathway slopes intersection so a tradition cut or fill slope is not established.
200	13	I. Bryce M.Miller	F1-F11	MAT	Add cut/fill lines for ML between ML and pathway	skari	In nearly all cases, the ML and pathway slopes intersection so a tradition cut or fill slope is not established.
201	1	MSB	General	MSB	Seldon Road Extension is classified as a minor arterial by the MSB Official Streets and Highways Plan	skari	Thank you
202	2	MSB	General	MSB	Ensure MSB Engineer review is conducted and documented, as per AS 08.48 with the MSB as the regulatory agency since it is an MSB-owned roadway.	skari	DOT will route documents for review by the MSB.

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203	3	MSB	B2	MSB	Provide stationing for the typical section “Pathway Adjacent to Roadway”.	skari	Will add with final plan
204	4	MSB	E1	MSB	Verify culvert meet MSB’s stream simulation design criteria for fish passage, as outlined in the Subdivision Construction Manual, including size of pipe, fill material gradation and streambank protection vegetation (typically willows for this size stream) at inlet and outlet.	skari	Overiszed pipe and substrate gradation satisfy the MSB design criteria.
205	5	MSB	E3	MSB	Section A-A shows fill slopes only but plans call for cut on sheets F1 & F20. Add cut section and ensure a ditch is included to protect structural section form water damage. Also, use 3:1 fill slopes or flatter, wherever possible, while maintaining positive drainage. 4’ dimension on right side of section appears unnecessary and is inaccurate.	skari	The section is specific to the parking area(s). Added cut section where applicable. Deleted 4-foot dimension.
206	6	MSB	F1	MSB	It appears there is a drafting error, showing a new pipe proposed under the west school driveway. I believe that pipe is existing and there is no plan to replace it.	skari	The BOP for the project was extended west beyond the driveway, so the driveway will be reconstructed and culvert replaced.
207	7	MSB	F9	MSB	Change name of connecting road from Beverly Way to N. Beverly Lake Road.	skari	N. Beverly Lake Road was already taken. In coordination with MSB to identify a unique name for the new connection, we arrived at "Beverly Place".
208	8	MSB	F10	MSB	At station 114+50, add landscaping and some type of barriers, where old road is obliterated, to block traffic from short cutting to Beverly Lake Road and reduce headlight impacts, and distraction/confusion to drivers on main road.	skari	Will relocate three large boulders from west end of project (~12+00 LT) to station 114+50.
209	9	MSB	F11	MSB	Currently, ponding occurs near station 121+00. Ensure drainage path is provided to the wetlands to the northwest. Looks to be accomplished with roadside ditching.	skari	Yes, ditching and the westward gradient will provide a drainage path to a culvert crossing at 110+50
210	10	MSB	F12	MSB	Delete Pittman Road label from driveway with P12-1.	skari	Deleted
211	11	MSB	F25	MSB	Consider use of 60 length “T”-turnaround instead of cul-de-sac. This will allow plow truck to go all the way past the 2nd driveway and then back into “T” to turnaround.	skari	The proximity of a turnaround to the backslope of the adjacent pathway creates an overlap in slope limits that may negatively impacts drainage.
212	12	MSB	F31	MSB	Fill slope near intersection with Windy Bottom appears to leave ROW. Verify that ROW is represented correctly.	skari	The ROW is depicted correctly. Verified the pathway can be constructed within the ROW.
213	13	MSB	F30	MSB	Beginning at STA 119+00 and ending at STA 123+50 move pathway alignment away from roadway as much as possible, maximizing use of the ROW.	skari	The proximity to the ROW on either end of the tangent and the short distance to fit the curve(s) make is counterproductive to jog the path in this location.
214	14	MSB	F30	MSB	Install a short pathway connection between the new pathway and Beverly Lake Road. Includes bollards or other barrier to prevent motor vehicles from driving onto pathway from the road.	skari	The elevation difference between the proposed Seldon pathway and the existing Beverly Lake Road in this vicinity does not present an opportunity for an accessible (<5% grade) connection. Pathway access is provided via Beverly Lane.
215	15	MSB	H11	MSB	Ensure shoulder of North Pittman Road is wide enough to accommodate crosswalk for school zone. This crosswalk should be similar to the crosswalks on Hollywood Road at Knik Elementary, but with a wider shoulder on north side of road.	skari	A crosswalk will not be constructed as part of this project. Improvements in the school vicinity are in accordance with the latest MSB SRTS guidance.
216	16	MSB	H11	MSB	Use name “Fullers Place” for Frontage Road. Add road name signs to top of stop sign #12	skari	Added N Fuller Place.

#	Reviewer's #	Reviewer	Sheet	Section	Comment	Response by	Response
217	17	MSB	H11	MSB	Recommend adding an advance wayfinding sign(s) for “N Pittman Road” for eastbound traffic on Seldon Rd, so that they know the left turn is Pittman continuation and going straight is Seldon Road. Also add green sign for Seldon Road facing eastbound traffic, and Pittman Road facing westbound traffic.	skari	Added D3-2300L
218	18	MSB	H15	MSB	Change Road name to Beverly Lake Road	skari	Changed to Beverly Place (previous)
219	19	MSB	H15	MSB	Add signs to Beverly Lake Road from both approaches to “Beverly Way” with an arrow pointing north indicating the direction “TO SELDON ROAD”, so that drivers know this is the connection that takes them to Seldon Rd.	skari	Discuss. Outside project limits.
220	20	MSB	H16	MSB	Change Frontage Road to “Fullers Place”. Add road name signs for this road to top of stop signs.	skari	Per MSB feedback, changed to N. Fuller Place
127b added	2	O. LeCrov	B01	TS	Cross-sections show same station ranges. Revise as required.	skari	Used separate cut and fill sections for clarity over same station range.

MEMORANDUM

State of Alaska

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

TO: file

DATE: 05/21/2025

TELEPHONE NO: 907-269-0562

FROM: Steve Kari, P.E.

SUBJECT: Traffic Control Plan
Seldon Rd Extension Phase II:
Windy Bottom/Beverly Lakes Rd
to Pittman Rd
0001723/CFHWY00562

This memo has been prepared to summarize the general traffic control methods required for construction of the **Seldon Rd Extension Phase II: Windy Bottom/Beverly Lakes Rd to Pittman Rd** project.

The Alaska Department of Transportation & Public Facilities (DOT&PF) requires this plan to ensure constructability and as a starting point for a contractor generated traffic control plan (TCP). This recognizes that different contractors will have various methods for controlling traffic and safety. All TCPs must adhere to Part 6 of the Alaska Traffic Manual.

Three details are attached. These details provide direction on how to treat roadside slope, obstacles, hazards, clear distances, and pedestrian traffic. Also included are acceptable locations for permanent construction signs. The location of the permanent construction signs will be installed according to Alaska Standard Plan C-04 and as modified by the attached plan drawing unless approved otherwise by the Engineer.

In accordance with the project special provisions, traffic restrictions will vary by site depending on location and traffic volume. Work on the Seward Highway may require weekend closures, but restrictions generally apply to peak hour traffic times.

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

DESIGNED BY	M.H.
CHECKED BY	S.M.K.
DRAFTED BY	M.H.

SCALE
N/A

DATE	TIME
4/13/2025	12:39 P.M.

DRAWING LOCATION
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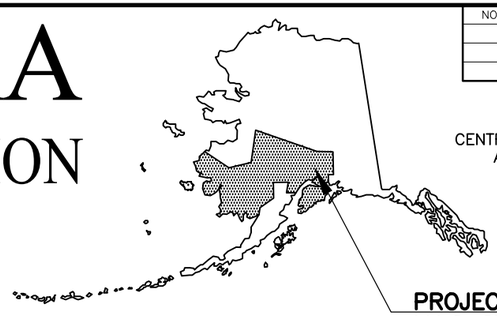
STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES



NO.	DATE	REVISION

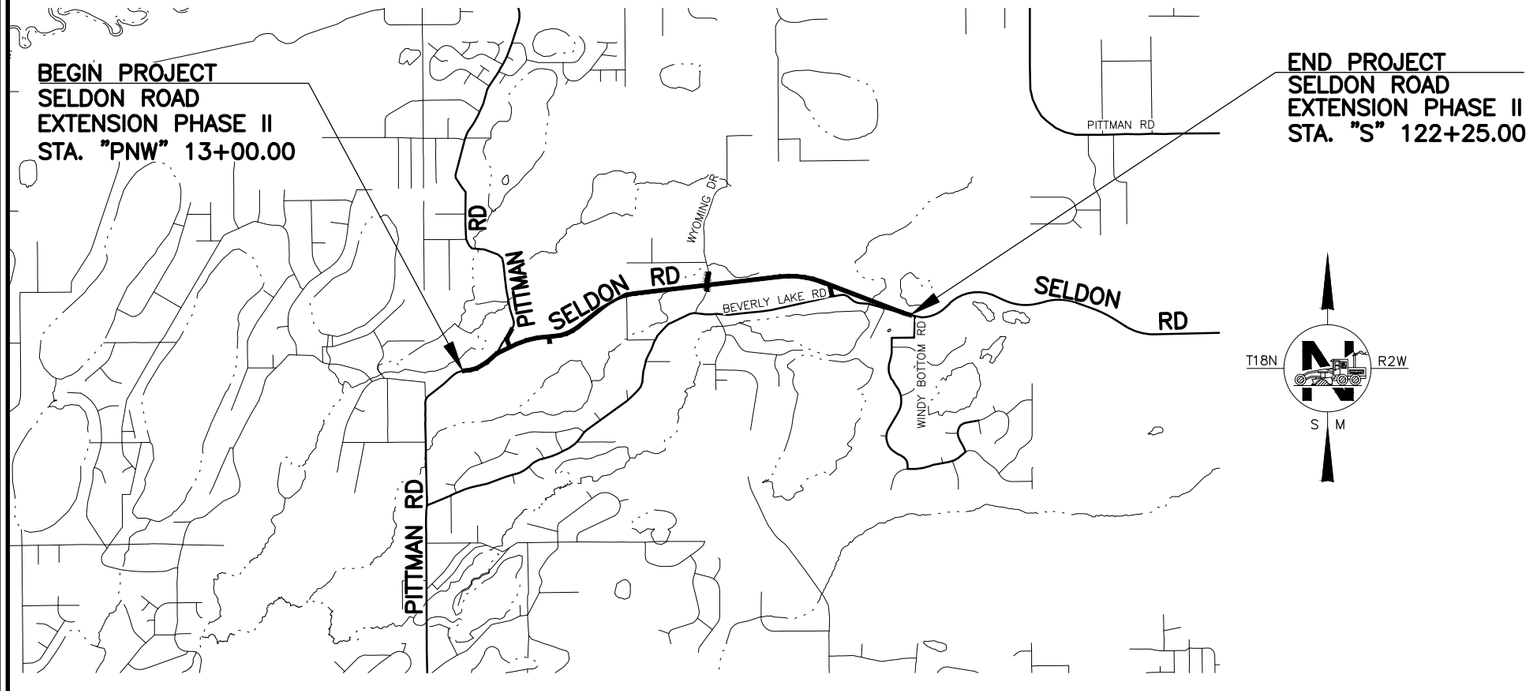
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0001723/CFHWY00562	2025	1	4

PROPOSED HIGHWAY PROJECT

SELDON RD EXTENSION PHASE II
WINDY BOTTOM/BEVERLY LAKES RD
TO PITTMAN RD (MSB)
PROJECT NO. 0001723/CFHWY00562

TRAFFIC CONTROL PLAN

INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PERMANENT CONSTRUCTION SIGNS
3	TRAFFIC CONTROL DEVICES FOR ROADSIDES
4	PEDESTRIAN TRAFFIC CONTROL



NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0001723/CFHWY00562	2025	2	4

DESIGNED BY
CHECKED BY
DRAFTED BY

SCALE

DATE TIME
4/13/2025_

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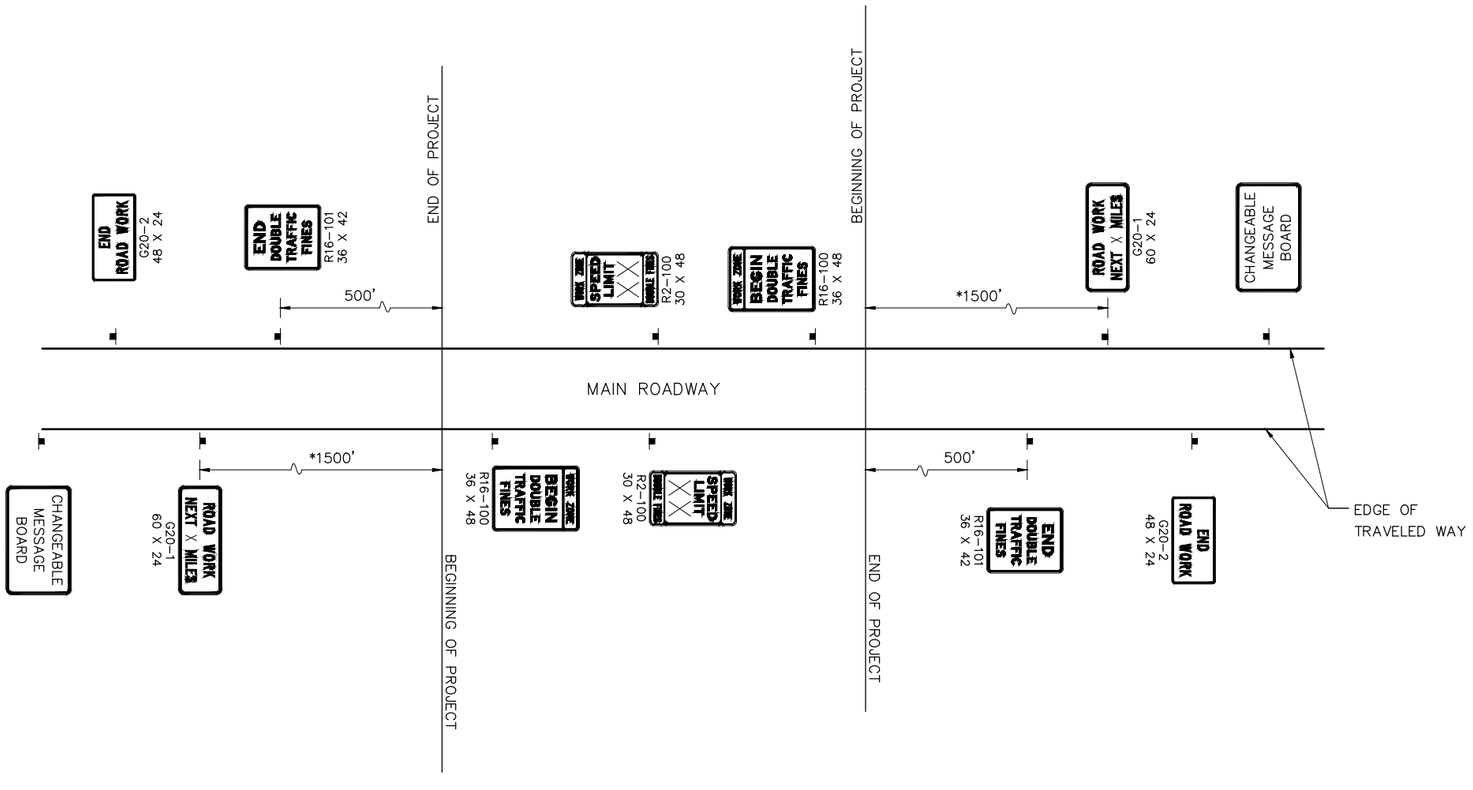
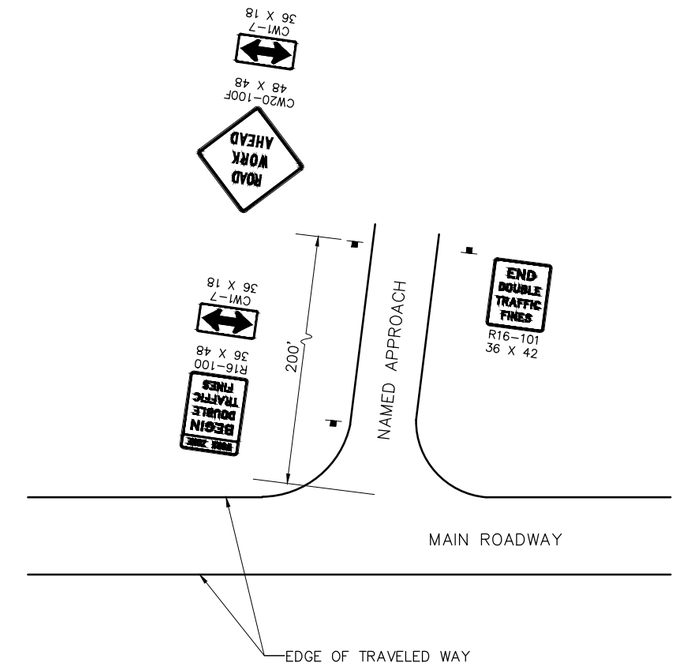


PERMANENT CONSTRUCTION SIGNING

* LOCATION TO BE DETERMINED BY PROJECT ENGINEER.



PERMANENT CONSTRUCTION SIGNING

SIDE STREETS

GENERAL TRAFFIC CONTROL NOTES:

1. WARNING LIGHTS SHOULD BE USED TO MARK CHANNELIZING DEVICES AT NIGHT AS NEEDED.
2. SEE ALASKA TRAFFIC MANUAL (MUTCD WITH ALASKA SUPPLEMENT) FOR ADDITIONAL INSTRUCTION AND/OR RESTRICTION ON THE USE OF TRAFFIC CONTROL DEVICES. REFER TO THE LATEST EDITION OF MUTCD, FOR ALL TYPICAL DRAWINGS.
3. FOR LONG TERM PROJECTS (LASTING LONGER THAN 3 DAYS), ANY CONFLICTING PAVEMENT MARKINGS NO LONGER APPLICABLE SHOULD BE REMOVED OR OBLITERATED AS SOON AS PRACTICABLE. TEMPORARY MARKINGS SHALL BE USED AS NECESSARY. (SEE SECTION 6D-1 OF ALASKA TRAFFIC MANUAL)
4. CONSTRUCTION SIGNS SHALL BE FABRICATED IN ACCORDANCE WITH THE ALASKA SIGN SPECIFICATIONS WITH MATERIAL IN ACCORDANCE WITH SECTION 615 OF THE ALASKA STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION.
5. FOR ROADWAYS WITH THREE OR MORE TRAFFIC LANES IN ONE DIRECTION, PLACE CONSTRUCTION SIGNS ADJACENT TO EACH SIDE OF ROADWAY.
6. ALL SIGNS SHOWN ON THIS PLAN SHALL BE CLASS "T" AS DESIGNATED IN THE ALASKA SIGN DESIGN SPECIFICATION.
7. ALL ADVANCE DETOUR AND ROAD CLOSURE SIGNING SHALL BE SUPPLEMENTED WITH HIGH LEVEL WARNING DEVICES.
8. MAINTAIN ACCESS TO BUSINESSES AND RESIDENCES WITHIN CLOSURE AREAS.

NOTES:

1. SPEED LIMIT TO BE DETERMINED BY THE PROJECT ENGINEER.
2. SEE STANDARD PLAN C-04.12 FOR SPACING OF DOUBLE FINE SIGNS AND SPEED LIMIT SIGNS.

PLANS DEVELOPED BY:
STANTEC CONSULTING SERVICES INC.
3900 C STREET, SUITE 902
ANCHORAGE, AK 99503
907-276-4245
CERTIFICATE OF AUTHORIZATION #126386

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SELDON ROAD EXTENSION PHASE II

WINDY BOTTOM/BEVERLY LAKES RD TO PITTMAN RD (MSB)

CONSTRUCTION SIGNING

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	0001723/CFHWY00562	2025	3	4

DESIGNED BY
CHECKED BY
DRAFTED BY

SCALE

DATE TIME
4/13/2025

DRAWING LOCATION
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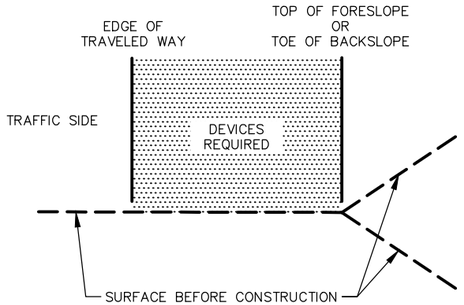
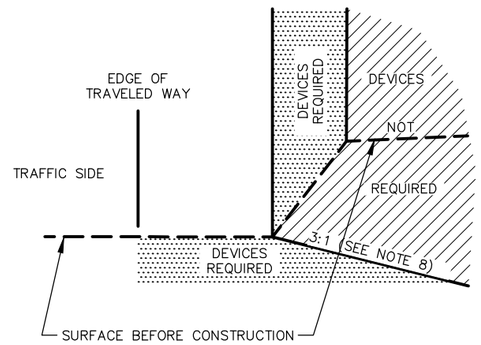
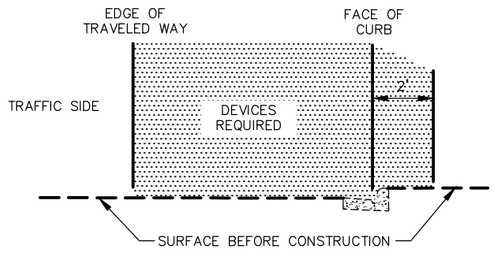


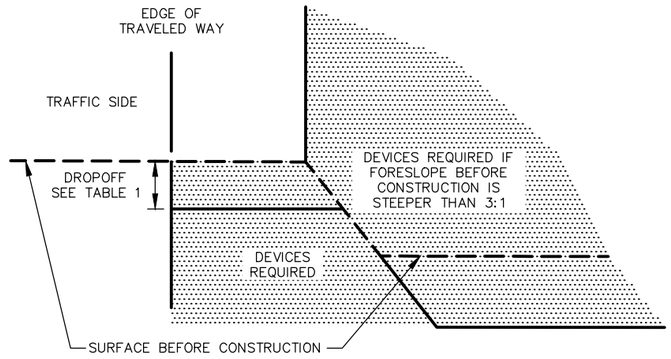
EMBANKMENT SECTION



BACKSLOPE SECTION



CURB AND GUTTER SECTION



FORESLOPE SECTION

LEGEND

- WORK AREA WHERE TRAFFIC CONTROL DEVICES ARE REQUIRED
- WORK AREA WHERE TRAFFIC CONTROL DEVICES ARE NOT REQUIRED
- SURFACE BEFORE CONSTRUCTION
- CONSTRUCTION AREA BOUNDARY

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

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

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

NOTES:

1. TRAFFIC CONTROL DEVICES REQUIRED BY THE GUIDELINES ON THIS SHEET ARE INTENDED FOR CONDITIONS WHICH WILL BE IN PLACE LONGER THAN ONE CONTINUOUS WORK SHIFT. AN APPROVED TRAFFIC CONTROL PLAN IS REQUIRED PRIOR TO BEGINNING WORK.
2. THE GROUND CROSS SECTION AT A LOCATION BEFORE CONSTRUCTION DETERMINES WHETHER TRAFFIC CONTROL DEVICES ARE NEEDED AT THE SAME LOCATION DURING CONSTRUCTION.
3. GUARDRAIL EXISTING AT A LOCATION BEFORE CONSTRUCTION SHALL REMAIN IN PLACE DURING CONSTRUCTION OR APPROVED ALTERNATE DEVICES INSTALLED.
4. INSTALL TRAFFIC CONTROL DEVICES BETWEEN THE EDGE OF TRAVELED WAY AND THE WORK AREA ON ANY ROADWAY OPENED TO TRAFFIC WHEN REQUIRED BY THIS DRAWING.
5. EXISTING ROADWAY ALIGNMENTS INSTALL TRAFFIC CONTROL DEVICES WHEN WORK OCCURS IN THE DEVICES REQUIRED AREAS SHOWN ON THIS DRAWING.
6. DETOURS, TEMPORARY ROADWAYS, OR NEW ROADWAYS NOT YET COMPLETE. INSTALL TRAFFIC CONTROL DEVICES WHEN ANY OF THE FOLLOWING CONDITIONS EXIST:
   A. THE HORIZONTAL OR VERTICAL CURVATURE IS MORE SEVERE THAN BEFORE CONSTRUCTION BEGAN.
   B. THE ROADWAY OR SHOULDER WIDTH IS LESS THAN BEFORE CONSTRUCTION BEGAN.
   C. THE BACKSLOPE OR FORESLOPE IS STEEPER THAN BEFORE CONSTRUCTION BEGAN.
   D. THE HEIGHT OF THE FORESLOPE IS GREATER THAN BEFORE CONSTRUCTION BEGAN.
7. DROPOFFS:

   INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL AND TABLE 1.
8. ON ANY NEWLY CONSTRUCTED SLOPE STEEPER THAN 4:1 TO 3:1 PROVIDE A TEN FOOT FLAT RECOVERY AREA AT THE TOE OF SLOPE OR INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE FORESLOPE SECTION DETAIL.
9. TRAFFIC CONTROL DEVICE REQUIREMENTS:
   A. ON ROADWAYS WITH A SPEED LIMIT GREATER THAN 40 MILES PER HOUR OR AVERAGE DAILY TRAFFIC VOLUME GREATER THAN 4000 VEHICLES PER DAY INSTALL TEMPORARY PORTABLE CONCRETE BARRIER OR TEMPORARY GUARDRAIL. ON MULTI-LANE ROADWAYS CLOSE THE LANE CLOSEST TO THE WORK AREA AND INSTALL DRUMS.

      TERMINATE RUNS OF TEMPORARY PORTABLE CONCRETE BARRIER USING ONE OF THE FOLLOWING THREE METHODS:

      I. TEMPORARY CRASH ATTENUATOR.

      II. RIGID TO SEMI-RIGID GUARDRAIL TRANSITION WITH SLOTTED RAIL TERMINAL OR OTHER APPROVED CRASHWORTHY END TREATMENT.

      III. FLARE THE ENDS OF THE TEMPORARY BARRIER AWAY FROM THE ROADWAY AT A RATE OF 15:1 ON A TRANSVERSE SLOPE OF 10:1 OR FLATTER TO THE OUTSIDE EDGE OF THE CLEAR ZONE AND INSTALL A SLOPING END TREATMENT, PER STANDARD DRAWING G-46.11.

      TERMINATE RUNS OF TEMPORARY GUARDRAIL USING EITHER OF THE FOLLOWING TWO METHODS:

      I. SLOTTED RAIL TERMINAL OR OTHER APPROVED CRASHWORTHY END TREATMENT.

      II. FLARE THE ENDS OF THE TEMPORARY GUARDRAIL AWAY FROM THE ROADWAY AT A RATE OF 15:1 ON TRANSVERSE SLOPE OF 10:1 OR FLATTER TO THE OUTSIDE EDGE OF THE CLEAR ZONE.

   B. ON ALL OTHER ROADWAYS INSTALL TYPE II BARRICADES, DRUMS OR DELINEATORS WHEN DEVICES ARE REQUIRED. SPACE THE DEVICES IN ACCORDANCE WITH THE REQUIREMENTS FOR SPACING TYPE II BARRICADES AND DRUMS SET FORTH IN THE ALASKA TRAFFIC MANUAL.
10. DO NOT CONSTRUCT VERTICAL DROP OFFS GREATER THAN 1.5" WITHIN THE TRAFFIC LANE OR ACTIVE WHEEL TRACK. PROVIDE 2' OF SHY DISTANCE FROM EDGE OF ALL TRAFFIC CONTROL DEVICES TO THE EDGE OF THE TRAVELED WAY.

PLANS DEVELOPED BY:
STANTEC CONSULTING SERVICES INC.
3900 C STREET, SUITE 902
ANCHORAGE, AK 99503
907-276-4245
CERTIFICATE OF AUTHORIZATION #126386

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SELDON ROAD EXTENSION
PHASE II
WINDY BOTTOM/BEVERLY LAKES RD TO PITTMAN RD (MSB)
TRAFFIC CONTROL DEVICES FOR ROADSIDES

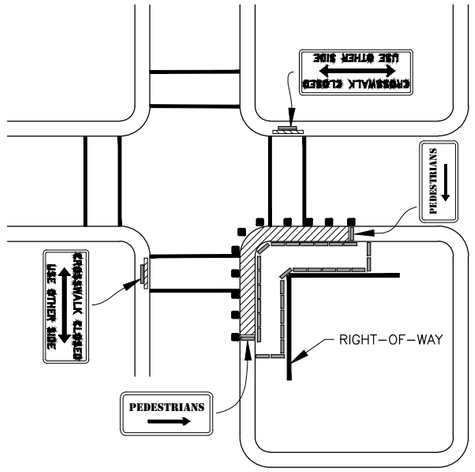
NO.	DATE	REVISION

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	0001723/CFHWY00562	2025	4	4

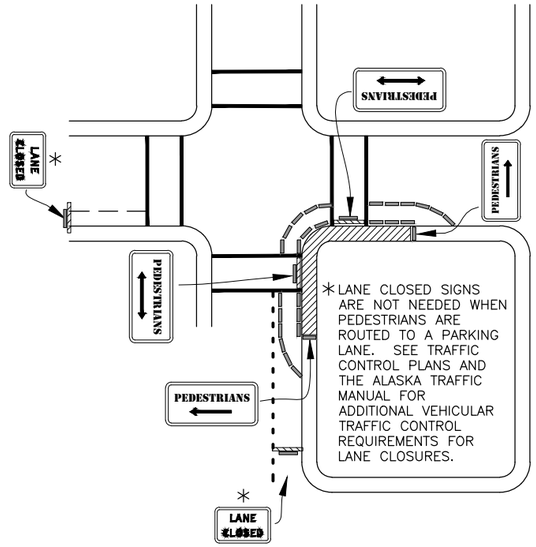
DESIGNED BY
CHECKED BY
DRAFTED BY

SCALE

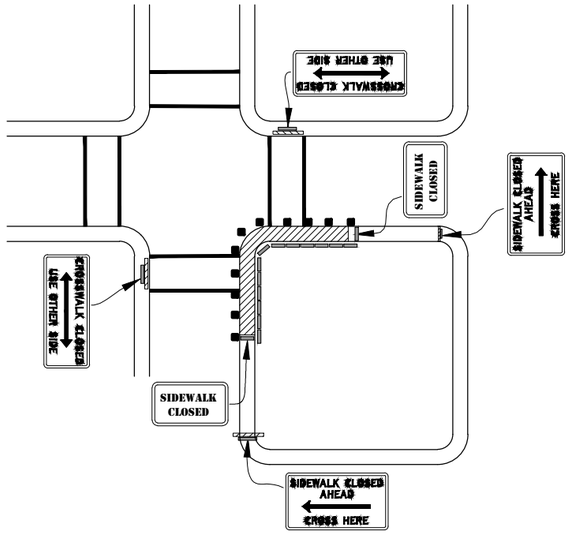
DATE TIME
4/13/2025



A. DETOUR AWAY FROM ROAD



B. DETOUR TO CLOSED PARKING OR TRAVEL LANE



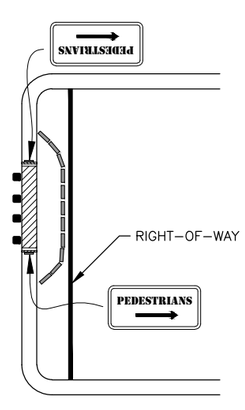
C. DETOUR TO OTHER SIDE

INTERSECTION SIDEWALK, PATHWAY OR SHOULDER CLOSURE

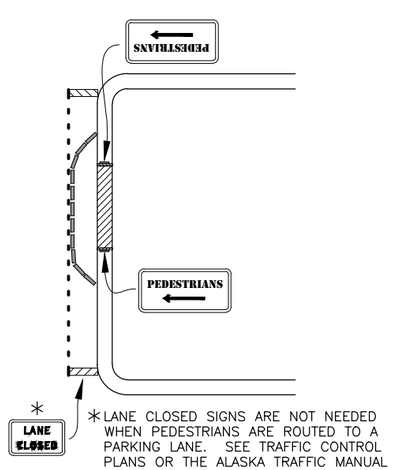
A TO C IN ORDER OF PREFERENCE

NOTES:

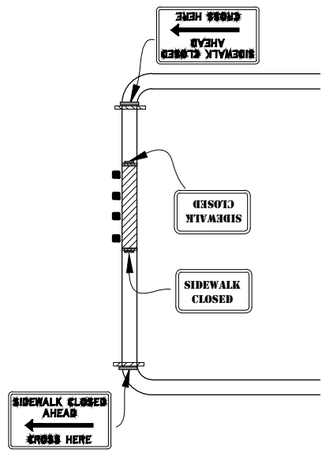
1. THIS SHEET FOCUSES ON TRAFFIC CONTROL DEVICES FOR PEDESTRIANS. LOOK ELSEWHERE FOR VEHICULAR TRAFFIC CONTROL REQUIREMENTS.
2. PROVIDE PEDESTRIAN TRAFFIC CONTROL DEVICES WHEN SIDEWALKS OR PATHWAYS ARE CLOSED TO PEDESTRIANS AND WHERE REQUIRED BY THE PLANS OR SPECIFICATIONS. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TTC ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
3. AVOID ROUTING PEDESTRIANS ACROSS ROADS UNNECESSARILY. USE DETAIL C OR F ONLY WHEN IT IS NOT PRACTICAL TO USE DETAIL A, B, D, OR E.
4. THE WIDTH OF THE EXISTING PEDESTRIAN FACILITY SHOULD BE PROVIDED FOR THE TEMPORARY FACILITY IF PRACTICAL. TRAFFIC CONTROL DEVICES AND OTHER CONSTRUCTION MATERIALS AND FEATURES SHOULD NOT INTRUDE INTO THE USABLE WIDTH OF THE SIDEWALK, TEMPORARY PATHWAY, OR OTHER PEDESTRIAN FACILITY. WHEN IT IS NOT POSSIBLE TO MAINTAIN A MINIMUM WIDTH OF 60 INCHES THROUGHOUT THE ENTIRE LENGTH OF THE PEDESTRIAN PATHWAY, A 60 X 60-INCH PASSING SPACE SHOULD BE PROVIDED AT LEAST EVERY 200 FEET TO ALLOW INDIVIDUALS IN WHEELCHAIRS TO PASS.
5. WHERE THE POSTED SPEED LIMIT EXCEEDS 45 MPH, SEPARATE PEDESTRIANS FROM ROADWAY EDGE OF PAVEMENT OR FACE OF CURB BY AT LEAST 5'. WHERE THAT IS NOT FEASIBLE, INSTALL PORTABLE CONCRETE BARRIER BETWEEN PEDESTRIANS AND THE ROAD.
6. WHEN PEDESTRIAN TRAFFIC CONTROL DEVICES REQUIRED BY THE CURRENT TRAFFIC CONTROL PLAN ARE NOT IN PLACE OR ARE TEMPORARILY REMOVED, PROVIDE A WORKER TO DIRECT PEDESTRIANS THROUGH THE WORK AREA.
7. COVER PEDESTRIAN TRAFFIC SIGNAL DISPLAYS CONTROLLING CLOSED CROSSWALKS.
8. WHEN USING DETAILS C AND F, ROUTE PEDESTRIANS TO THE BEST CROSSING POINT NEAR THE WORK AREA.
9. WHEN CHANNELIZATION IS USED TO DELINEATE A PEDESTRIAN PATHWAY, A CONTINUOUS DETECTABLE EDGING SHOULD BE PROVIDED THROUGHOUT THE LENGTH OF THE FACILITY SUCH THAT PEDESTRIANS USING A LONG CANE CAN FOLLOW IT. THESE DETECTABLE EDGINGS SHOULD COMPLY WITH THE PROVISIONS OF THE MUTCD.
10. SIGNS AND OTHER DEVICES MOUNTED LOWER THAN 7 FEET ABOVE THE TEMPORARY PEDESTRIAN PATHWAY SHOULD NOT PROJECT MORE THAN 4 INCHES INTO ACCESSIBLE PEDESTRIAN FACILITIES.
11. INSTALL PEDESTRIAN SIGNS ON AN ADA COMPLIANT (DETECTABLE) TYPE III BARRICADE.



D. DETOUR AWAY FROM ROAD



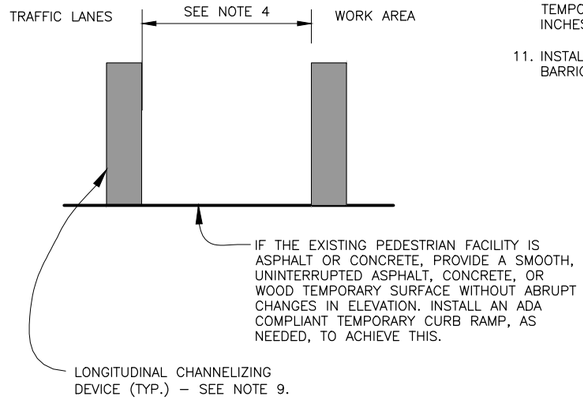
E. DETOUR TO CLOSED PARKING OR TRAVEL LANE



F. DETOUR TO OTHER SIDE

MID-BLOCK SIDEWALK, PATHWAY OR SHOULDER CLOSURE

D TO F IN ORDER OF PREFERENCE



PEDESTRIAN DETOUR – TYPICAL SECTION

LEGEND:

- LONGITUDINAL CHANNELIZING DEVICE
- TYPE III BARRICADE
- CHANNELIZING DEVICE
- TYPE III BARRICADE WITH SIGN
- WORK AREA

PLANS DEVELOPED BY:
STANTEC CONSULTING SERVICES INC.
3900 C STREET, SUITE 902
ANCHORAGE, AK 99503
907-276-4245
CERTIFICATE OF AUTHORIZATION #126386

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

SELDON ROAD EXTENSION PHASE II

WINDY BOTTOM/BEVERLY LAKES RD TO PITTMAN RD (MSB)

PEDESTRIAN TRAFFIC CONTROL

DRAWING LOCATION
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Erosion and Sediment Control Plan

For

Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd To Pittman Rd (MSB)

0001723/CFHWY00562

Wasilla, Alaska

Alaska Department of Transportation & Public Facilities
Central Region
P.O. Box 196900
Anchorage, Alaska USA 99519-6900

Prepared By: Melissa Spicer

Company Name: Stantec Consulting, Inc

ESCP Preparation Date: December 2024

The following Erosion and Sediment Control Plan (ESCP) has been prepared by the Alaska Department of Transportation and Public Facilities (DOT&PF) to assist bidders in successfully planning their construction means and methods to comply with the 2021 Alaska Construction General Permit (CGP), United States Army Corps of Engineers (USACE) 404/10 Permit, Alaska Department of Environmental Conservation (DEC) 401 Water Quality Certification, Alaska Department of Fish and Game (ADF&G) Title 16, and other permits associated with this project. This document is not intended to be all inclusive of the best management practices (BMP's) that will be required to reduce the potential for sediment discharge during construction and comply with permit conditions or construction specifications. This ESCP is intended to guide contractors during the bidding process and assist in the preparation of the contractor's Storm Water Pollution Prevention Plan (SWPPP) that must be approved prior to commencing construction after award. The contractor is responsible for the risk assessment analysis, planning, preparation and implementation of the SWPPP.

TABLE OF CONTENTS

APPENDICES

Appendices that are marked with **(ESCP)** are to be filled out by the Designer. All other appendices are to be filled out by the SWPPP preparer and will not be included in the ESCP.

Appendix A Site Maps and Drawings **(ESCP)**
Appendix B BMP Details **(ESCP)**
Appendix C Project Schedule
Appendix D Supporting Documentation: **(ESCP)**

- TMDLs
- Endangered Species
- Historic Properties
- DEC Non-Domestic Wastewater Plan Review Non-Objection Letter (if required)
- DEC Dewatering Permit (if required)
- Environmental Permits and Commitments
- Other Permits or Requirements

Appendix E Project Specific ESCP Discussion & Comments **(ESCP – not part of the SWPPP template)**

The above Appendix E is for ESCP writers only and should include any additional information that the Designer would like to share with the SWPPP preparer. Below is the list of Appendices to be included in the SWPPP.

Appendix E Delegation of Authority (25D-107, 25D-108), Subcontractor Certifications (25D-105), Project Staff Tracking (25D-127) and Personnel Qualifications
Appendix F Permit Conditions:

- Copy of Signed Notice of Intent
- Copy of Letters from DEC Authorizing Coverage, with DEC NOI Tracking Number
- Copy of 2021 Alaska Construction General Permit

Appendix G Grading and Stabilization Records (25D-110)
Appendix H Monitoring Plan (if applicable) and Reports
Appendix I Training Records (25D-125)
Appendix J Corrective Action Log and Delayed Action Item Reports (25D-112, 25D-113)
Appendix K Inspection Records (25D-100)
Appendix L SWPPP Preconstruction Site Visit (25D-106)
Appendix M SWPPP Amendment Log (25D-114)
Appendix N Daily Record of Rainfall (25D-115)
Appendix O Hazardous Materials Control Plan
Appendix P Treatment Chemical/Active Treatment Systems (if applicable)
Appendix Q Other

- Anti-Degradation Analysis (if applicable)
- Correspondence with Regulatory Agencies
- Notices of Termination

1.0 PERMITTEE (5.3.1)

The Department of Transportation & Public Facilities (DOT&PF) will be a permittee for the project. Upon the approval of the contractor's Storm Water Pollution Prevention Plan (SWPPP) by DOT&PF, the contractor will be required to submit a Notice of Intent (NOI) and obtain permit coverage as an operator. The contractor's contact information as well as contact information for all subcontractors must be included in the contractor's SWPPP. All subcontractors will be required to sign a certification (DOT&PF Form 25D-105) that they have read the Alaska Construction General Permit (CGP) and the contractor's SWPPP and will adhere to their terms and conditions.

1.1 Operator(s)/Contractor(s)

Operator Information			
Organization: Enter Text	Name: Enter Text	Title: Enter Text	
Phone: Enter Text	Fax (optional): Enter Text	Email: Enter Text	
Mailing Address:	Street (PO Box): Enter Text		
	City: Enter Text	State: Enter Text	Zip: Enter Text
Area of Control	Day-to-day operational control of those activities at a site which are necessary to ensure compliance with a SWPPP or other permit conditions.		

The contractor has day-to-day operational control over activities in the field, including subcontractors, installing, maintaining, and inspecting all erosion and sediment controls and implementation of the SWPPP.

Owner/Operator Information			
Organization: State of Alaska Department of Transportation and Public Facilities (DOT&PF)	Name: Sean Holland, P.E.	Title: Central Region Director	
Phone: (907) 269-0770	Fax (optional): (907) 248-1573	Email: sean.holland@alaska.gov	
Mailing Address:	Street (PO Box): P.O. Box 196900		
	City: Anchorage	State: Alaska	Zip: 99519-6900
Area of Control	Operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.		

Repeat as necessary.

1.2 Subcontractors

Subcontractor Information			
Organization: Enter Text	Name: Enter Text	Title: Enter Text	
Phone: Enter Text	Fax (optional): Enter Text	Email: Enter Text	
Mailing Address:	Street (PO Box): Enter Text		
	City: Enter Text	State: Enter Text	Zip: Enter Text
Area of Control	Insert Area of Control (if more than one operator at site)		

Repeat as necessary to include all subcontractors. Include any Utility company and the Utility companies' contractors' doing concurrent relocation as a subcontractor – see subsection 641-1.07.

2.0 STORM WATER CONTACTS (5.3.2)

Identify the qualified persons responsible for the following required positions (note: a small project may have all these responsibilities carried out by one person):

Superintendent; DOT&PF's Project Engineer; Storm Water Lead (5.3.2.1); SWPPP Preparer (5.3.2.2); Person(s) Conducting Inspections- Contractor's SWPPP Manager and DOT&PF's Storm Water Inspector (5.3.2.3); Person(s) Conducting Monitoring (if applicable, 5.3.2.4), and Person(s) Operating Active Treatment System (if applicable, 5.3.2.5).

Document that the named individuals are Qualified Persons as described in CGP Appendix C. Include documentation of qualifications in Appendix E of the SWPPP.

Qualified Personnel	Responsibility
Contractor's Superintendent Company Name Address City, State, Zip Code Telephone # Fax/Email	The Contractor's duly authorized representative in responsible charge of the work. Authority for the overall operation of the Project and for Contractor furnished sites and facilities directly related to the Project. May also perform responsibilities of SWPPP Manager, including inspections.
DOT&PF's Project Engineer Company Name Address City, State, Zip Code Telephone # Fax/Email	The DOT&PF's duly authorized representative in responsible charge of the work. Authority to stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit. Must approve all amendments. May also perform responsibilities of Storm Water Inspector, including inspections.
SWPPP Manager (Storm Water Lead and Inspector) Company Name Address City, State, Zip Code Telephone # Fax/Email	Authority to stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit. Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.

Qualified Personnel	Responsibility
SWPPP Preparer Company Name Address City, State, Zip Code Telephone # Fax/Email	Possess the skills to assess conditions at the construction site that could impact storm water quality. Familiar with Part 5 as a means to implement the permit.
DOT&PF's Storm Water Inspector Company Name Address City, State, Zip Code Telephone # Fax/Email	Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.
Monitoring Person (If Applicable) Company Name Address City, State, Zip Code Telephone # Fax/Email	Knowledgeable in the principles and practices of water quality monitoring who is familiar with Part 7 and the monitoring plan for the site and how to conduct water quality sampling, testing, and reporting.
Active Treatment System Operator (If Applicable) Company Name Address City, State, Zip Code Telephone # Fax/Email	Knowledgeable in the principles and practices of treatment systems that employs chemical coagulation, chemical flocculation or electrocoagulation to aid in the treatment of storm water runoff. Familiar with Part 4.5 as a means to implement and comply with the permit.

A SWPPP Project Staff Tracking log (Form 25D-127) will be included in Appendix E to document any changes in personnel for the positions of Superintendent, Project Engineer, SWPPP Manager, and Inspectors.

Delete the information below prior to submittal of SWPPP. This information is provided for the SWPPP Preparer and is not part of the SWPPP template.

2.1 Contact Information for SWPPP Preparation

The following people may be contacted for questions when writing the SWPPP:

Name	Phone	Email
Athena Marinkovic	(907) 269-0436	athena.marinkovic@alaska.gov
Brian Elliott	(907) 269-0539	brian.elliott@alaska.gov

3.0 PROJECT INFORMATION (5.3.3)

3.1 Project Information

Project Name: Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd To Pittman Rd (MSB)				
Location Address:	Street/Location: Seldon Road		Borough or similar government subdivision: Matanuska-Susitna Borough	
	City: Meadow Lakes		State: Alaska	Zip: 99654
	Latitude (decimal degree, 5 places): 61.61754	Longitude (decimal degree, 5 places): -149.58982		
	Determined By: ☐ GPS ☐ Web Map:	☐ USGS Topo Map, Scale:	☒ Other: Google Earth – approximate center of project.	

3.2 Project Site-Specific Conditions (5.3.3)

Mean annual precipitation based on nearest weather stations (inches): Based on the nearest weather station with current data, Matanuska AG Exp Station (AES) (505733), the mean annual precipitation is 14.37 inches. Precipitation data taken from https://xmacis.rcc-acis.org/, copy provided in Appendix D.

Size of the 2-yr, 24-hr storm event (in inches): The 24-hour, 2-year storm event size for this weather station is 1.26 inches based on NOAA Atlas 14 Point Precipitation Frequency Estimates for the project area accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html, copy provided in Appendix D.

Soil Type(s) and Slopes: Thin organic layer over primarily silt 1-3 feet in depth with varying amounts of sand or sand and gravel with some soft, silty soils under areas with surface peat between 8-inches and 6 feet in depth. The identified alignment is generally frost susceptible with frost classification of F2 to F4. See Geotechnical Engineering Report by Shannon & Wilson, October 2015 and Additional Geotechnical Explorations for Seldon Road Extension by Shannon & Wilson, August 2019.

Seldon Road will be constructed with a center crown and approximate 2% grade towards the ditches. Pathway is to be constructed with 1.5% slope towards ditch between road and pathway. Ditches will have varying slopes between 25% to 50%. Slopes are shown on project sheets B1 – B3 and F1-F31.

Landscape Topography: Largely undeveloped with flat or moderately (0-7%) sloped terrain.

Drainage patterns: Roadway and pathway will drain towards ditches for infiltration. Cross-culverts will be constructed to maintain current drainage, north and south.

Type of Existing Vegetation: The land cover within the water shed is primary wetland complex, and timbered uplands (Hydrologic and Hydraulic Memo by Stantec, July 2023).

Approximate growing season: The growing season for the Ecoregion 115, Cook Inlet area, is approximately 150 days, beginning May 8 and ending October 5 according to the US Army Corps of Engineers, Engineer Research and Development Center, Wetlands Regulatory Assistance Program, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Alaska Region (Version 2.0), ERDC/EL TR-07-24. Available at https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7608, copy included in Appendix D.

Seeding Dates: Seeding dates for this project are May 15 to August 15, or obtain written approval from the Engineer to seed at a different date. See Section 618 of the project specifications.

Time Period to Avoid Vegetation Clearing: Clearing for this project will need to occur outside of the USFWS-identified sensitive period of May 1 through July 15.

Fish Window: **Fish passage culvert installation will require a Fish Habitat Permit, not received at the writing of the ESCP. Coordinate with DOT&PF Environmental to identify fish window.**

Historic site contamination evident from existing site features and known past usage of the site: A review of the ADEC Contaminated Sites Database did not identify any contaminated sites within or adjacent to the project area.

Additional information about these sites is available on the DEC Division of Spill Prevention and Response website: http://www.arcgis.com/home/webmap/viewer.html?webmap=315240bfbaf84aa0b8272ad1cef3cad3 . Include only those sites listed as 'Active' or 'Cleanup Complete – Institutional Controls'

3.3 Reference Documents Available

Listed below are the reference documents available for this project. Please contact the Project Engineer for assistance in obtaining these documents.

- Project Specific Permits – located in Appendix D and in the Special Provisions Package
- Geotechnical Report – available from the Plans room during the bidding process or download from the Bid Express project site (https://www.bidx.com/ak/lettings)
- Environmental Commitment Memo – available at Preconstruction Meeting
- Environmental Document – available for review in the DOT&PF Preliminary Design & Environmental section

4.0 NATURE OF CONSTRUCTION ACTIVITY (5.3.4)

4.1 Scope of Work

The Proposed Action would:

1) Clear and grub vegetation
2) Extend Seldon Road with a 2.25-mile two-lane arterial facility
3) Construct frontage roads to tie into the existing road network
4) Reconstruct portions of adjacent roads to meet current standards and create new intersections
5) Construct a new 10-foot-wide separated pedestrian pathway on the south side of the new facility
6) Construct a new trailhead parking area at the new Pittman Road intersection
7) Relocate utilities
8) Construct new drainage facilities
9) Install new or replace roadside hardware, including signing and striping.

4.2 Project Function (5.3.4.1)

The purpose of this project is to continue the roadway connection between Church Road and Pittman Road and construct a separated pedestrian/bike path.

4.3 Support Activities (As Applicable)

Modify support activities table, as necessary. "Dedicated" only applies to activities exclusively for the project, i.e. commercial concrete or asphalt plants would be marked "No" under the "Dedicated" column. Location must be provided for ALL support activities, even those which are commercial or off-site. Provide a physical address for the support activities. For private and/or commercial support activities locations, include the name of the individual and/or company and their physical address. Location may be an address or other descriptive location, i.e. NE corner of staging area.

Support activities for this project are:

Support Activity	Location	Dedicated	
		Yes	No
Concrete Batch Plant		☐	☐
Asphalt Batch Plant		☐	☐
Equipment Staging Yards		☐	☐
Material Storage Areas		☐	☐
Excavated Material Disposal Areas		☐	☐
Borrow Areas		☐	☐

4.4 Sequence and Timing of Soil-disturbing Activities (5.3.4.2)

The contractor will be required to finish, either temporary or final stabilized, individual areas prior to moving on to the next area. The contractor will be required to prepare a detailed schedule for review and approval prior to commencement of construction activities and is to be included in the SWPPP. The schedule will detail the sequence of activities and describe the stabilization schedule. The contractor must adapt this section with their specific plans in the project SWPPP.

Limit ground disturbed by construction activities and not permanently stabilized between all roadways combined, at any specific time, to a maximum of 11,000 feet parallel to the roadway(s), unless additional length is approved.

4.5 Size of Property and Total Area expected to be Disturbed (5.3.4.3)

The following are estimates of the construction site:

Description	Number	Remarks
Total project area:	**41.70** acres	ROW to ROW
Construction-site area to be disturbed:	**36.70** acres	Area for new road/path construction.
Percentage impervious area BEFORE construction:	**6** %	

Runoff Coefficient BEFORE construction:	**0.18**	
Percentage impervious area AFTER construction:	**43** %	
Runoff coefficient AFTER construction:	**0.46**	

The values shown in the table above were calculated with the information available at the time of the final design. The contractor's values will be different due to staging areas, batch plants, material stockpiles, etc. The Rational Method was used to calculate the Runoff Coefficient. If a discrepancy is found, contact the Project Engineer to request further information.

4.6 Identification of All Potential Pollutant Sources (5.3.4.5)

Identify and list all potential sources of sediment from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Identify and list all potential sources of pollution, other than sediment, from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Potential sources of sediment to storm water runoff:

Ground disturbance, including clearing and grubbing for construction of new road.

Potential pollutants and sources, other than sediment, to storm water runoff:

Other pollution sources for this project include vehicle and equipment fluids, sanitary waste, Best Management Practice (BMP) materials, and general site litter. No pollutant sources from areas other than construction have been identified for this project.

Trade Name Material	Storm Water Pollutants	Location

5.0 SITE MAPS (5.3.5)

Site map(s) and drawings are located in Appendix A.

The SWPPP must include a legible site map (or set of maps for large projects) showing the entire site and identifying the following site-specific information:

1. North Arrow **(ESCP)**
2. Property boundaries **(ESCP)**
3. Locations where earth-disturbing activities will occur, noting any phasing dictated by design **(ESCP)**
4. Location of areas that will not be disturbed and natural features to be preserved **(ESCP)**
5. Locations of all storm water conveyances including ditches, pipes, and swales **(ESCP)**
6. Locations of storm water inlets and outfalls, with a unique identification code for each outfall **(ESCP)**
7. Location where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or a Municipal Separate Storm Sewer Systems (MS4), if present **(ESCP)**
8. Direction of storm water flow and approximate slopes anticipated after grading activities **(ESCP)**
9. Locations where control measures will be installed **(ESCP)**
10. Locations where exposed soils will be or have been stabilized
11. Locations where post-construction storm water controls will be installed (i.e. seeding areas, matting, riprap, sedimentation basins, etc.) **(ESCP)**
12. Locations of support activities, if known
13. Locations where authorized non-storm water will be used
14. Locations of all waters of the U.S. (including significant wetland areas 10,000 square feet or greater) on the site within 2,500 feet of the site boundary (~1/2 mile on each side of road) that may be affected by storm water discharges from the site (see Section 7.1) **(ESCP)**
    a. This can be shown on a general location map (USGS quad map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the U.S. within the one mile distance.
15. Location of existing public water system (PWS) drinking water protection areas (DWPA) for PWS sources (e.g. springs, wells, or surface water intakes) that intersect the boundary of the proposed project/permit area. The DWPAs can be found using the interactive web map application, "Alaska DEC Drinking Water Protection Areas", located at *http://dec.alaska.gov/das/GIS/apps.htm.* **(ESCP)**
    a. A copy of the webpage from the above URL will work with the addition of the project boundary and labels for the DWPAs by their ID numbers (see Section 9).
16. Sampling point(s), if applicable
17. Areas where final stabilization has been accomplished
18. Location of staging and material storage areas (construction materials, hazardous materials, fuels, etc.) **(ESCP, if known)**
19. Dumpsters
20. Porta-potties
21. Concrete, paint, or stucco washout areas
22. Stabilized construction exits **(ESCP, if known)**

6.0 DISCHARGES

Subject to compliance with the terms and conditions of the CGP, the permittee is authorized to discharge pollutants in storm water discharges from the site. If the permittee is eligible for coverage under CGP and does not comply with the requirements of the CGP, the permittee may be in violation of this general permit for otherwise eligible discharges.

Instructions:

Describe and identify the location of any storm water discharge associated with support activities, including discharges from dedicated asphalt and concrete plants covered by the CGP (5.3.8).

6.1 Locations of Other Industrial Storm Water Discharges (5.3.8)

The contractor is required to identify discharges from related support activities. Portable batch plants located on department-supplied property must be included in the contractor's SWPPP and related inspections. If the DOT&PF is not a CGP operator for the site or sites listed in this subsection, then describe the sites and BMPs for them in a separate SWPPP2. In this section, explain which areas are covered within this SWPPP and which are covered within a separate SWPPP2. Also provide information on where the SWPPP2 is available for review.

6.2 Allowable Non-Storm Water Discharges (1.4.3; 4.3.7; 5.3.9)

The contractor must list all allowable non-storm water discharges and describe how the discharges will be minimized and managed to reduce pollution to storm water in the contractor's SWPPP.

Allowable Non-Storm Water Discharges:

- Discharges from fire-fighting activities (1.4.3.1)
- Fire hydrant flushing (1.4.3.2)
- Waters used to wash vehicles where detergent are not used (1.4.3.3)
- Water used to control dust (1.4.3.4)
- Potable water including uncontaminated water line flushings (1.4.3.5)
- Routine external building wash down that does not use detergents (1.4.3.6)
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used (1.4.3.7)
- Uncontaminated air conditioning or compressor condensate (1.4.3.8)
- Uncontaminated, non-turbid discharges of ground water or spring water (1.4.3.9)
- Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater (1.4.3.10)
- Uncontaminated construction dewatering waters that are treated by an appropriate control measure in compliance with Part 4.4.2 or have been treated with treatment chemicals in compliance with Part 4.6 (1.4.3.11)
- Landscape irrigation (1.4.3.12)

7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS (3.2, 5.6)

A search of the "Alaska's Final **2022** Integrated Water Quality Monitoring and Assessment Report" found no listings or impairments for **Beverly Lake, Merri Belle Lake, or unnamed streams**.

7.1 Identify Receiving Waters (5.3.3.3)

Description of receiving waters: **Unnamed tributaries to Beverly Lake and Beverly Lake; Merri Belle Lake; unnamed streams; surrounding wetlands.** None of these water bodies are anadromous.

Outstanding Natural Resource Waters (2.1.6):

The DEC must be consulted, at least 30 days prior to construction activities, when determining requirements for water quality analysis on all projects that meet the following:

- Will or may discharge storm water to a Tier 3 water body, also known as Outstanding Natural Resource Waters (ONRW).

No ONRW are designated in Alaska as of the date of this document.

Description of storm sewer and/or drainage systems: **As this project will construct a new roadway, there are no existing storm sewer systems and none will be constructed. Drainage system to be constructed consists of ditches and culverts.**

7.2 Identify TMDLs (5.6.1)

Is an EPA-established or approved TMDL published for the receiving water(s) listed in Section 7.1?

☐ Yes ☑ No

Are there impaired receiving waters listed in Section 7.1 without an approved TMDL? ☐ Yes ☑ No

8.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES (3.3, 5.7)

8.1 Information on Endangered or Threatened Species or Critical Habitat (5.7.1)

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☑ No

Describe how this determination was made: **DOT&PF consulted the ADF&G and USFWS to determine the project is not anticipated to affect any endangered or threatened species or critical habitat. See Categorical Exclusion Documentation included in Appendix D.**

Survey of the project area, including a 660-foot buffer of the project footprint did not identify any eagle nests within the project area. If a new eagle nest is observed prior to construction, USFWS will be consulted.

Will species or habitat be adversely affected by storm water discharge?

☐ Yes ☑ No

Provide summary of necessary measures (5.7.5): **None**

9.0 APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS (4.10, 4.15)

The project will comply with all applicable Federal, State, Local, and Tribal requirements for soil erosion control and storm water management.

A Fish Habitat Permit will be required for work installing fish passage culvert at ~ STA 110+50. Coordinate with DOT&PF Environmental to include copies of applicable permit(s) in Appendix D and requirements in Section 10.

USACE Section 404 Nationwide permit required for fill and dredge in wetlands to install culverts.

The contractor will be responsible for obtaining all necessary permits and clearances for material and disposal sites, and/or equipment storage areas in accordance with the CGP for Storm Water Discharges from Construction Activities.

9.1 Historic Properties

SHPO consultation was completed on: **July 11, 2022**

Are there any historic sites on or near the construction site?

☐ Yes ☑ No

Describe how this determination was made: A Cultural Resource Survey Report (Cultural Resource Consultants, 2015) was completed for the proposed project and did not identify any archaeological sites or historic properties recommended eligible for the National Register of Historic Places. A Historic and Cultural Resources Memo (Stantec, 2022) was completed for the proposed project to provide an updated cultural resources review and recommended the proposed project would have no effect on cultural resources.

SHPO concurred with the finding of no historic properties affected on April 19, 2016 and July 11, 2022; copies in Appendix D.

If cultural or paleontological resources are discovered after the initial commencement of construction activities, work that would disturb such resources is to be stopped, and the Office of History and Archaeology, a Division of Parks and Outdoor Recreation of the Alaska Department of Natural Resources (http://dnr.alaska.gov/parks/oha/), is to be notified immediately at (907) 269-8721.

It is the Contractor's responsibility, thru the Project Engineer, to get clearance for material and disposal sites that have not been assessed during the Design phase of the project.

9.2 Projects near Public Water System (PWS) (4.10)

The project boundary intersects **2** Public Water System (PWS) Drinking Water Protection Area(s) (DWPA) and **0** Provisional Protection Area(s), and will have to follow the requirements of the 2021 CGP Part 4.10. The PWS contact will need to be notified by whatever method is most expedient: email, phone, or post (4.10.1). This should be done by the DOT&PF Project Engineer on behalf of both parties.

The intersecting DWPAs and Provisional Protect Areas ID numbers (PWSID) with contact information are:

Water System Name	Unified Alaskan Utilities Sherwood Estat	MSBSD Meadow Lakes Elementary
PWSID	AK2224078	AK2225967
Contact Name	None Provided On Website.	Belanger, Daniel
Phone #		907-864-2024
Address		3901 E Bogard Rd,Wasilla,AK-99654
Email		daniel.belanger@matsuk12.us

ADEC requests the project adhere to ***Recommendations for General Project Activities near a PWS Source*** (available at https://dec.alaska.gov/media/23023/dec-eh-dw-recommendations-for-general-project-activities-near-a-pws-source.pdf).

The water system name, number, name of contact, and all methods of contact can be found at: https://dec.alaska.gov/eh/dw/dwp/protection-areas-map/.

If the project is near a PWS, add language that addresses the following items:

1. Within the identified DWPA, restrict project activities that could significantly change the natural surface water drainage or groundwater gradient (4.10.2).

2. Immediately notify the nearby PWS of any identified potential contamination, such as spills or excess erosion (4.10.3).

Record the time, date, and method of contact and enter into the SWPPP in Appendix Q. Either a copy of the email, or a formal memo stating the date of phone call, or a receipt from certified mail will fulfill this obligation.

General Principles for Erosion and Sediment Controls.

The contractor must design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

- Control storm water volume and velocity to minimize soil erosion and pollutant discharges;
- Control storm water discharges, including both peak flowrates and total storm water volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points;
- Minimize the amount of soil exposed during construction activity;
- Minimize the disturbance of steep slopes;
- Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity, duration of precipitation; the nature of resulting storm water runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site;
- Provide and maintain natural buffers around waters of the U.S., direct storm water to vegetated areas and maximize storm water infiltration to reduce pollutant discharges, unless infeasible;
- Minimize soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates it to be compacted.
- Unless infeasible, preserve topsoil. Preserving topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

Additional Erosion and Sediment Controls Selection and Design Considerations:

Preventing storm water from coming into contact with polluting materials is generally more effective, and less costly, than removing pollutants from storm water;

Using a combination of control measures is more effective than using control measures in isolation for minimizing pollutants in the storm water discharge;

Using technologically available, economically practicable, and achievable methods in light of best industry practices;

Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures that will achieve the limits in this permit;

Minimizing impervious areas at the permittees facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce runoff and improve groundwater recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;

Dissipate storm water runoff into open vegetated swales and natural depressions to reduce in stream impacts of erosive flows;

Conserving and/or restoring of riparian buffers will help protect streams from storm water runoff and improve water quality; and

Using treatment interceptors (e.g., sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

Describe the Best Management Practices (BMPs) to be implemented to control pollutants in storm water discharges. For each major activity identified:

- Clearly describe appropriate control measures.
- Describe the general sequence during the construction process in which the measures will be implemented.
- Describe maintenance and inspection procedures to be undertaken for that specific BMP.
- Include protocols, thresholds, and schedules for cleaning, repairing, and/or replacing damaged or failing BMPs.
- Identify staff responsible for maintaining BMPs. (If your SWPPP is shared by multiple operators, indicate the operator responsible for each BMP.)

Categorize each BMP under one of the following areas of BMP activity as described below:

1. *Minimize the Amount of Soil Exposed during Construction Activity (4.2.2) & Site Delineation (4.2.1)*
2. *Maintain Natural Buffer Areas (4.2.3) & Clearing Vegetation (4.2.4)*
3. *Control Storm Water Discharges and Flow Rates (4.2.5)*
4. *Protect Steep Slopes (4.2.6)*
5. *Storm Water Inlet Protection (4.3.1)*
6. *Water Body Protection (4.3.2)*
7. *Down-Slope Sediment Controls (4.3.3)*
8. *Stabilized Construction Vehicle Access and Exit Points (4.3.4)*
9. *Track-Out from vehicles (4.3.5)*
10. *Dust Generation (4.3.6)*
11. *Stockpile Management (4.3.7)*
12. *Sediment Basins (4.3.9)*
13. *Dewatering (4.4)*
14. *Soil Stabilization (4.5)*
15. *Treatment Chemicals / Active Treatment Systems (4.6)*
16. *Good Housekeeping Measures (4.8)*
17. *Spill Notification (4.9)*
18. *Construction and Waste Materials (5.3.7)*
19. *Permanent/Post-Construction BMPs (4.11)*
20. *Projects near a Public Water System (PWS) (4.10)*

- Note the location of each BMP on your site map(s).
- Any structural BMPs should have design specifications and details referred to in Section 11 or included in Appendix B.

For more information or ideas on BMPs, see the DEC *Alaska Storm Water Guide*: https://dec.alaska.gov/water/wastewater/stormwater/guidance/ & for a list of Alaska specific BMPs look at the DOT&PF *Alaska SWPPP Guide*'s Appendix B - BMP Guide for Erosion & Sediment Control at http://dot.alaska.gov/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

10.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES (4.0; 5.3.6)

Much of the guidance in this section is for both the ESCP & SWPPP preparers. Carefully read through the requirements listed below when filling out Section 10. When developing this section, think about how they are going to construct the project. Look at means and measures but do not direct the contractor…merely suggest. Consider 'prior to/upon construction' methods (i.e. upon placing culvert install a fiber roll and outlet protection).The following sections describe BMPs that will or may be used as necessary to prevent erosion and control sediment.

The selection, design, installation, maintenance, and removal of control measures must be in accordance with good engineering practices, manufacturer specifications, and address site-specific conditions such as precipitation, site topography, soil characteristics, and growing season.

The plan preparer will use this section to describe the types and locations of control measures and BMPs to be installed and maintained in accordance with CGP Part 4.0.

Describe each control measure and BMP, including installation schedule and maintenance, inspection, and removal requirements. You may include a brief description of each BMP in this section and refer to detailed installation, maintenance, inspection, removal requirements, and manufacturer's specifications that **MUST** be included in the Appendix B.

If a control measure or BMP will be used to comply with more than one element of this section, you do not need to repeat the detailed installation, maintenance, inspection, removal requirements, and manufacturer's information. For each repeated element, identify the control measure or BMP to be used, and refer to the section or Appendix B where the detailed information is presented.

The person(s) identified in Section 2.0 of this SWPPP will be responsible for ensuring compliance with the installation, maintenance, inspection, and removal of these control measures.

The format to be used is:

BMP Description:

Describe purpose, applicability, limitations and design. If using a BMP manual or publication, this information may be found there.

BMP Manual/Publication:

Provide the citation information as described below. If referencing Appendix B, where the BMP details are provided, ensure the attached sheets clearly identify this information.

Installation Schedule:

Identify the activity or phase prior to which the BMP will be installed or the activity that requires this BMP to be installed before it can begin.

Maintenance and Inspection:

Describe the thresholds and/or indicators for maintenance and protocols for inspecting the BMP. Describe the maintenance procedures. If using a BMP manual or publication, this information may be found there.

Responsible Staff:

Name the position and company who is responsible for installation and maintenance.

How to Cite a BMP Publication:

DOT&PF requires citations for the BMP manual or publication used to select and design the BMP, along with a description of the BMP. If no BMP manual or publication was used to select or design a given BMP then state “No BMP manual or publication was used in the design or selection of this BMP”. BMP designs submitted by the contractor and approved by the Project Engineer may be used but still must state that no manual or publication was used.

BMP Manuals/Publications: BMP manuals describe each BMP and outline details such as installation, design parameters, applicability/limitations, maintenance, and targeted pollutants. To cite a manual, include the title, author (individual or agency) and date of publication.

Be careful when citing outside of the state control measures or BMPs. Read through them to make sure they do not put any additional restrictions that go beyond the CGP. If citing outside of state BMPs, make sure to mark out any requirements that do not apply to this project or do not meet CGP requirements and cite as ‘modified from (insert BMP manual title).

DOT&PF Specifications and Plan Sheets: The publication cited may be the DOT&PF contract specifications and plan sheets provided that the minimum information regarding the BMP is included (those listed above).

When the plans and specifications are used, the reference must include the sheet or page number and these must be appended to the SWPPP. If the specifications and plan sheets do not provide the minimum information, the plan preparer must provide the missing information in the plan. Any drawing or description developed by the plan preparer must include the statement “No BMP manual or publication was used for this design.”

Manufacturer’s Specification Sheet: Referencing a manufacturer’s specification sheet is suitable only if it includes all the necessary information listed in the above subsection. When using the manufacturer’s specification sheet(s), provide the product name, manufacturer, and date of copyright, and attach copies of the specification sheet(s) to the plan. It may also be helpful to provide the manufacturer’s website if the information was obtained online. You may deviate from manufacturer’s specifications where you provide justification for such deviation and include documentation of your rationale in the ESCP/SWPPP.

Permanent/Post-Construction Control Measures: Identify any permanent/post-construction control measures that will be installed during the construction process and not discussed elsewhere in the SWPPP (permanent Soil Stabilization measures should be covered in section 10.13).

10.1 Minimize Amount of Soil Exposed during Construction Activity (4.2.2)

Describe how the disturbed land areas (e.g., clearing and grading) and undisturbed land areas (e.g., trees, boundaries of sensitive areas, or buffers established by CGP Part 4.2.3) will be delineated.

Describe the areas that will be disturbed for each phase of construction, and the methods you will use (e.g., signs, fences, etc.) to protect the areas that are to be left undisturbed. Construction activities must be phased to minimize the extent and duration of exposed soil.

Identify natural features and describe how each will be protected during construction activity.

Describe how native topsoil will be preserved. Native topsoil should be preserved for later use with on-site stockpiles, unless deemed infeasible by space constraints or site design criteria creates impervious surfaces (CGP Part 4.2.2.1).

BMP Description	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
***Installation Schedule*:**	
***Maintenance and Inspection*:**	
***Responsible Staff*:**	

10.1.1 Site Delineation (4.2.1)

Insert text or table here

10.2 Maintain Natural Buffer Areas (4.2.3)

Are stream crossings or waters of the U.S. located within or immediately adjacent to the property?

☐ Yes ☐ No

If YES, describe the control measures to be implemented to comply with the CGP Part 4.2.3 (e.g., buffer areas, perimeter controls, etc.).

You must maintain natural buffer areas at stream crossings and around the edge of any waters of the U.S. that are located within or immediately adjacent to the construction activity in accordance with the following:

- The buffer must be a minimum of 25 feet wide, or the width as required by local ordinance, unless infeasible based on site dimensions;
- Exceptions are allowed for water dependent activities, specific water access activities, or necessary water crossings;
- A permittee should, to the extent practicable, use perimeter controls adjacent to buffers and direct storm water sheet flow to buffer areas to increase sediment removal and maximize storm water infiltration.

Insert Text

10.2.1 Clearing Vegetation (4.2.4)

Clearing of vegetation that disturbs the vegetative mat and exposes soil is **prohibited** prior to obtaining authorization under the CGP.

Cutting of trees and brush while the ground is frozen without disturbing the vegetative mat for the purpose of clearing in accordance with the U.S. Fish & Wildlife Service "Recommended Time Periods for Avoiding Vegetation Clearing" is allowed prior to the submittal of a project's NOI. If vegetation clearing that disturbs the vegetative mat and occurs after the onset of spring thaw (as defined in Appendix C) or conditions that consist of above freezing temperatures that cause melting of snow, the permittee must develop a SWPPP and file an NOI. Operators must receive authorization under this permit and otherwise comply with the terms of this permit prior to such clearing.

10.3 Control Storm Water Discharges and Flow Rates (4.2.5)

Describe control measures to comply with the CGP (e.g., divert storm water around the site, slow down or contain storm water, use of velocity dissipation devices, installing permanent storm water management controls prior to construction of site improvements to the extent practicable, etc.). Storm water that may concentrate must be slowed down or contained.

Example Format:

***BMP Description*:**	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
***Installation Schedule*:**	
***Maintenance and Inspection*:**	
***Responsible Staff*:**	

***BMP Description*: Culvert Outlet/Apron (Energy Dissipater)**	
BMP Manual/Publication: Project Sheet E1, E2, Standard Plan D-06.10 and Specification 611.	
☑ ***Permanent***	☐ ***Temporary***
***Installation Schedule*:**	Install upon completion of culvert installation in accordance with project plans and specifications.
***Maintenance and Inspection*:**	Inspection: Look for scouring and voids within riprap and accumulated sediment. Maintenance: Remove excessive accumulated sediment. Repair voids and scouring with additional riprap.
***Responsible Staff*:**	SWPPP Manager & Superintendent, Contractor

10.3.1 Protect Steep Slopes (4.2.6)

Will steep slopes be present at the site during construction? ☑ Yes ☐ No

If YES, describe control measures to be implemented to comply with CGP Part 4.2.6 (e.g., reduce continuous slope length, divert storm water around slopes, stabilized exposed areas, etc.).

Slopes 20 percent or greater in grade for a length exceeding 25 feet should have BMPs installed to reduce continuous length. These may include trackwalking and fiber rolls.

Example Format:

BMP Description: *Fiber Rolls for Erosion Control BMP-10.01.a*	
BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, March 2021*	
☐ ***Permanent***	☑ ***Temporary***
Installation Schedule:	Installed prior to soil disturbance in the contributing drainage area.
Maintenance and Inspection:	Inspection: Look for roll ends remain abutted tightly. Ensure that the rolls are in contact with the soil and are entrenched. Look for scouring underneath the rolls. Maintenance: If rolls are crushed, torn, slumping, or split, the damaged sections must be replaced. Remove sediment accumulated upslope of the roll when it reaches one-half the distance between the top of the fiber roll and the ground surface.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

Sediment Controls:

Sediment control measures (e.g. sediment ponds, traps, filters, etc.) must be constructed as one of the first steps in grading. These control measures must be functional before other land disturbing activities take place.

10.4 Storm Water Inlet Protection Measures (4.3.1)

Describe control measures (e.g., filter berms, perimeter controls, temporary diversion dikes, etc.) to be implemented to protect all inlets receiving storm water from the project during the duration of the project.

The only storm water inlets for this project will be cross-culverts installed during construction of the road and pathway.

Example Format:

BMP Description: Culvert Inlet Protection	
BMP Manual/Publication: *DOT&PF Alaska SWPPP Guide, March 2021*	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	Immediately when culvert is installed, bedded, and backfilled. All culvert inlet protection will be installed within 24 hours of culvert placement.
Maintenance and Inspection:	Inspection: Look for roll ends or sandbags remain abutted tightly. Confirm barrier is in full contact with the soil and bypass routes are not present. Ensure that the rolls or sandbags are in contact with the soil and are entrenched. Look for scouring underneath the rolls or sandbags. Check for sediment accumulation, barrier displacement, and structural damage. Maintenance: Restore structure to original dimensions and full contact with soil. Repair any damage as necessary to eliminate bypass routes. Remove accumulated sediment before it reaches one-third of the design depth of the spillway.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.5 Water Body Protection Measures (4.3.2)

Describe control measures selected to minimize discharge of sediment prior to entry into water bodies located on or immediately downstream of the site.

Temporary stream diversion may be needed during installation of culverts. All in-stream work must comply with applicable ADF&G Fish Habitat Permit(s).

Example Format:

BMP Description: *Rock Filter Berm BMP-16.00*	
BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, March 2021*	
☐ ***Permanent***	☑ ***Temporary***
Installation Schedule:	Gravel filter berms will be used as perimeter protection 24 hours after grubbing.
Maintenance and Inspection:	Inspection: Look for voids, undercutting, and/or sediment accumulation. Maintenance: Make repairs to berms at first sign of deterioration. Remove and either dispose of or reincorporate into the project any sediment buildup before 1/2 of above ground height or capacity or 1/3 if protecting a water body or storm drain inlet. Replace filter material when necessary.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

***BMP Description*:** *Culvert Inlet Protection BMP-08.00*	
BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, March 2021*	
☐ ***Permanent***	☑ ***Temporary***
***Installation Schedule*:**	Immediately when culvert is installed, bedded, and backfilled. All culvert inlet protection will be installed within 24 hours of culvert placement.
***Maintenance and Inspection*:**	Inspection: Look for roll ends or sandbags remain abutted tightly. Confirm barrier is in full contact with the soil and bypass routes are not present. Ensure that the rolls or sandbags are in contact with the soil and are entrenched. Look for scouring underneath the rolls or sandbags. Check for sediment accumulation, barrier displacement, and structural damage. Maintenance: Restore structure to original dimensions and full contact with soil. Repair any damage as necessary to eliminate bypass routes. Remove accumulated sediment before it reaches one-third of the design depth of the spillway.
***Responsible Staff*:**	SWPPP Manager & Superintendent, Contractor

10.6 Down-Slope Sediment Controls (4.3.3)

Describe sediment controls (e.g., silt fence or temporary diversion dike) for any portion of the down-slope and side-slope perimeter where storm water will be discharged from disturbed areas of the site.

Example Format:

Fibers rolls will be used as a down-slope sediment control. See Section 10.3.1 Protect Steep Slopes for the BMP description, installation, maintenance, and inspection information.

BMP Description:	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.7 Stabilized Construction Vehicle Access and Exit Points (4.3.4)

Vehicle access points must be limited as much as possible and must be stabilized.

Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (i.e., vehicle tracking), and stabilization practices (i.e., stone pads and/or wash racks) to minimize off-site vehicle tracking of sediments and discharges to storm water.

Any rubber tire operating on bare soils will require a stabilized entrance / exit prior to driving on paved surfaces. Tracked equipment must be cleaned prior to operating on paved surfaces. The existing gravel surfaces will be used for the stabilized access and exit points.

Example Format:

BMP Description:	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.8 Dust Generation and Track-Out from Vehicles (4.3.5, 4.3.6)

Describe control measures to minimize the generation of dust and off-site vehicle tracking of sediment. Dust must be minimized prior to the vehicle exits by application of water or other dust suppression techniques.

The contractor will be required to remove any debris including soil and rock from the roadway. Any material tracked will be swept up daily. ACGP requires sediment tracked out from a site to be removed by the end of the same business day in which the track-out occurs or by the end of the next business day if track-out occurs on a non-business day.

Example Format:

BMP Description:	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.9 Soil Management and Soil Stockpile (4.3.7)

Will soil stockpiles be at the site during construction? ☐ Yes ☐ No

If YES, describe control measures intended to control sediment loss from the stockpiles (e.g., tarps or perimeter straw wattles). Show location(s) of stockpile(s) on site maps, if known. Stockpiles must be stabilized or covered, protected with sediment controls and located away from storm water inlets, conveyance channels, or water bodies, if possible.

Example Format:

BMP Description: *Plastic Covering BMP-12.00*	
BMP Manual/Publication: *DOT&PF, Alaska SWPPP Guide, March 2021*	
☐ ***Permanent***	☑ ***Temporary***
Installation Schedule:	Plastic covering will be installed when the stockpile will not be actively worked on more than 14 days or when there are windy conditions. Plastic covering will be secured either by weighted or trenched method.
Maintenance and Inspection:	Inspection: Look for unsecured covering or locations of erosion under the covering. Maintenance: Re-secure covering.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.10 Authorized Non-Storm Water Discharges (4.3.8)

A permittee must minimize any non-storm water authorized by this permit. List any authorized non-storm water discharges.

10.11 Sediment Basins (4.3.9)

Refer to CGP Part 4.3.8 to determine if a sediment basin is required for your site.

Will a sediment basin be required during construction? ☐ Yes ☐ No

If YES, provide a brief description of the sediment basin here. Append detailed design information in appendices (e.g., calculated volume of runoff from a two-year, 24-hour storm, or other assumptions used to calculate appropriate sediment-basin size). Show location of sediment basin(s) on site maps.

Insert Text

10.12 Dewatering (4.4)

Describe dewatering practices to be implemented if water must be removed from an area so construction activity can continue.

Will dewatering be conducted during construction? ☑ Yes ☐ No

Dewatering may be required for culvert installation.

Will excavation dewatering be conducted within 1,500 feet of a DEC mapped contaminated site found on the DEC website? ☐ Yes ☑ No

For DEC's contaminated sites:
http://www.arcgis.com/home/item.html?id=315240bfbaf84aa0b8272ad1cef3cad3.

If yes to above question, review and comply with the DEC General Permit for Excavation Dewatering (AKG002000 - https://dec.alaska.gov/water/wastewater/stormwater/dewater-hydrostatic/#dewater), or most current version, for specific requirements

Describe control measures to be implemented to comply with dewatering discharges authorized either under the CGP or the DEC General Permit for Excavation Dewatering requirements.

Example Format:

BMP Description:	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.13 Permanent/Post-Construction BMPs (4.11)

Describe any permanent/post-construction control measures that will be installed during the construction process AND have not been discussed elsewhere in this document.

Examples of these measures are:

- Biofilters
- Detention/Retention Devices
- Earth Dikes, Drainage Swales, and Lined Ditches
- Infiltration Basins
- Vegetated Strips and/or Swales

Ditches constructed in accordance with project plans will be vegetated with topsoil and seeding described in Section 10.13.1.

10.13.1 Soil Stabilization (4.5, 5.3.6.3)

The project must stabilize all disturbed areas of the site to minimize on-site erosion and sedimentation and the resulting discharge of pollutants.

Soil stabilization requirements vary depending on the mean annual precipitation for the site. Refer to CGP Part 4.5 for specific requirements.

Refer to the Alaska Plant Materials Center's Alaska Coastal Revegetation & Erosion Control Guide and Interior Alaska Revegetation & Erosion Control Guide at http://plants.alaska.gov for help in selecting appropriate seed mixes and information on methods for revegetation.

Describe permanent & temporary stabilization control measures and sequence of installation.

Describe how the site will be stabilized prior to seasonal freeze-up.

Example Format:

BMP Description:	
BMP Manual/Publication:	
☐ ***Permanent***	☐ ***Temporary***
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.14 Treatment Chemicals (4.6; 5.3.6.4)

Provide documentation for all treatment chemicals and/or an Active Treatment System (ATS) to comply with CGP Part 4.6. Submit cationic treatment chemical use or ATS to DEC at least 14 days for approval be for installing.

Will treatment chemicals be used to control erosion and/or sediment during construction?

☐ Yes ☐ No

If YES, comply with CGP Part 4.6 and complete the following sections (10.15 & 10.16).

10.15 Treatment Chemicals (4.6.1)

The use of treatment chemicals to reduce erosion from the land or sediment in a storm water discharge is allowed provided all the requirements of CGP Part 4.6 are met. Use conventional sediment controls before and after the application of treatment chemicals. Chemicals may only be applied where storm water is treated upstream and is directed to a sediment control (e.g., sediment trap, sediment basin) before discharge.

No treatment chemicals will be used on this project.

If YES, comply with ACGP Part 4.6 and complete the following subsections. If NO, delete the following subsections.

10.15.1 Treatment Chemical Selection (4.6.2)

Describe what chemicals will be used, including information required by CGP Part 4.6.2.

Insert Text

10.15.2 Treatment Chemical Use Procedures (4.6.3; 4.6.6)

Describe storage methods that will be used and ensure they comply with Part 4.6.3.

Describe training for employees using treatment chemicals at the site, as specified in Part 4.6.6. Document this training in either appendix for Employee Qualifications or Training Records.

Insert Text

10.15.3 Application of Treatment Chemicals (4.6.4; 4.6.5)

The application of treatment chemicals shall be in combination with appropriate physical control measures to ensure effectiveness of treatment chemical. Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier.

Briefly describe treatment chemical application procedures to be used. Append detailed treatment chemical application procedures Appendix P.

Insert Text

10.16 Active Treatment System Information or Cationic Treatment Chemicals (4.6.7)

A permittee who uses an Active Treatment System (ATS) or cationic treatment chemicals as a control measure must submit information required by the DEC for review at least 14 days prior to start of operation of the ATS at the project. Specific submittal requirements can be found at 4.6.7.

Will an ATS or cationic treatment chemicals be used as a control measure at the site?

☐ Yes ☐ No

If YES, simply include the packet submitted to DEC in Appendix P, and refer to this documentation below.

Insert Text

10.17 Good Housekeeping Measures (4.8)

The project must design, install, implement, and maintain effective good housekeeping measures to prevent and/or minimize the discharge of pollutants. The project must include appropriate measures for any of the following activities at the site.

Consult the DEC Storm Water Guide or other resources for more information or ideas on BMPs. See also the EPA's National Menu of BMPs at http://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater-documents & for a list of Alaska specific BMPs look at the *Alaska SWPPP Guide*'s Appendix B - BMP Guide for Erosion & Sediment Control at http://www.dot.state.ak.us/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

10.17.1 Washing of Equipment and Vehicles (4.8.1)

Will equipment and vehicle washing and/or wheel wash-down be conducted at the site?

☐ Yes ☐ No

If YES, describe the control measures to be implemented to comply with CGP Part 4.8.1.

Example Format:

BMP Description:	
BMP Manual/Publication:	
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.17.2 Fueling and Maintenance Areas (4.8.2)

Describe equipment/vehicle fueling and maintenance practices to be implemented to control pollutants to storm water (e.g., secondary containment, drip pans, spill kits, etc.).

Describe spill prevention and control measures to be implemented, including ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control.

Will equipment and vehicle fueling or maintenance be conducted at the site?

☐ Yes ☐ No

The contractor's lay down yards, fueling and maintenance areas must be delineated on the contractor's SWPPP site map. Spill kits appropriate to respond to the hazards on site will be required. Inspections will include the contractor's fueling, maintenance, and laydown areas. Equipment will be maintained to prevent oils and grease from discharging with storm water. Prior to use each day, equipment operators are required to do a visual inspection for leaks, drips, and excess grease. If leaks cannot be repaired and stopped, the equipment will be placed out of service over drip pans and/or pads to collect any fluids or grease and prevent pollution discharge. Topping off fluids will not be allowed in lieu of maintenance. Equipment operators will look for excess grease accumulations, especially when the weather warms up, removing and properly disposing of excess grease to prevent discharge.

HMCP or SPCC: For the specific sections in the Good Housekeeping BMPs that deal with fueling and oiling, equipment care and maintenance, waste materials, etc., it should be mentioned, by referencing the specific page and section, this requirement for BMP reference and citation is met. Also, it will/can create less conflict within the SWPPP due to the HMCP being project specific and the BMP citations more generic.

10.17.3 Staging and Material Storage Areas (4.8.3)

Designate areas to be used for staging and material storage areas. Locate such activities, to the extent practicable, away from storm water conveyance channels, storm water inlets, and waters of the U.S.; and minimize the exposure to precipitation and storm water and vandalism for all chemicals, treatment chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment.

10.17.4 Washout of Applicators/Containers Used for Paint, Concrete, and Other Materials (4.8.4)

Describe location(s) and controls to minimize the potential for storm water pollution from washout areas for concrete mixers, paint, stucco, etc.

Will washout areas for trucks, applicators, or containers of concrete, paint, or other materials be used at the site? ☐ Yes ☐ No

If YES, describe control measures to be implemented to comply with CGP Part 4.8.4. If NO, delete the following paragraph.

The contractor will provide a designated concrete washout area. The washout area may be moved during the construction process but the location must be kept current on the site map. Concrete wash water may not be discharged with storm water. The washout must have sufficient capacity for the scheduled activities.

Example Format:

BMP Description:	
BMP Manual/Publication:	
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

10.17.5 Fertilizer or Pesticide Use (4.8.5)

Describe fertilizers and/or pesticides expected to be used and/or stored on-site and procedures for storage of materials to minimize exposure of the materials to storm water.

Will fertilizers or pesticides be used at the site? ☐ Yes ☐ No

If YES, describe control measures to be implemented to comply with CGP Part 4.8.5.

Example Format:

BMP Description:	
BMP Manual/Publication:	
Installation Schedule:	
Maintenance and Inspection:	Inspection: Maintenance:
Responsible Staff:	

Contractors will obtain authorization to spray pesticides through DOT&PF M&O utilizing the DOT&PF Integrated Vegetation Management Plan (IVMP). A permit from DEC is only required (in addition to IVMP authorization obtained via working through the regional M&O environmental analysts and a TCP from ROW) if the contractor is applying pesticide to a water body/aquatic site. Also, if spraying within the MOA, a local permit must be obtained from the MOA as well. For more information and contacts, visit http://dot.alaska.gov/stwdmno/ivmp/index.shtml.

10.18 Spill Notification (4.9)

The contractor shall describe spill-notification procedures, including relevant federal, state, tribal, and local agency contact information, to be implemented in the event of a leak, spill, or release of hazardous substances or oil that occur at the construction site. Refer to CGP Part 4.9 for permit requirements.

Contractor shall use DOT&PF Hazardous Material Control Plan template at http://www.dot.state.ak.us/stwddes/dcsconst/assets/docs/constforms/hmcp_template.doc to create project specific plan. Include final plan as approved by DOT&PF in Appendix O.

10.19 Construction and Waste Materials (4.8.6, 5.3.7)

Describe in general terms the type of construction and waste materials expected to be stored at the site, with updates as appropriate, and describe the measures for handling and disposal of all wastes generated at the site, including clearing and demolition debris or other waste soils removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. Refer also to CGP Parts 4.8.3 Staging and Material Storage Areas, and 4.8.6 Storage, Handling, and Disposal of Construction Waste.

Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.

The contractor must establish proper building and material storage areas to avoid pollutants coming in contact with rainfall or flowing storm water. Any materials that have the potential to pollute storm water will be covered to prevent rainfall from coming into contact with them. Garbage containers will be covered to prevent debris from blowing away as well. Any contractor supplied staging area must be included in inspections and the SWPPP. No materials will be staged or stored, even temporarily in flowing water.

The contractor should designate a waste collection area on site that does not receive substantial amount of runoff from upland areas and does not drain directly to a water body.

Construction Materials

Insert Text or Table

Waste Materials

Insert Text or Table

Example Format:

BMP Description: *General Construction Site Waste Management*	
BMP Manual/Publication: *DEC Alaska Storm Water Guide, December 2011*	
Installation Schedule:	Continuously during construction activities
Maintenance and Inspection:	Inspection: Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. Maintenance: Immediately repair or replace any that are found to be defective.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

11.0 INSPECTIONS (5.4; 6.0)

Minimum requirements for the locations and scope of site inspections are described in the CGP Part 6.4.

Inspection requirements for linear projects are described in the CGP Part 6.5.

Describe the frequency inspections will occur at your site, including any correlations to storm frequency and intensity.

Note that inspection details for particular BMPs should be included in Section 11 or Appendix B.

11.1 Inspection Schedules (5.4.1.2; 6.1; 6.2; 6.6)

Refer to CGP Part 6.1 for inspection frequency requirements.

Required inspection frequency is based on mean annual precipitation for the site. Refer to Section 3.2 for annual precipitation data and can be found in the project specifications.

A permittee must allow an authorized representative of DEC, EPA or the MS4 operator to conduct a site inspection in accordance with the CGP Part 6.6.

Inspection Frequency:

The inspection frequency in Central Region will now be once every seven calendar days.

Inspection frequency: **Once every seven calendar days**

Justification for reduction in inspection frequency, if applicable: **Insert Text**

As defined by the CGP, winter shutdown means the cessation of soil disturbing or soil stabilizing construction activity for winter. Typically this period is from October/November to April/May and is approximately from Fall Freeze-up to Spring Thaw.

CGP Definition of Fall Freeze-up: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the fall that air temperatures will be predominately below freezing. It is the date in the fall that has an 80% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

CGP Definition of Spring Thaw: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the spring that air temperatures will be predominately above freezing. It is the date in the spring that has a 20% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

These dates can be found by looking up the “Fall ‘Freeze’ Probabilities” & “Spring ‘Thaw’ Probability” for the weather station closest to the site on the website: www.wrcc.dri.edu/summary/Climsmak.html or the 5-year moving average of first/last dates from https://xmacis.rcc-acis.org/. NOTE: this estimation of “Fall Freeze-up” & “Spring ‘Thaw’” is for planning purposes only. During construction, the permittee will need to maintain control measures based on actual conditions.

Estimated date of winter shutdown: **Insert Text**

Based on the 5-year moving average from https://xmacis.rcc-acis.org/ for the Matanuska Experimental Farm weather station, Fall Freeze-up is September 22. ACGP Part 6.2.3 allows inspections to stop 14 calendar days after this date (October 6) if freezing conditions exist, ground disturbing work has ceased, and stabilization measures (at least temporary) have been applied in anticipation of spring thaw. The Spring Thaw date is May 10 and inspections must resume at least 21 calendar days prior to this date (April 19).

The inspections will be conducted jointly with department personnel as directed by the Project Engineer. The schedule for site inspections will be established and updated daily as necessary to meet the requirements of the CGP and provide the department with notice and opportunity to participate in the site inspection.

11.2 Inspection Form or Checklist (5.4.1.3; 6.7)

Contractor is required to attach Form 25D-100 in Appendix K. An Inspection Report will be completed in SWPPPTrack after each inspection, identifying BMPs installed at the time of inspection, noting corrective actions required, and documenting complete-by-date for any actions discovered during the inspection. Each report will be certified by the Contractor's Superintendent and DOT&PF's Project Engineer.

11.3 Corrective Action Procedures (5.4.1.4; 8.0)

Identify how conditions found that require corrective action will be addressed:

The following guidelines apply for setting corrective action complete-by dates as required by the CGP:

For conditions that are easily remedied (i.e., removal of tracked sediment, maintenance of control measures, or spill clean-up), the permittee must initiate appropriate steps to correct the problem within twenty-four hours from the time of discovery and correct the problem as soon as possible; or

If installation of a new control measure is needed or an existing control measure requires significant redesign and reconstruction or replacement, the permittee must install the new or modified measure and make it operational within seven calendar days from the time of discovery of the need for the corrective action, unless infeasible.

If a discharge occurs during a local 2-year, 24-hour storm event, a corrective action must be initiated the day after the storm event ends as described in CGP Part 8.1.1.

For corrective actions that could affect a subcontractor, notify the subcontractor within three calendar days of taking the corrective action.

Additionally, deadlines for completion of corrective actions shall be selected to protect water quality and prior to the next storm event unless impracticable.

Corrective Action Log

The corrective action log will be completed in SWPPPTrack to document the following within 24 hours of discovery of any conditions listed in CGP Part 8.1 (Appendix J contains DOT&PF Form 25D-112):

- Date the problem was identified
- Summary of corrective action taken or to be taken
- Notice of whether SWPPP modifications were required as a result of this discovery or corrective action
- Date corrective action completed and name of person completing the action

In the event there is a reason (outside of the project staff's control) that a corrective action cannot practicably be completed by the set complete-by date, DOT&PF will complete a Delayed Action Item Report (Form 25D-113). This form will set a new complete-by date and document the reason that the previous date could not be met.

11.4 Inspection Recordkeeping (5.4.2)

Records (including inspection reports, corrective action logs, delayed action item reports, grading and stabilization logs, amendment logs, staff tracking logs, rainfall logs, and training logs) will be maintained for a minimum period of at least three (3) years after the permit is terminated. A hard copy and electronic copy

of the final SWPPP, including all appendices, will be transmitted to DOT&PF when the project's NOTs are filed.

12.0 MONITORING PLAN (IF APPLICABLE) (5.5; 7.0)

12.1 Determination of Need for Monitoring Plan

Is there an EPA-established or approved TMDL for **Receiving waters identified in Section 7.1**? ☐ Yes ☑ No

Is the receiving water listed as impaired for turbidity and/or sediment? ☐ Yes ☑ No

A project subject to the monitoring requirements of CGP Part 3.2 is required to collect and analyze storm water discharge samples and document monitoring activities with the procedures described in CGP Part 7.0.

13.0 POST-AUTHORIZATION RECORDS (5.8)

Copy of Permit Requirements (5.8.1)

The contractor's SWPPP must contain the following documents:

- copy of CGP (5.8.1.1)
- copy of the signed and certified NOI form submitted to DEC (5.8.1.2)
- upon receipt, a copy of letter from DEC authorizing permit coverage, providing tracking number (5.8.1.3)

These documents must be included in Appendix F.

13.1 Additional Documentation Requirements (5.8.2)

The Grading and Stabilization Log, Form 25D-110 in Appendix G, will be filled out in SWPPPTrack to satisfy the following CGP requirements:

- Dates when grading activities occur (5.8.2.1.1)
- Description of grading activities and location (5.8.2.1.2)
- Dates when construction activities temporarily or permanently cease on a portion of the site (5.9.2)
- Dates when stabilization measures are initiated (5.8.2.1.4)
- Description of Stabilization Measure (5.8.2.1.5)

Other documents will be included as shown below:

- Date of beginning and ending period for winter shutdown (5.8.2.2; insert in Appendix K)
- Copies of inspection reports (5.4.2; 5.8.2.3; insert in Appendix K).
- Copies of monitoring reports, if applicable (7.3.9.2; 5.8.2.4; 5.8.2.5; 5.5.2; 9.1; insert in Appendix H).
- Documentation in support of chemical-treatment processes (4.6; 5.8.2.7; insert in Appendix P).
- Documentation of maintenance and repairs of control measures (5.8.2.9; 8.1; 8.2; insert in Appendix J).
- Copy of DEC Letter of Non-Objection (insert in Appendix D).

13.1.1 Records of Employee Training (4.14; 5.8.2.8)

Training staff and subcontractors is an effective BMP. Document all training conducted for your staff, those with specific storm water responsibilities (e.g. installing, inspecting, and maintaining BMPs), and subcontractors. Use the Training Log (Form 25D-125) in Appendix I.

Describe Training Conducted: **Insert Text**

General storm water and BMP awareness training for staff and subcontractors:

During safety meetings and schedule briefings, corrective actions from the previous period will be reviewed. The contractor is encouraged to discuss timing of activities and stabilization requirements. Records of the training topics, attendees, and length must be maintained in the contractor's SWPPP.

Detailed training for staff and subcontractors with specific storm water responsibilities:

Insert Text

Individual(s) Responsible for Training:

Insert Names, Titles, and Contact Numbers here

Documentation of training conducted shall be record on Form 25D-125 and included in Appendix I.

14.0 MAINTAINING AN UPDATED SWPPP (5.9)

This section does not need to be filled out but is a list of reminders for the applicant.

The permittee must modify the SWPPP, including site map(s), in response to any of the following:

- Whenever changes are made to construction plans, control measures, good housekeeping measures, monitoring plan (if applicable), or other activities at the site that are no longer accurately reflected in SWPPP (5.9.1.1);
- If inspections of site investigations by staff or by local, state, tribal, or federal officials determine SWPPP modifications are necessary for permit compliance (5.9.1.2); and
- To reflect any revisions to applicable federal, state, tribal, or local laws that affect control measures implemented at the construction site (5.9.1.3).

14.1 SWPPP Amendment Log (5.9.2)

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause replacement of control measures). Use DOT&PF construction form 25D-114 as maintained in SWPPPTrack. **Amendments must be approved by an AK-CESCL or equivalently certified individual and be included in Appendix M. The Superintendent and the SWPPP Manager are the only persons authorized to amend the SWPPP and update the SWPPP Amendment Log in SWPPPTrack. Amendments must be approved by the Project Engineer in SWPPPTrack.**

14.2 Deadlines for SWPPP Modifications (5.9.3)

Revisions to the SWPPP must be completed within seven days of the inspection that identified the need for a SWPPP modification or within seven days of substantial modifications to the construction plans or changes in site conditions.

15.0 ADDITIONAL SWPPP REQUIREMENTS (5.10)

15.1 Retention of SWPPP (5.10.1)

A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from DEC must be retained at the construction site.

15.2 Main Entrance Signage (5.10.2)

A sign or other notice must be posted conspicuously near the main entrance of the site. The sign or notice must include a copy of the completed NOI for both DOT&PF and the contractor.

15.3 Availability of SWPPP (5.10.3)

The permittee must keep a current copy of the SWPPP at the site. The SWPPP must be made available to subcontractors, government and tribal agencies, and MS4 operators, upon request.

15.4 Signature and Certification (5.10.4)

As co-permittees, the SWPPP is signed, dated, and certified by both the contractor and by DOT&PF. DOT&PF requires the use of its forms, instead of those provided as examples in the DEC template. The contractor must complete the SWPPP Contractor Certification (Form 25D-111) once DOT&PF approves the SWPPP and include it in Appendix E. Either the contractor's corporate officer or their duly authorized representative can certify the SWPPP. If a duly authorized representative certifies, the Delegation of Signature Authority form must be included in Appendix E.

Upon approval, DOT&PF will provide the contractor with signed DOT&PF forms for the DOT&PF SWPPP Certification (Form 25D-109) and DOT&PF Delegation of Authority (Form 25D-107) for inclusion in Appendix E of the SWPPP.

APPENDIX A
SITE MAPS AND DRAWINGS

APPENDIX B
BMP DETAILS

APPENDIX D
SUPPORTING DOCUMENTATION

APPENDIX E
PROJECT SPECIFIC ESCP DISCUSSIONS & COMMENTS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION

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

Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)
Project No. 0001723 / CFHWY00562

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"

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(Federal-Aid Highways)

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

INVITATION TO BID

for Construction Contract

Date TBD

Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)
Project No. 0001723 / CFHWY00562

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

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

State Funded ☐ Federal Aid ☒

Description of Work:
This federally funded project will continue the work completed in Phase I of the project and extend Seldon Rd from Windy Bottom/Beverly Lakes Rd to Pittman Rd on new alignment. Work may include; new roadway, approach roads, frontage roads, parking facilities, pedestrian pathway and facilities, drainage improvements, intersection improvements, ADA improvements, roadside hardware, lighting, signing & striping, and utilities

Project DBE Utilization Goal: ☒ Race-Neutral

The Engineer's Estimate is between **$10,000,000** and **$20,000,000**

All work shall be completed in **N/A** Calendar Days, or by **November 1, 2027.**
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: **Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)** **Project No. 0001723 / CFHWY00562**	**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 **Chris Bentz, P.E.**

Email: chris.bentz@alaska.gov Phone: (907) 269-0652

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

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

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

Other Information:

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

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

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

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

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

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

SPECIAL NOTICE TO BIDDERS

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

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

   a. Standard Specifications for Highway Construction, 2020 Edition comb bound ($25.00), download at: www.dot.state.ak.us/stwddes/dcsspecs/assets/pdf/hwyspecs/sshc2020.pdf, or order bound book from LuLu at: https://www.lulu.com/en/us/shop/state-of-alaska-dept-of-transportation/2020-alaska-standard-specification-for-highway-construction/paperback/product-1gq9j9qk.html
   b. Alaska Test Methods Manual (Lab & Field), May 15, 2023 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:
      - Matanuska Electric Association, Inc. (MEA) Electrical Facility Clearance Requirements https://www.mea.coop/power-safety/electrical-safety
      - Matanuska Telephone Association https://www.sfmta.com/permits/muni-construction-support-and-clearance-permit#Clearance
      - 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
   f. Cross Sections
   g. Geotechnical Report, Seldon Road Extension Phase II, Wasilla, Alaska, October 2015, Prepared by Shannon & Wilson, Inc.
   h. Geotechnical Report, Additional Geotechnical Explorations for Seldon Road Extension, Wasilla, Alaska, August 2019, Prepared by Shannon & Wilson, Inc.
   I. Erosion, Sediment Control Plan (ESCP),Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB), December 2024, Prepared by Stantec.
   j. Traffic Control Plan (TCP). Seldon Rd Extension Phase II Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB), 0001723/CFHWY00562, April 2025.

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

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

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

   The overall DBE Utilization Goal is revised to 8.28 percent.

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

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

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

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

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

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

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

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

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

   2 CFR 184:
   https://www.federalregister.gov/documents/2023/08/23/2023-17724/guidance-for-grants-and-agreements

   23 CFR 635.410:
   https://www.govinfo.gov/content/pkg/CFR-2022-title23-vol1/xml/CFR-2022-title23-vol1-sec635-410.xml

   USDOT waiver at 88 FR 55817:
   https://www.federalregister.gov/documents/2023/08/16/2023-17602/waiver-of-buy-america-requirements-for-de-minimis-costs-and-small-grants

   FHWA interpretations, waivers, regulations, policy and guidance on Buy America:
   https://www.fhwa.dot.gov/construction/cqit/buyam.cfm

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

8. **Utilities**.

   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.

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

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

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

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

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.

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

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

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

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PART 4

STANDARD MODIFICATIONS AND SPECIAL PROVISIONS

To the **STATE OF ALASKA**

STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

2020
EDITION

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SECTION 102
BIDDING REQUIREMENTS AND CONDITIONS

Standard Modification

102-1.05 PREPARATION OF BID.

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

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

HSM20.42-043022

SECTION 104
SCOPE OF WORK

Standard Modification

104-1.06 VALUE ENGINEERING CHANGE PROPOSALS BY CONTRACTOR.

Replace 104-1.06.3.e with the following:

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

HSM20.2-113020R

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

CR105.5-012816R1

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.

CR105.6-23.0601

SECTION 106
CONTROL OF MATERIAL

Standard Modification

106-1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.

Add the following:

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

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

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

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

HSM20.20-21.1231

Special Provision

Replace the BUY AMERICA PROVISION with the following:

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

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

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

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

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

The supplier certifying Form 25D-62 may be the manufacturer, fabricator, vendor, or supplier; provided they have sufficient control and knowledge of the manufacturing process to accept responsibility and

certify full and complete conformance with 23 CFR §635.410 and 2 CFR Part 184. The Prime Contractor shall also certify Form 25D-62. Provide additional certifications and backup documentation to signed Form 25D-62 when required by the Engineer. False statements may result in criminal penalties prescribed under AS 36.30.687 and Title 18 US Code Section 1001 and 1020.

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

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

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

1. cement and cementitious materials
2. aggregates such as stone, sand, or gravel
3. aggregate binding agents or additives

De Minimis amount:

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

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

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

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

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

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

Iron and Steel minimal use:

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

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

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

2. **Plastic and Polymer-based products**. All manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.
3. **Glass**. All manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.
4. **Fiber Optic Cable**. All manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.
5. **Optical Fiber**. All manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.
6. **Lumber**. All manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.
7. **Drywall**. All manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.
8. **Engineered Wood**. All manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

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

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

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

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

Replace Subsection 106-1.05 with the following:

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

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

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

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

HSP20.7A-23.1114

SECTION 107
LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Special Provisions

107-1.02 PERMITS, LICENSES, AND TAXES.

The Department will: Add No. 3:

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

    a. Alaska Department of Fish & Game (ADF&G) Title 16 (Fish Habitat) Permit.
    b. U.S. Army Corps of Engineers (USACE) Nationwide Permit 23.

CR107.4-120117R2

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 F, when there are draft permits.

CR107.2-070121

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.

CR107.5-120117R

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.

CR107.3-051517

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).

HSM20.41-010122

Add the following Subsection 108-1.011 Related Sections:

108-1.011 RELATED SECTIONS.

Section 652, Prosecution and Progress – Supplemental Requirements

CR108.3-012816R

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

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.

CR109.4-010120

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.

CR109.2-110118

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.

HSM20.3-113020R

SECTION 120
DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

Standard Modification

120-1.01 DESCRIPTION.

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

120-3.01 DETERMINATION OF COMPLIANCE.

2. Phase II – Award.

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

HSM20.21A-24.0415

DIVISION 200 — EARTHWORK

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SECTION 201
CLEARING AND GRUBBING

Special Provisions

201-3.01 GENERAL.

Add the following:

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

CR201.3-042313

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.

CR201.1-010114

201-5.01 BASIS OF PAYMENT.

Add the following:

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

CR201.3-042313

SECTION 202
REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Special Provisions

202-1.01 DESCRIPTION.

Add the following:

Residence foundation (concrete): Remove and dispose of a concrete foundation located within the project limits at approximate station “F” 25+05.

Domestic Well: Decommission existing well at approximate station “F” 25+81, 34’ RT.

Cluster mailbox: Remove and relocate cluster mailboxes as shown in the plans.

Boulders: Remove and relocate boulders from “S” 12+50, 105’ LT to “S” 114+10, 65’ RT.

CR202.6-040120

Add the following:

Property Owner Fence: carefully remove fences, designated by the Engineer, to the right-of-way limit, or to the end of the span beyond the right-of-way limit. Fence materials belong to the property owners. Salvage and stack fence materials neatly in the property owner's yard. If a noise barrier or separation fence is constructed, with the owner's permission, use salvaged fencing to fill fencing gaps behind the property line. Use salvaged fencing according to Section 607, for reconstructed fences.

CR202.6-040120

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.

CR202.2-040120

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.

CR202.1-040120

Add the following Subsection 202-3.08 Ground Water Well Decommissioning:

202-3.08 GROUND WATER WELL DECOMMISSIONING. Decommission the water wells according to DEC requirements conforming to 18AAC 80.015(e) Well Protection Source Water Protection, and Well Decommissioning, or a DEC approved alternate method. Develop and submit a detailed Ground Water Well Decommissioning Plan to the Engineer. Contact the _____***[City]***__ DEC office at (907) ###-####, for plan review requirements of alternate methods.

CR202.8-20.0401R

202-4.01 METHOD OF MEASUREMENT.

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.____"

HSM20.4-113020R

Add the following:

Acquiring waste disposal permits is subsidiary to 202 Pay Items.

CR202.1-040120

Add the following:

Item 202.2022.____. At the Contract Unit price for the actual length of fence taken down, disposed, or delivered to the owner, regardless of the type or height.

PAY ITEM

Item Number	Item Description	Unit
202.2022.____	Removal of Fence	LF

CR202.6-040120

Add the following:

Item 202.2010.____. At the Contract Lump Sum price for each tank removed and disposed. Payment includes full compensation for necessary excavation, purging, processing, or removing fuel/Septic-contaminated soils around the tanks, and backfilling the resultant hole.

PAY ITEM

Item Number	Item Description	Unit
202.2010.____	Removal of Tanks, Storage	Each

CR202.7-040120

Add the following:

PAY ITEM

Item Number	Item Description	Unit
202.2012.____	Ground Water Well Decommissioning	Each

CR202.8-20.0401R

202-5.01 BASIS OF PAYMENT.

Payment will be made under the following:

PAY ITEM

Item Number	Item Description	Unit
202.2027.____	Cluster Mail Box Unit	EA

CFHWY00562

SECTION 203
EXCAVATION AND EMBANKMENT

Standard Modification

203-3.04 COMPACTION WITH MOISTURE AND DENSITY CONTROL.

In the second paragraph delete "and ATM 214".

HSM20.5-113020R

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.

6. In addition to other equipment required to complete the temporary water diversion and dewatering work, maintain a minimum of two trash pumps with hoses at the site during diversion construction activities. Maintain the intake to prevent fish entrapment, entrainment, or injury with the use of perforated or slotted plate and woven wire with a mesh size not greater than 3/32 inch or a profile bar and wedgewire with openings not greater than 1/16 inch. Do not exceed passive approach velocity of 0.2 fps and active approach velocity of 0.4 fps.

Rewater to minimize sediment movement downstream of the site. Prior to rewatering, slowly wet the reconstructed waterway channel; wash the fines into the bed by using pumps, or by diverting a small portion of the waterway channel flow. Capture and pump the sediment and turbid water, from the downstream end of the channel to the upstream end of the channel, until fines are washed into the streambed and water runs clear. Attain the Engineers written approval before breaching the coffer/diversion dams. Slowly breach the coffer/diversion dams and rewater the waterway channel.

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

CR204-24.0501

DIVISION 300 — BASES

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SECTION 301
AGGREGATE BASE AND SURFACE COURSE

Special Provision

301-2.01 MATERIALS.

Add the following after the first sentence:

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

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

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

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.

CR301.1-012407R

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.

CR301.2-062116

Add No. 5 after the 5th paragraph:

5. within 50 feet of detector loops.

CR301.3-022015

Standard Modification

301-3.03 SHAPING AND COMPACTION.

In the second paragraph delete "and ATM 214".

HSM20.5-113020R

Add the following:

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

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

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

301-5.01 BASIS OF PAYMENT.

Add the following:

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

CR301.1-012407R

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 COMPOSITION OF MIXTURE - 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:

- The results do not achieve the requirements specified in Table 306-1
- The asphalt binder source is changed
- The source of aggregate, aggregate quality, gradation, or blend ratio is changed
- 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 subsequent to the approved Job Mix. The fee will be included under Pay Item 306.2001.____ ATB, Price Adjustment, Type ___; Class__.

306-2.02 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.

306-2.03 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.

306-2.04 ANTI-STRIP ADDITIVES. 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.

306-2.05 PROCESS QUALITY CONTROL. Sample and test materials for quality control of the ATB according to Subsection 106-1.03. Submit to the Engineer, with the JMD, a documentation plan that will provide a complete, accurate, and clear record of the sampling and testing results. When directed by the Engineer, adjust the plan and resubmit.

Submit a paving and plant control plan at the pre-paving meeting to be held a minimum of 7 days before initiating pre-paving operations. Address the sequence of operations. Outline steps to provide product consistency, to minimize segregation, to prevent premature cooling of the ATB, and to provide the mat density required by these specifications. Include a proposed quality control testing frequency for gradation, asphalt binder content, and compaction.

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.

306-2.06 RECYCLED ASPHALT PAVEMENT (RAP). Process existing pavement removed under Subsection 202-3.07 so material passes the 1 1/2" sieve. 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.

CONSTRUCTION REQUIREMENTS

306-3.01 WEATHER LIMITATIONS. Do not place ATB on a wet surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or finishing of the mix. Do not place ATB unless the roadway surface temperature is 40°F or warmer.

306-3.02 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.

306-3.03 ASPHALT MIXING PLANTS. Meet AASHTO M 156. Use an asphalt plant designed to dry aggregates, maintain 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 4 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 equipment meeting OSHA safety requirements.

306-3.04 HAULING EQUIPMENT. Costs associated with meeting the requirements of Subsection 306-3.04 are subsidiary to Section 306 Pay Items.

Vehicles/Equipment. Haul ATB in trucks with tight, clean, smooth metal beds, thinly coated with a minimum amount of paraffin oil, lime water solution, or an approved manufactured asphalt release agent. Do not use petroleum fuel as an asphalt release agent.

During ATB hauling activities, the hauling vehicle will have covers attached and available for use. Be prepared to demonstrate deployment of the cover when hauling material or empty. Illustrate the efficiency of deployment and how the materials are protected from the environment and the environment is protected from the materials. When directed by the Engineer, cover the ATB in the hauling vehicle(s).

Roadway Maintenance. Daily inspect, remove/clean, and dispose of project materials deposited on existing and new pavement surface(s) inside and outside the project area including haul routes.

The inspection plan and method of removal/cleaning and disposal shall be submitted in writing to the Engineer and approved by the Engineer 7 days before initiating paving operations. Include alternatives, options to immediately correct deficiencies in the inspection plan and methods of removal/cleaning and disposal that may be discovered as the work is being performed.

The Engineer may require the Contractor to include a vehicle/equipment cleaning station(s), to be added at the project site and or at the plant, in the basic plan or as one of the corrective alternatives/options. At a minimum, the cleaning station will include the materials and means to:

(1) Spray truck tires with an environmental degradable release agent if mix adheres to tires before dumping in front of the paving equipment.
(2) Clean off loose mix from gates, chains, and tires that might fall on the pavement of the haul route.
(3) Contain, collect and disposal of (1) and (2).

The Contractor is responsible for the inspection plan, the means, and methods used for removal/cleaning and disposal of fugitive materials/debris. The Contractor is responsible for the damage as a result of not removing these materials (to the roadway material, the users, and others) and the damage to the roadway materials from the removal method(s). Approval does not change the Contractor's responsibility, nor add responsibility to the Department for this work.

Repair damage, as specified in Subsection 306-3.16 Patching Defective Areas, to the existing roadway materials (asphalt type) as a result of the fugitive materials or their removal. Use repair materials of similar type to the damaged material. Attain written approval from the Engineer for the proposed material.

306-3.05 PAVING EQUIPMENT. Use self-propelled asphalt pavers with a heated vibratory screed. Control grade and cross slope with automatic grade and slope control devices. Use an erected string line, a 30-foot minimum mobile stringline (ski), or other approved grade follower, to automatically actuate the screed or blade control system. Use grade control on either (a) both the high and low sides or (b) grade control on the high side and slope control on the low side.

Use a paver screed assembly that produces a finished surface of the required smoothness, thickness, and texture without tearing, shoving, or displacing the ATB.

Equip pavers 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.

Prevent segregation of the coarse aggregate particles from the remainder of the ATB during paving operations. Specifically equip pavers to prevent segregation between the hopper and augers. Use means and methods approved by the paver manufacturer. Means and methods may include chain curtains, deflector plates, or other similar devices or combination of devices. When required by the Engineer, provide a Certificate of Compliance verifying use of the means and methods required to prevent segregation.

306-3.06 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Avoid crushing or fracturing of aggregate. Use rollers designed to compact ATB asphalt mixtures and reverse without backlash.

All rollers shall have an attached infrared thermometer that measures and displays the surface temperature to the operator.

Use fully skirted pneumatic-tire rollers having a minimum operating weight of 3000 pounds per tire.

306-3.07 PREPARATION OF EXISTING SURFACE. Prepare base surface conforming to the Plans and Specifications.

Before placing the hot asphalt mix, apply tack coat material (Section 702) as specified here and in Section 402. Uniformly coat contact surfaces of curbing, gutters, sawcut pavement, cold joints, manholes, and other structures with tack coat material. Allow tack coat to break before placement of ATB on these surfaces.

306-3.08 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt binder to the asphalt mixing plant at a uniform temperature, within the allowable mixing temperature range.

306-3.09 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).

306-3.10 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.

306-3.11 TEMPORARY STORAGE. Silo type storage bins may be used, provided the characteristics of the ATB remain unaltered. Changes in the JMD, visible or otherwise, are cause for rejection. Changes may include: visible segregation, heat loss; and the physical characteristics of the asphalt binder, lumpiness, or stiffness of the ATB or similar.

306-3.12 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. Areas with temperature differences more than 25° F lower than the surrounding ATB may produce areas of low density. Contractor shall 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.

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.

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.

Do not cover/place 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 pave against new Portland cement concrete curbing until it has cured for at least 72 hours.

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

306-3.13 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 ATB. Do not leave rollers or other equipment standing on ATB that is not sufficiently cooled to prevent indentation.

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 shall be deemed unacceptable by the Engineer 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 JMD will be used for the first lot of ATB. The MSG for additional lots will be determined from the first sublot of each lot.

Acceptance testing for density will be performed according to ATM 410 using a 6 inch diameter core.

306-3.14 JOINTS. 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. 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. 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 cutting back on the previous run to expose the full depth of the layer. Saw cut the joint, use a removable bulkhead or other method approved by the Engineer.

Remove to full depth improperly formed joints resulting in surface irregularities. Before removing pavement, cut a neat straight line along the pavement to be removed and the pavement to remain. Use a power saw or other method approved by the Engineer. Replace the removed asphalt with new ATB and thoroughly compact.

306-3.15 SURFACE TOLERANCE. Costs associated with meeting surface tolerances are subsidiary to the ATB Pay Items.

The Engineer will test the finished surface after final rolling at selected locations using a 10 ft straightedge. Correct variations from the testing edge, between any two contacts, of more than 1/4 inch.

306-3.16 PATCHING DEFECTIVE AREAS. Costs associated with patching defective areas are subsidiary to the ATB Pay Items.

Remove defective ATB for the full thickness of the course, do not skin patch. Cut the pavement so that edges are vertical and the sides are parallel to the direction of traffic. Coat edges with a tack coat meeting Section 402 and allow to cure. Place and compact fresh ATB to grade (Subsection 306-3.13) and surface tolerance requirements (Subsection 306-3.15).

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:

   Percent of asphalt binder for each sublot multiplied by the total weight represented by that sublot. The same tests used for the acceptance testing of the sublot 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 remnant. This procedure may be used on 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 be 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 will be 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.

   Method 1 will be used for determining 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.

3. ATB, Price Adjustment, Type ; Class . By the fees specified in Subsections 306-2.01, 4.02, and 5.01.

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 sublot of the shortened lot. If there is no prior lot, and there are at least 3 sublots, the material in the shortened lot will be considered as a lot and 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 sublot. ATB quantities of 600 tons or greater will be treated as an individual sublot.

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 306-2.05 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 sublot of a lot will include retesting for the MSG. Retesting will be performed by a Department laboratory.

2. Asphalt Binder

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

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

a. Acceptance Test. The lot size for asphalt binder 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 ([acceptance + retest]/2) passes the specification requirement, the average value becomes the ATV. If this ATV fails the specification requirement, the Engineer or Contractor may request the third sample (referee sample) be tested.

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

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 306-3.16 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. Asphalt Material Price Adjustment. This subsection provides a price adjustment for asphalt material by: (1) additional compensation to the contractor or (2) a deduction from the contract amount.

1. This provision shall apply:

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

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

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

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

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

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

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

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

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

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

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

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

306-5.01 BASIS OF PAYMENT.

Except where specified as individual Pay Items the work and materials associated with:

Asphalt binder, anti-stripping additives, surface tolerance corrections, patching defective areas; removal and disposal of rejected ATB, and the hauling equipment are subsidiary to the Asphalt Treated Base Pay Items.

Item 306.2001·____· ATB, Price Adjustment, Type ___; Class __: is the sum of the price adjustment for the fees assessed the Contractor including:

- Each mix design subsequent to the approved Job Mix Design (Subsection 306-2.01) will result in a fee of $2500.00 each.
- Failure to cut core samples within the specified period will result in a fee of $100.00 per sample per day (Subsection 306-4.02).
- Failure to backfill voids left by sampling within the specified period will result in a fee of $100 per hole per day (Subsection 306-4.02).
- 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 (Subsection 306-4.02, 4.03).

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 ##-## X	Ton
306.2001.____	ATB, Price Adjustment, Type ___; Class __	CS
306.2002.____	Asphalt Material Price Adjustment	CS

CR306-010122

DIVISION 400 — ASPHALT PAVEMENTS AND SURFACE TREATMENTS

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Special Provision

Replace Section 401 with the following:

SECTION 401
HOT MIX ASPHALT PAVEMENT

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

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

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

MATERIALS

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

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

Furnish the following documents at delivery:

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

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

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

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

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

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

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

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

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

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

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

TABLE 401-1
HMA MARSHALL Design Requirements

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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.

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

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

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

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

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

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

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

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

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

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

Supplemental Process Quality Control:

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

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

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

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

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

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

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

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

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

CONSTRUCTION REQUIREMENTS

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

1. Paving Plan. Include the following:

   a. Sequence of operations

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

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

   d. Procedures to produce consistent HMA

   e. Procedures to minimize material and thermal segregation

   f. Procedures to minimize premature cooling

   g. Procedures to achieve HMA density

h. Procedures for joint construction including corrective action for joints that do not meet surface tolerance requirements

i. Quality control testing methods, frequencies and sample locations for gradation, asphalt binder content, and density, and

J. Any other information or procedures necessary to provide completed HMA construction that meets the Contract Requirements

2. Pavement Inspection Plan. Include the following:

a. Process for daily inspections

b. Means and methods to remove and dispose of project materials

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

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

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

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

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

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

You may use belt conveyor scales to proportion plant blends and mixtures if the scales meet the general requirements for weighing equipment and are calibrated according to the manufacturer's instructions.
If WMA is approved by the Engineer, modify the mixing plant as required by the manufacturer and WMA additive manufacturer.

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

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

Do not haul HMA on barges.

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

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

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

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

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

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

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

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

401-3.09 RESERVED.

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

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

Preparation of a milled surface:

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

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

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

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

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

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

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

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

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

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

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

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

Do not store HMA on barges.

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

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 Portland cement concrete curbing until it has cured for at least 72 hours.

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

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

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

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

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

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

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

The Lower Specification Limit for density is 92.0% of the Maximum Specific Gravity (MSG) as determined by ATM 409. The MSG from the approved JMD is used for the first lot of each type of HMA. The MSG for additional lots is determined from the first sublot of each lot.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

401-3.20 ROADWAY MAINTENANCE. Inspect daily according to pavement inspection plan. Remove, and dispose of project materials incorrectly deposited on existing and new pavement surfaces(s) inside and outside the project area including haul routes.
The Contractor is responsible for damage caused by not removing these materials and any damage to the roadway from the removal method(s).

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

Add the following subsection:

401-3.21 ASPHALT SAFETYEDGE^{SM}. Incorporate asphalt **SAFETYEDGE^{SM}** to the dimensions shown as designated in the Plans. Construct the asphalt **SAFETYEDGE^{SM}** monolithically with the HMA. Comply with all Construction Requirements set forth in Section 401.

Utilize an approved asphalt **SAFETYEDGE^{SM}** system that is capable of providing a sloped wedge equal to the dimensions shown in the Plans. The use of a single plate strike off is not allowed. The asphalt **SAFETYEDGE^{SM}** system must be adjustable to accommodate varying paving thicknesses. All asphalt **SAFETYEDGE^{SM}** systems to be used must be approved by the Engineer.

Construct a 100-foot test section prior to work to demonstrate the edge shape and compaction. Make adjustments as required by the Engineer to meet specification requirements.

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

1. Hot Mix Asphalt.

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

   b. By the final HMA surface area.

2. Asphalt Binder. By weight, as follows:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

add the following

15. Asphalt **SAFETYEDGE^{SM}**. The additional work required to construct the asphalt **SAFETYEDGE^{SM}** and test section will not be measured for payment.

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401-4.02 ACCEPTANCE SAMPLING AND TESTING.

1. Hot Mix Asphalt

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2. Asphalt Binder

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

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

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

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

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

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

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

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

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

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

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

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

   A lot containing material with less than a 1.000 pay factor is accepted at an adjusted price, provided that pay factor is at least 0.800 and there are no isolated defects identified by the Engineer. A lot

containing material that fails to obtain the minimum pay factor is considered unacceptable and rejected under Subsection 105-1.11.

HMA pay factors are computed as follows:

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

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

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

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

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

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

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

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

TABLE 401-3
WEIGHT FACTORS

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

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

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

HMA Price Adjustment = [(CPF or DPF)* -1.000] x (tons in lot) x (PAB)

* CPF or DPF, whichever is lower

PAB = Price Adjustment Base = $110.00 per ton.

The HMA Price Adjustment is the sum of the price adjustments for each lot and paid for under Item 401.0008.____.

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

   The longitudinal Joint Density Price Adjustment is the total price adjustment paid for under Item 401.0009.____.

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

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

   Method 1: SPA = PAB x PQ x SF,

   where:

   SPA = Pavement Smoothness Price Adjustment

   PAB = $110.00 per ton,

   PQ = Top layer HMA quantity, tons

   SF = Smoothness Factor (Table 401-4)

TABLE 401-4
SMOOTHNESS FACTOR (SF)

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

IRI (in./mile)	SF
Greater than 120.0*	-

* Corrective Work required, see Subsection 401-3.18

Method 2: SPA = PAB x PQ x SF,

where:

SPA = Pavement Smoothness Price Adjustment

PAB = $110.00 per ton,

PQ = Top layer HMA quantity, tons

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

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

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

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

The Pavement Smoothness Price Adjustment is the total price adjustment paid for under Item 401.2010.____.

4. Asphalt Binder Price Adjustment. A lot quantity of asphalt binder, with a pay factor less than 1.00, is accepted or rejected per Table 401-3.01-1 Asphalt Binder Pay Factors.

TABLE 401-4.03-1
ASPHALT BINDER PAY FACTORS

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

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

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

Select the lowest pay factor from:

RTFO (test the binder residue at the performance grade temperature)
(1) DS, All Grades, G*/Sinδ, kPa^{-1}

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

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

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

The Asphalt Binder Price Adjustment is the sum of the price adjustments for each lot and paid for under Item 401.2021.____.

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

1. This provision shall apply:

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

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

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

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

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

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

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

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

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

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

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

5. Method of measurement for determining Q (quantity) is the weight of asphalt material that meets the criteria of this subsection and is incorporated into the project. The quantity does not include aggregate, mineral filler, blotter material, thinning agents added after material qualification, or water for emulsified asphalt. The quantity for emulsified asphalts will be based on the asphalt residue

material only and will be calculated using the percent residue from testing, or if not tested, from the manufacturer's certificate of compliance.

401-5.01 BASIS OF PAYMENT.

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

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

Test Strips: Subsection 401-2.10 Process Quality Control.

a. Approved. Test strip construction and material, approved by the Engineer in writing, as meeting the specification requirements will be paid for at the Contract unit prices for HMA and asphalt binder as included in the Bid Schedule. Price adjustments 401.0008.____, 401.009.____, 401.0010.____ and 401.2021.____ do not apply.

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

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

The following price adjustment Pay Items, unless included as individual Pay Items in the bid schedule, are paid under 401.2022.____ Combined Price Adjustment.

401.0008.____ HMA Price Adjustment, Type __; Class __,
401.0009.____ Longitudinal Joint Density Price Adjustment,
401.0010.____ Pavement Smoothness Price Adjustment, Method __.
401.2021.____ Asphalt Binder Price Adjustment

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

- Each mix design subsequent to the approved JMD for each type and class of HMA specified will result in a fee of $6000.
- 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 will be assessed.

Items 401.0008.____ HMA Price Adjustment, Type___; Class___, and 401.2022.____ Combined Price Adjustment do not apply to the following:

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

Item 401.0015.____ Asphalt Material Price Adjustment.

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

- When more than one "Asphalt Material Price Adjustment" Pay Item is included in the Plans or bid schedule the asphalt material price adjustment, for each Section's asphalt material, is paid under the Pay Item with the greatest quantity.
- When more than one asphalt material is included in the project and only one "Asphalt Material Price Adjustment" Pay Item is included in the Plans or bid schedule, the asphalt material price adjustment, for each Section's asphalt material, is paid under the one Pay Item regardless of the quantity.
- When the Pay Item "Asphalt Material Price Adjustment," is not included, for any section, no payment will be made.

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

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

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

PAY ITEM

Item Number	Item Description	Unit
401.0001.____	HMA, Type __; Class __	Ton
401.0002.____	HMA, Leveling Course, Type IV; Class B	LnSt
401.0003.____	HMA, Leveling Course, Type IV; Class B	Ton
401.0004.____	Asphalt Binder, Grade PG ##-## X	Ton
401.0005.____	HMA, Temporary, Type II, Class B	Ton
401.0006.____	HMA, Type __, Class __	SY
401.0007.____	Liquid Anti-Strip Additives	CS
401.0013.____	Job Mix Design	Each
401.0014.____	Joint Adhesive	LF
401.0015.____	Asphalt Material Price Adjustment	CS
401.0016.____	Crack Repair	LF
401.0017.____	Prelevel for Ruts, Delaminations, and Depressions	SY
401.0018.____	Repair Unstable Pavements	SY
401.2022.____	Combined Price Adjustment	CS

CR401-23.0501

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.

HSM20.6-113020

DIVISION 600 — MISCELLANEOUS CONSTRUCTION

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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.

For steel and plastic pipe, match the end section material to the pipe material.

Separate dissimilar materials with an electrical insulating material. The insulating material must be at least 1/16 inch thick and approved by the Engineer.

Culvert marker post is 6-foot tall by 2.5 inches wide with reinforcing ribs, capable of a 9-inch minimum bending radius, and blue with no marking.

Culvert marker Strap and Seals according to ASTM D3953. .625 inch x .02 inch, dry Type 1 regular-duty (magnetic, ferritic), galvanized Finish B (hot-dipped Grade 2 moderate coating, .18 oz./ft^2 surface or .0002 inch thick minimum. Push type seals, Style III (overlap), regular duty, galvanized Finish B (hot-dipped coating) by 1.75-inch minimum length and matched to strapping width.

CONSTRUCTION REQUIREMENTS

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

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

603-3.02. LAYING PIPE. Begin the pipe laying at the downstream end of the pipe. Keep the lower segment of the pipe in contact with the bedding throughout its full length. Place bell or groove ends of rigid pipe and outside circumferential laps of flexible pipe facing upstream.

Lay paved or partially lined pipe so that the longitudinal centerline of the paved segment coincides with the flow line. Install elliptical conduit and circular conduit reinforced with other than a full circular cage or cages so the orientation of a vertical plane through the longitudinal axis of the conduit does not vary more than 5 degrees from the design orientation.

Repair damaged metallic coating on metal pipe according to AASHTO M36.

603-3.03 JOINING PIPE. Joints shall provide circumferential and longitudinal strength to preserve the pipe alignment, prevent separation of pipe sections, and provide a watertight joint between new sections of pipe and joints between new and existing sections of pipe of similar and dissimilar materials. Include a continuous gasket (seal) in all joints. Construct the watertight joint capable of passing a laboratory hydrostatic pressure and vacuum test of at least 4 psi for 10 minutes.

1. Rigid Pipe. Use either bell and spigot or tongue and groove joints. Join pipe sections with the ends fully entered and the inner surfaces reasonably flush and even.

   Use one or more of the following joint materials, or any other if approved:

   a. Portland cement mortar

   b. Portland cement grout

   c. Rubber gaskets

   d. Coupling bands

   e. Preformed plastic sealing compound

   Make mortar joints using an excess of mortar to form a bead around the outside of the pipe.

   For grouted joints, use molds or runners to retain the poured grout. Install rubber ring gaskets to form a flexible, watertight seal.

   When using portland cement mixtures, protect the completed joints against rapid drying using suitable covering material.

2. Metal Pipe. Join the metal pipe firmly using connecting bands conforming to ASTM B745 (Corrugated Aluminum Pipe) and ASTM A760 (Corrugated Steel Pipe) and as noted herein. Use bands that are no more than two nominal sheet thicknesses lighter than the pipe jointed, and in no case more than 0.052 inches lighter. Include a gasket each side of the gap.

   a. Primary Band. Furnish and install corrugated bands so that the band corrugations match and conform to the corrugations of the pipe. Conform to the following guidelines:

      (1) The gap between the pipes joined is in the center of the band and is no wider than one corrugation width.

      (2) Band for 12-inch through 30-inch diameter pipe are at least 12 inches wide.

      (3) Bands for pipe with diameters greater than 30 inches are at least 22 inches wide.

   b. Secondary Band. Use this band only where it is not physically possible to use primary bands, such as on field-cut pipe ends, joining new pipe to existing pipe, etc. Furnish and install deformed metal sheet bands (dimple bands) so that the projections match and are the same depth as the pipe corrugations. Form these projections in circumferential rows with one projection for each corrugation of the helical pipe.

Conform to the following guidelines:

(1) The gap between the pipes joined is in the center of the band and is no wider than 2 inches.

(2) Bands for 12-inch diameter pipe are at least 12 inches wide and have one circumferential row of projections for each pipe end joined.

(3) Bands for pipe with diameters greater than 12 inches are at least 24 inches wide and have two circumferential rows of projections for each pipe end joined.

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

CR603-20.0615R

SECTION 611
RIPRAP

Special Provision

611-2.01 MATERIALS.

Replace the first paragraph with the following:

Evenly graded stones that are hard, angular, and have no more than 50 percent wear at 500 revolutions as determined by AASHTO T 96. Apparent specific gravity will be determined by ATM 308. Use stones with breadth and thickness at least 1/3 of its length. Do not use round boulders or cobbles on slopes steeper than 3:1.

CR611.1-020119

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.

   a. Property of the State. When 615-3.01 7a identifies a maintenance station to receive sign salvage, the signs (sign panels, posts, and hardware) are the property of the State.

      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 their hardware. Deliver sign panels, posts, and hardware to the State Maintenance Station noted in these Special Provisions. Do not deliver salvaged materials until inspected and approved by the Engineer. Replace any items damaged by you at no additional cost to the Department.

      Deliver salvaged sign panels, posts, and hardware to the State Maintenance and Operations Station, located at:
      NA.

   b. Property of the Contractor. When 615-3.01 7a does not identify a State Maintenance and Operations Station; the signs salvaged (sign panels, posts, and hardware) are the property of the Contractor.

      Remove project signs and/or parts designated for salvage, off the project site.

   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 as required by Federal, State, and Municipal environmental regulations.

   All signs, the sign panels, posts, hardware, and foundations at a single installation are considered as one unit.

8. All materials and finished signs are subject to inspection and acceptance in place.

   a. Surfaces exposed to weathering must be free of defects in the coating that impair serviceability or detract from general appearance or color match.

   b. Finished signs must be clean and have no chatter marks, burrs, sharp edges, loose rivets, delaminated reflective sheeting, or aluminum marks. Do not make repairs to the face sheet.

9. Install the various breakaway assemblies according to the manufacturer's written instructions. Meet MASH crashworthiness requirement for breakaway hardware, unless approved otherwise by the Engineer.

10. Secure the anchors in templates and install them according to the manufacturer's written instructions.

11. Finish the foundation according to these tolerances:

    a. Do not use more than two shims per coupling.

    b. Do not use more than three shims to plumb each post.

    Remove and replace all foundations requiring more than three shims to plumb a post without extra compensation.

12. Construct the top of any foundation located on a slope so that the finished slope passes through the top center of the foundation. Grade the area 24 inches up and down slope of the foundation edge so that no portion of the foundation projects above the surrounding slope and water will drain away from the foundation.

13. Attach a label to the back of all standard signs in the lower right corner. Make the label at least 15 square inches and show the year the sign was purchased from the manufacturer. Show the last two digits of the year in clear and bold numbers. Make the label from ASTM D4956 Type I or brighter retroreflective sheeting. Use background and legend colors meeting Table 615-1.

TABLE 615-1
DECAL COLORS

YEAR	BACKGROUND COLOR	LEGEND COLOR
XXX1	Yellow	Black
XXX2	Red	White
XXX3	Blue	White
XXX4	Green	White
XXX5	Brown	White
XXX6	Orange	Black
XXX7	Black	White
XXX8	White	Black
XXX9	Purple	White
XXX0	Strong Yellow-Green	Black

Central values and tolerance limits for each color, as referenced in the MUTCD, are available from the Federal Highway Administration, (HHS-30), 400 7th St. SW, Washington, D.C. 20590

615-3.02 SIGN PLACEMENT AND INSTALLATION. The location and type of installation will be as shown on the Plans. Sign locations are approximate and subject to field adjustment by the Engineer.
Do not allow the top of the embedded steel tube to extend more than 2 inches above the surrounding ground and concrete foundation.

On all signs, install 2-inch diameter wind washers, colored to match the sign face, between the fastener head and the sign. Use rust-resistant washers fabricated from a material equal in strength to the sign blank.

Mount signs on mast arms level.

Bring existing signs that are to remain, into conformance with Standard Drawing S-05. Keep existing signs in service until they are no longer needed.

615-4.01 METHOD OF MEASUREMENT.

Standard Signs and Object Markers. By the total area of legend-bearing sign panel erected in place. No deductions in quantity for corner rounding will be made. Nominal dimensions for sign sizes indicated on the Plans will be used to calculate sign pay quantities. Octagons and round signs will be measured as rectangles. Only one side of each double-faced sign will be measured for payment.

Removal and Relocation. By each, complete in place.

Delineators. By each, complete in place. A single delineator consists of one post equipped with three reflectors.

Salvage Sign. By each complete sign delivered in acceptable condition.

615-5.01 BASIS OF PAYMENT. Sign posts, bases, and mounting hardware are subsidiary.

Salvage Sign. Each complete sign includes the sign panels, posts, hardware, and foundations 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

CR615-23.0501

SECTION 618
SEEDING

618-1.01 DESCRIPTION. Establish a healthy living perennial stand of grass or other vegetative living groundcover by seeding. Maintain the living cover for the term of the Contract.

618-2.01 MATERIALS. Use materials that conform to the following:

Water	Subsection 712-2.01
Seed	Section 724 (Grass Seed)
Fertilizer	Section 725
Topsoil	Section 726
Soil Stabilization	Section 619
Soil Stabilization Material	Section 727

TABLE 618-1
GRASS SEED MIX, SOIL STABILIZER, AND FERTILIZER APPLICATION RATES

Materials	Ingredients	Application Rate (per MSF[c])
Grass Seed Mix [a, b]	Nortran – Tufted Hairgrass Arctared – Red Fescue Wainwright - Slender Wheatgrass Annual Ryegrass	0.60 lbs. 0.45 lbs. 0.37 lbs. 0.08 lbs. Total = 1.50 lbs.
Soil Stabilizer **Slope ≤ 3:1**	Mulch	46 lbs.
Slope >3:1	Mulch with tackifier	45-58 lbs.
Fertilizer	20-20-10	12 lbs.

a. Do not remove the tags from seed bags.
b. Submit an alternate seed mix when the specified seed is not commercially available. Provide a letter confirming the specified seed is not available. Include an agronomist certified seed mix design, including application rate, suited to the project site.
c. MSF = 1000 ft^2.

CONSTRUCTION REQUIREMENTS

618-3.01 SURFACE PREPARATION. Remove ruts, holes, humps and other irregularities from the surface. Clear stones four inches in diameter and larger, weeds, plant growth, sticks, stumps, and other debris that will interfere with the application of stabilization material, topsoil, the seeding operation, growth of vegetative groundcover, and subsequent maintenance of the cover.

Smooth the slopes for a uniform appearance and round the top and bottom of the slopes to facilitate tracking or raking. Do not disrupt drainage flow lines.

Evenly place stabilization material and or topsoil when specified.

Prepare the surface material by grooving the material in a uniform pattern that is perpendicular to the fall of the slope. Use one or more of the following grooving methods with associated equipment before the application of seed:

1. Manual raking with landscaping rake;

2. Mechanical track walking with track equipment; or

3. Mechanical raking with a scarifying slope board. Form one-inch wide grooves spaced no more than six inches apart.

618-3.02 SEEDING SEASON. Seed disturbed areas after permanent cessation of ground disturbing activities in that area, within the period specified in the Alaska Department of Environmental Conservation (ADEC) Alaska Pollutant Discharge Elimination System (APDES) Construction General Permit (CGP) for Alaska, Section 4.5 Soil Stabilization, and Section 641 Erosion, Sediment, and Pollution Control.

Do not seed during windy conditions, when climatic conditions or ground conditions would hinder placement or proper growth.

Seed between May 15 and August 15.

618-3.03 APPLICATION. Seed, seeding, reseeding includes the application of seed, fertilizer, and stabilization material.

If the seed mix, fertilizer and stabilization material are not included in the Plans or Specifications, including their application rates, use the recommendations of the ADNR and the Revegetation Manual for Alaska.

Do not seed areas of bedrock and plant beds.

Use any of the following methods:

1. Hydraulic Method

   Apply seed and stabilization material in one application when using the hydraulic method. Apply fertilizer with the hydraulic method. Include the fertilizer with the seed and stabilization material or apply separately.

   a. Furnish and place a slurry made of seed, fertilizer, water, and other materials.

   b. Use hydraulic seeding equipment that will maintain a continuous agitation and apply a homogeneous mixture through a spray nozzle. The pump must produce enough pressure to maintain a continuous, nonfluctuating spray that will reach the extremities of the seeding area with the pump unit located on the roadbed. Provide enough hose to reach areas not practical to seed from the nozzle unit situated on the roadbed.

   c. If mulch material is required, it may be added to the water slurry in the hydraulic seeder after adding the proportionate amounts of seed and fertilizer. Add seed to the slurry mixture no more than 30 minutes before application.

   d. Mix the slurry and apply it evenly.

2. Dry Methods

   a. Use mechanical spreaders, seed drills, landscape seeders, aircraft, cultipacker seeders, fertilizer spreaders, or other approved mechanical spreading equipment.

   b. Spread fertilizer separately at the specified rate.

618-3.04 MAINTENANCE. Maintenance includes but is not limited to the following:

1. Protecting seeded areas against traffic by approved warning signs or barricades and against erosion.

2. Repairing surfaces gullied or otherwise damaged following seeding. Fill erosion gullies 4 inches deep and greater filling the gully to surrounding grade including the portions less than 4 inches deep. Apply and prepare the stabilization material and or topsoil for seeding. Seed repaired area. Refer to Subsections 618-3.01 & 3.03.

3. Reseeding areas not showing evidence of satisfactory growth within 3 weeks of seeding and after repairs are complete. Reseed bare patches of soil more than 10 square feet in area. Contact ADNR for advice or corrective measures, when seeded areas are not showing evidence of satisfactory growth.

4. Watering seeded areas for healthy growth of vegetative cover. Adjust the amount of water when directed.

618-3.05 ACCEPTANCE. The vegetative ground cover will be inspected considering each station and each side of the road a separate area. Acceptance of the ground cover requires a minimum of 75% cover density in the inspection area, gullies repaired and reseeded, and no bare patches of soil more than 10 square feet in area.

Repair/reseed areas that are not accepted.

618-3.06 PERIOD OF ESTABLISHMENT. Establishment period, for each seeded area, extends one complete growing season (May 1 to August 15) after the planting year, acceptance, and final inspection beginning from the date of Project completion, Subsection 105-1.15.

Employ all possible means to preserve/maintain the new vegetative groundcover in a healthy and vigorous condition to ensure successful establishment. Maintain the vegetative cover, according to Subsection 618-3.04, to not less than the requirements for acceptance, Subsection 618-3.05.

618-4.01 METHOD OF MEASUREMENT. Section 109 and as follows:

Seeding by the Acre. By the area of ground surface acceptably seeded and maintained.

Seeding by the Pound. By the weight of dry seed acceptably seeded and maintained.

Water for Seeding. If weighed, a conversion factor of 8.34 pounds per gallon will be used to convert weights to gallons.

MGAL equals 1000 gallons.

618-5.01 BASIS OF PAYMENT.

1. Pay Items 618.0001.____ and .0002.____ Seeding. Payment is for healthy established vegetative groundcover through the establishment period.

   a. The initial surface preparation, seed, fertilizer, mulch when applied hydraulically, their application, and the water for hydraulic application are subsidiary.

   b. Maintenance fill, stabilization material, topsoil, surface preparation, seed, fertilizer, mulch when applied hydraulically, and the water required for hydraulic application are subsidiary.

2. Pay Item 618.0003.____ Water for Seeding. Payment is for water applied for growth of vegetative groundcover through the establishment period.

   If Pay Item 618.0003.____ Water for Seeding, is not included in the bid schedule, water applied for growth of vegetative groundcover through the establishment period is subsidiary.

Except for maintenance, stabilization material is paid under Section 619 and topsoil under Section 620.

PAY ITEM

Item Number	Item Description	Unit
618.0001.____	Seeding	Acre
618.0002.____	Seeding	LB
618.0003.____	Water for Seeding	MGAL

CR618-23.0601

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 (ADOT&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:
   - Compost for Erosion/Sediment Control (Filter Berms and Filter Socks) ..... R 51
   - Compost for Erosion/Sediment Control (Compost Blankets) ..... R 52

3. United States Composting Council (USCC)
   - Testing Methods for the Examination of Compost and Composting (TMECC)
   - Seal of Testing Assurance Program (STA) documents

4. Erosion Control Technology Council (ECTC)
   - Hydraulic Erosion Control Products (HECPs) Specification Chart
     Table 1, Performance Chart for Standard HECPs
   - 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)
   - 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
   - Dry Erosion Control, Stabilization Products
   - Hydraulic Erosion Control Products (HECPs)
2) Matting ..... Subsection 727-2.02
   - Rolled Erosion Control Products (RECPs)
3) Sediment Retention Fiber Rolls (SRFRs) ..... Subsection 727-2.03
   - Filter Socks
   - Compost Socks
   - 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:
   - Precipitation
   - Extended ultraviolet radiant including sunlight
   - Chemicals that are strong acids or other
   - Flames and welding sparks
   - Excess temperatures
   - Other environmental conditions that may damage the materials

2. Fabrication.
   a. Sandbags. Sand bags shall measure 15 inches by 30 inches. Place approximately 1.0 cubic foot of select Material, Type B, in each sandbag sack. Close the open end of the sandbag as recommended by the fabric manufacturer.

619-3.02 SURFACE PREPARATION. Clear all areas to be stabilized of stones 4 inches in diameter and larger and of weeds, plant growth, sticks, stumps, and other debris or irregularities that might interfere with the stabilization operation, growth of cover (where vegetative cover is part of the stabilization operation) or subsequent maintenance of the vegetative-covered area(s).

Smooth the surface of the area(s) to be stabilized; make the areas reasonably free of ruts, holes, and humps; trackwalk if required by the manufacturer; apply the stabilization material to each area.

If specified, apply topsoil to the area to be stabilized before application of the stabilizing material. Section 618 and 620.

619-3.03 APPLICATION. Apply stabilization material, including rate of application, according to the specifications. If not specified, apply according to the manufacturer's requirements. Where manufacturer requirements conflict with the specification, except where the Engineer directs otherwise, apply the material according to the requirements of the manufacturer.

If seeding is specified, except where seed is included in the stabilization material, complete the application of stabilization materials within 24 hours after seed is placed.

Do not use vehicles or equipment which cause rutting or displacement of the subgrade or topsoil.

1. Temporary Seeding. Annual Ryegrass per Subsection 724-2.02, Table 724-1. Apply at a rate of 1/2 lb/1000 sq. ft., minimum, on level ground to a maximum of 1 1/2 lb/1000 sq. ft., maximum, on sloping ground and highly erodible soils. Prepare surface and place seed as noted under Subsection 619-3.02 Surface Preparation and Section 618 Seeding. Confirm application of temporary seeding with the Engineer.

2. Tacking Agents - Tackifiers. Apply tacking agents according to the manufacturer's installation instructions matched to the application providing functional longevity, erosion control effectiveness, and vegetative establishment.

3. Soil Binders. Apply soil binders according to the manufacturer's installation instructions.

    a. Using Polyacrylamide (PAM) and PAM with Short-Term Mulch:
    Apply PAM on bare soils.

    Apply PAM and PAM with short-term mulch only where sediment control is in place and complete.

    Do not apply PAM and PAM with short-term mulch on saturated ground during rainfall.

    b. Using Moderate-Term Mulch:
    Apply moderate-term mulch according to manufacturer's installation instructions. If the curing period to achieve maximum performance is greater than the time period before precipitation is predicted, or the soil is saturated, do not apply the moderate-term mulch except as approved by the Engineer.

    c. Using Long-Term Mulch:
    Apply long-term mulch according to the manufactures installation instructions.

4. Erosion Control Blankets (ECBs). Select blankets, as specified by the manufacturer, to match the slope; and installed according to the manufacturer's instructions rolled out on well prepared soils to assure intimate contact and anchored with staples, stakes and or anchor trenches. Temporary erosion control blankets with 60 percent or greater open area may be installed prior to seeding. Place blankets with less than 60 percent open area immediately after the seeding operation.

    Staple matting/ECBs as recommended by the manufacturer for the application.

5. Compost Blankets. Construct compost blankets according to latest AASHTO R 52 and as specified. Use coarse compost and place over bare soil a blanket of 2 inch minimum thickness, except as otherwise specified. Apply material either by hand spreading and or pneumatically. Compost will have no free water visible or produce dust when handled. Place compost before seeding or mix seed with compost.

6. Check Dams. Place check dams as soon as possible and practicable or when and where if directed by the Engineer. Place the check dams perpendicular to channels and construct of a height sufficient to maximize detention while keeping the water in the channel. Place and install check dams according to the Plans and anchor to maintain in effective position.

    a. Sandbag. Place the initial row in tight contact with the ditchline for the length of the dam. Place each following row centered across the joint between the bags of the lift/row below.

7. Stabilized Construction Entrance.
   Temporary stabilized construction entrance shall be constructed according to the Plans, prior to beginning any clearing, grubbing, earthwork, or excavation.

   When the stabilized entrance no longer prevents track out of sediment or debris, the Contractor shall either rehabilitate the existing entrance to original condition, or construct a new entrance.

   When the Plans require a tire wash in conjunction with the stabilized entrance, the Contractor shall include details for the tire wash and the method for containing and treating the sediment-laden runoff as part of the SWPPP. All vehicles leaving the site shall stop and wash sediment from their tires.

8. Sediment Control Barriers. Sediment control barriers shall be installed according to the Plans or manufacturer's recommendations in the areas of clearing, grubbing, earthwork, or drainage prior to starting those activities.

   a. Sandbag. Place the initial row in tight contact with the surface perpendicular to the slope. Place each following row centered across the joint between the bags of the lift/row below.

   b. Sediment Retention Fiber Rolls.

   c. Silt Fence.

   d. Compost Berm. Construct compost berms according to latest AASHTO R 51. Use coarse compost.

9. Turf Reinforcement Mats. According to manufacturer's installation instructions.

619-3.04 MAINTENANCE. Maintain stabilized areas in a satisfactory condition for the term of the Contract. Inspect as required by the CGP, approved SWPPP, and Section 641 Erosion, Sediment and Pollution Control and correct any deficiencies immediately. Remove and dispose of temporary measures, including trapped sediment and contaminants, off project at approved locations. Materials manufactured as degradable may be left in place when approved by the Engineer.

Maintenance includes but is not limited to:

1. Protecting stabilized areas against traffic by approved warning signs or barricades.

2. Repairing surfaces gullied or otherwise damaged following application of stabilization material(s).

Where seeding is included as a part of the soil stabilization:

1. Reseeding, as required by Section 618 Seeding. Reapply the stabilization materials correcting the problems of the initial application.

2. Watering, where vegetative growth is part of the soil stabilization, according to Section 618 Seeding.

The Engineer will perform inspection of the stabilization as required in the CGP, Section 641, and the SWPPP. Make repairs as required by same and as directed.

619-4.01 METHOD OF MEASUREMENT. Section 109, measured on the slope of the ground surface.

619-5.01 BASIS OF PAYMENT. Water, maintenance, repair, removal, and disposal of temporary stabilization materials are subsidiary.

Seeding is paid under Section 618 Pay Items, topsoil under Section 620 Pay Items, silt fence under Section 633 Pay Items and temporary erosion, sediment, and pollution control under 641 Pay Items.

PAY ITEM

Item Number	Item Description	Unit
619.0001.____	Mulching	SY
619.0002.____	Matting	SY
619.2001.____	Compost	SY
619.2002.____	Turf Reinforcement Mat	SY
619.2003.____	Sediment Retention Fiber Rolls	LF
619.2004.____	Check Dam and Sediment Barrier (-Geotextile)	LF
619.2005.____	Check Dam	LF
619.2006.____	Sediment Barrier	LF
619.2007.____	Compost Berm	LF
619.2008.____	Sandbags	Each
619.2009.____	Manufactured Inlet Protection System	Each
619.2010.____	Sandbag Inlet Protection System	Each
619.2016.____	Mulch	SY

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SECTION 633
SILT FENCE

Standard Modification

633-2.01 MATERIALS.

Replace "Silt Fence Subsection 729-2.04" with the following:

Silt Fence Subsection 729-2.02

633-3.01 CONSTRUCTION REQUIREMENTS.

Replace the first sentence with the following:

Install silt fence according to the SWPPP, Appendix B.

HSM20.13-113020R

Special Provisions

Replace Section 634 with the following:

SECTION 639
DRIVEWAYS

639-1.01 DESCRIPTION. Construct driveways and approaches.

639-2.01 MATERIALS. Reserved.

639-3.01 CONSTRUCTION. Reserved.

639-4.01 METHOD OF MEASUREMENT. By the number of driveways and approaches constructed.

639-5.01 BASIS OF PAYMENT. The Contract unit price for driveways and approaches is for furnishing equipment and labor.

Pavement removal and excavation required constructing driveways and approaches is subsidiary to the driveway and approach pay items.

Materials required to construct driveways and approaches will be paid for separately under the respective items listed in the bid schedule.

PAY ITEM

Item Number	Item Description	Unit
639.0001.____	Driveway	Each
639.0002.____	Driveway, Residential	Each
639.0003.____	Driveway, Commercial	Each
639.2000.____	Approach	Each

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SECTION 641
EROSION, SEDIMENT, AND POLLUTION CONTROL

641-1.01 DESCRIPTION.

Provide project administration and Work relating to control of erosion, sedimentation, and discharge of pollutants, according to this Section and applicable local, state, and federal requirements, including the Alaska Pollution Discharge Elimination System (APDES) Construction General Permit (CGP). The state APDES program is administered by the Department of Environmental Conservation (DEC). Section 301(a) of the Clean Water Act (CWA) and 18 AAC 83.015 provide that the discharge of pollutants to water of the U.S. is unlawful except as allowed by the CGP.

641-1.02 DEFINITIONS.

These definitions apply only to Section 641.

ACTIVE TREATMENT SYSTEM (ATS) OPERATOR. CGP Appendix C.

ALASKA CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (AK-CESCL). A person who has completed training, testing, and other requirements of, and is currently certified as, an AK-CESCL from an AK-CESCL Training Program (a program developed under a Memorandum of Understanding between the Department and others). The Department recognizes AK-CESCLs as "qualified personnel" required by the CGP. An AK-CESCL must be recertified every three years. (See Qualified Person)

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC). The state agency authorized by EPA to administer the Clean Water Act's National Pollutant Discharge Elimination System.

ALASKA GENERAL PERMIT FOR EXCAVATION, DEWATERING (Excavation Dewatering Permit).

Permit authorizing excavation dewatering discharges from Construction Activities.

ALASKA MULTI-SECTOR GENERAL PERMIT (MSGP). Permit authorizing storm water discharges associated with Industrial Activity.

ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM (APDES). A system administered by DEC that issues and tracks permits for storm water discharges.

BEST MANAGEMENT PRACTICES (BMPS). CGP Appendix C.

CLEAN WATER ACT (CWA). Federal Water Pollution Control Amendments of 1972, as amended (33 U.S.C. 1251 et seq.).

CONSTRUCTION ACTIVITY. Ground disturbing activity by the Contractor, Subcontractor or utility company; that may result in erosion, sedimentation, or a discharge of pollutants into storm water. CGP Appendix C.

CONSTRUCTION GENERAL PERMIT (CGP). The permit authorizing storm water discharges from Construction Activities, issued and enforced by Alaska DEC. It authorizes storm water discharges providing permit conditions and water quality standards are met.

U.S. ARMY CORPS OF ENGINEERS PERMIT (COE Permit). U.S. Army Corps of Engineers Permit for construction in waters of the U.S. may be issued under Section 10 of the Rivers and Harbors Act of 1899, or Section 404 of the Clean Water Act.

ELECTRONIC NOTICE OF INTENT (ENOI). CGP Appendix C.

ELECTRONIC NOTICE OF TERMINATION (ENOT). CGP Appendix C.

ENVIRONMENTAL PROTECTION AGENCY (EPA). The federal agency charged to protect human health and the environment.

ERODIBLE STOCKPILE. Any material storage area or stockpile consisting of mineral aggregate, organic material, or a combination thereof, with greater than 5 percent passing the #200 sieve, and any material storage where wind or water transports sediments or other pollutants from the stockpile. Erodible Stockpile also includes any material storage area or stockpile where the Engineer determines there is potential for wind or water transport of sediments or other pollutants away from the stockpile.

EROSION AND SEDIMENT CONTROL PLAN (ESCP). The Department's project specific document that illustrates measures to control erosion and sediment on the project. The ESCP provides bidders with the basis for cost estimating and guidance for developing an acceptable Storm Water Pollutant Prevention Plan (SWPPP).

FINAL STABILIZATION. CGP Appendix C, "Stabilization".

HAZARDOUS MATERIAL CONTROL PLAN (HMCP). The Contractor's detailed project specific plan for prevention of pollution from storage, use, transfer, containment, cleanup, and disposal of hazardous material (including, but are not limited to, petroleum products related to construction activities and equipment). The HMCP is included as an appendix to the SWPPP.

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT. A DEC storm water discharge permit issued to certain local governments and other public bodies, for operation of storm water conveyances and drainage systems. CGP Appendix C.

OPERATOR(S). The party(s) responsible to obtain CGP permit coverage. CGP Appendix C.

1. Contractor – the Contractor is an Operator inside and outside the Project Zone.

2. Department – the Department is an Operator inside the Project Zone.

POLLUTANT. Any substance or item meeting the definition of pollutant contained in 40 CFR § 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sediment, sewage, garbage, sewage sludge, chemical wastes, biological materials, wrecked or discarded equipment, rock, sand, cellar dirt and industrial or municipal waste.

PROJECT ZONE. The physical area provided by the Department for Construction. The Project Zone includes the area of highway or facility under construction, project staging and equipment areas, and material and disposal sites; when those areas, routes and sites, are provided by the Contract.

Material sites, material processing sites, disposal sites, haul routes, staging and equipment storage areas; that are furnished by the Contractor or a commercial operator, are not included in the Project Zone.

QUALIFIED PERSON. CGP Appendix C and Section 641-1.04.

SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN (SPCC PLAN). The Contractor's detailed plan for petroleum spill prevention and control measures that meet the requirements of 40 CFR 112.

SPILL RESPONSE FIELD REPRESENTATIVE. The Contractor's representative with authority and responsibility for managing, implementing, and executing the HMCP and SPCC Plan.

STORM EVENT. CGP Appendix C.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP). The Contractor's plan for compliance with the CGP for construction activities inside the Project zone, CGP Appendix C and Section 641.

STORM WATER POLLUTION PREVENTION PLAN TWO (SWPPP2). The Contractor's plan for compliance with the CGP and MSGP for construction activities outside the Project Zone.

SUPERINTENDENT. The Contractor's duly authorized representative with authority and responsibility for the overall operation of the Project and Contractor furnished sites and facilities.

SWPPP AMENDMENT. A modification to the SWPPP. CGP Part 5.0.

SWPPP MANAGER. The Contractor's Qualified Person with authority and responsibility. CGP Appendix C.

SWPPP PREPARER. The Contractor's Qualified Person with authority and responsibility. CGP Appendix C.

SWPPPTRACK. Software Subscription service version SWPPPTrack DOT AK developed and provided by SWPPPTrack AK LTD, for use on construction projects that require coverage under the APDES CGP.

TEMPORARY STABILIZATION. CGP Appendix C, "Stabilization".

641-1.02.01 REFERENCE.

A list of websites and documents referenced herein, including SWPPP preparation documents and construction forms, are available at the DOT&PF Statewide Design and Engineering Services Storm Water web page and Construction Forms webpage.

DEC Permit information is available at the DEC Division of Water webpage.

641-1.03 PLAN AND PERMIT SUBMITTALS.

For plans listed in Subsection 108-1.03.5 (SWPPP, HMCP, and SPCC), use the Contractor submission and Department review deadlines identified in this subsection.

Partial and incomplete submittals will not be accepted for review. Any submittal that is re-submitted or revised after submission, but before the review is completed, will restart the submittal review timeline. No additional Contract time or additional compensation will be allowed due to delays caused by partial or incomplete submittals, or required re-submittals.

1. Storm Water Pollution Prevention Plan. Submit one electronic copy (single PDF file) of the SWPPP to the Engineer for approval. Deliver these documents to the Engineer at least 21 days before beginning Construction Activity. Organize the SWPPP and related documents for submittal according to the requirements of Subsection 641-2.01.2.

   The Department will review the SWPPP submittals within 14 days after they are received. Submittals will be returned to the Contractor, and marked as either “rejected” with reasons listed or as “approved” by the Department. When the submittal is rejected, the Contractor must revise and resubmit the SWPPP. The 14-day review period will restart when the Contractor submits an electronic copy of the revised SWPPP to the Engineer for approval.

   After the SWPPP is approved and certified by the Department using Form 25D-109, the Contractor must certify the approved SWPPP using Form 25D-111. See Subsection 641-1.03.4 for further SWPPP submittal requirements.

   Submit the final SWPPP. Transmit an electronic copy (single pdf file) of the final SWPPP to the Engineer when the Contractor's eNOT is filed, or within 30 days of the Department's eNOT being filed, whichever is sooner. Include all SWPPP documents.

2. Hazardous Material Control Plan. The HMCP Template is available at the DOT&PF Construction Forms webpage. The HMCP submittal, review timeline, and signature requirements are the same as the SWPPP.

3. Spill Prevention, Control, and Countermeasure Plan. When a SPCC Plan is required under Subsection 641-2.03, submit an electronic copy of the SPCC Plan to the Engineer. Deliver these documents to the Engineer at least 21 days before beginning Construction Activity. The Department reserves the right to review the SPCC Plan and require modifications.

4. CGP Coverage. The Contractor is responsible for permitting of Contractor and subcontractor Construction Activities related to the Project. Do not use the SWPPP for Construction Activities outside the Project Zone where the Department is not an operator. For Construction Activities outside the Project Zone, the Contractor must use a SWPPP2. Department approval is not required for a SWPPP2.

   After the Department certifies the SWPPP and prior to beginning Construction Activity, submit an eNOI with the required fee to DEC for coverage under the CGP. Submit a copy of the signed eNOI and DEC's written acknowledgement (by letter or other document), to the Engineer as soon as practicable and no later than three days after filing eNOI or receiving a written response.

   Do not begin Construction Activity until the conditions listed in Subsection 641-3.01.1 are completed.

   The Department will submit an eNOI to DEC for Construction Activities inside the Project Zone. The Engineer will provide the Contractor with a copy of the Department's eNOI and DEC's written acknowledgment (by letter or other document), for inclusion in the SWPPP.

   Before Construction Activities occur, transmit to the Engineer an electronic copy of the approved and certified SWPPP, with signed Delegations of Signature Authorities on Forms 25D-107 and 25D-108, SWPPP Certifications on Forms 25D-111 and 25D-109, both permittee's signed eNOIs and DEC's written acknowledgement.

5. DEC SWPPP Review. When CGP Part 2.1.3, or 2.1.4 requires DEC SWPPP review:

   a. Transmit a copy of the Department-approved SWPPP to DEC using delivery receipt confirmation;

   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation; and

   c. Retain a copy of delivery receipt confirmation in the SWPPP.

6. Local Government SWPPP Review. When local government or the CGP Part 2.1.4, requires local government review:

   a. Transmit a copy of the Department-approved SWPPP and other information as required to local government, with the required fee. Use delivery receipt confirmation;

   b. Transmit a copy of the delivery receipt confirmation to the Engineer within seven days of receiving the confirmation;

   c. Transmit a copy of any comments by the local government to the Engineer within seven days of receipt;

   d. Amend the SWPPP as necessary to address local government comments and transmit SWPPP Amendments to the Engineer within seven days of receipt of the comments;

   e. Include a copy of local government SWPPP review letter in the SWPPP; and

   f. File a notification with local government that the project is ending.

7. Modifying Contractor's eNOI. When required by the CGP Part 2.7, modify your eNOI to update or correct information within 30 calendar days of the change. Reasons for modification are in the CGP Part 2.7.1. The Contractor must submit an eNOT instead of an eNOI modification when the operator has changed. The new operator must file an eNOI to obtain permit coverage.

641-1.04 PERSONNEL QUALIFICATIONS.

Provide documentation in the SWPPP that the individuals serving in these positions meet the personnel qualifications. The Department accepts the following certificates as equivalent to AK-CESCL: Certified Professional in Erosion and Sediment Control (CPESC), or Certified Inspector in Sediment, and Erosion Control Certified (CISEC). These equivalent certificates are included in the CGP Appendix C and repeated below.

TABLE 641-1.04 PERSONNEL QUALIFICATIONS

Personnel Title	Required Qualifications
SWPPP Preparer	1. Current certification as a Certified Professional in Erosion and Sediment Control (CPESC); or 2. Current certification as AK-CESCL, and at least two years' experience in erosion and sediment control as a SWPPP Manager or SWPPP writer, or equivalent; or 3. Professional Engineer registered in the State of Alaska with current certification as AK-CESCL.
Superintendent	Current AK-CESCL, or substitute training from CGP Appendix C, Qualified Person Table 4
SWPPP Manager	Current AK-CESCL or substitute training from CGP Appendix C, Qualified Person Table 4.
Active Treatment System Operator	Current AK-CESCL or substitute training from CGP Appendix C, Qualified Person Table 4. ATS operator should possess a recognized certification, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to meet the ATS requirement.

641-1.05 SIGNATURE/CERTIFICATION REQUIREMENTS AND DELEGATIONS.

1. eNOI and eNOT. The eNOI, eNOT, and eNOI Modifications must be signed and certified by a responsible corporate officer according to CGP Appendix A, Part 1.12. Signature and certification authority for the eNOI and eNOT cannot be delegated.

2. Delegation of Signature Authority for Other SWPPP Documents and Reports. Use Form 25D-108 to delegate signature authority and certification authority to the Superintendent position, according to CGP Appendix A, Part 1.12.3, for the SWPPP, Inspection Reports and other reports required by the CGP. The Superintendent position is responsible for signing and certifying the SWPPP, Inspection Reports, and other reports required by the CGP, except the eNOI, eNOI Modifications, and eNOT.

   The Engineer will provide the Department's delegation on Form 25D-107, which the Contractor must include in the SWPPP.

3. Subcontractor Certification. Subcontractors must certify on Form 25D-105, that they have read and will abide by the CGP and the conditions of the project SWPPP.

4. Signatures and Initials. Where documents are completed in SWPPPTrack, utilize SWPPPTrack to sign and initial documents. When documents are not completed in SWPPPTrack (e.g. Form 25D-111 SWPPP Certification for Contractor), upload scanned copies after signing and initialing the documents into SWPPPTrack.

641-1.06 RESPONSIBILITY FOR STORM WATER PERMIT COVERAGE.

107-1.02 includes the requirements to obtain permits, and to provide permit documents to the Engineer.

1. The Department and the Contractor are jointly responsible for permitting and permit compliance within the Project Zone.

2. The Contractor is responsible for permitting and permit compliance for all construction support activity in the Project Zone and outside the Project Zone. The Contractor has sole responsibility for compliance with DEC, COE, and other applicable federal, state, and local requirements, and for securing all necessary clearances, rights, and permits. The Contractor is responsible for protection, care, and upkeep of all work, and all associated off-site zones.

3. The Contractor is responsible for obtaining an Excavation Dewatering Permit (AKG002000) if construction activities are within 1,500 feet of a DEC-identified contaminated site or groundwater plume.

4. An entity that owns or operates, a commercial plant (as defined in Subsection 108-1.01.4) or material source or disposal site outside the Project Zone, is responsible for permitting and permit compliance. The Contractor has sole responsibility to verify that the entity has appropriate permit coverage.

5. The Department is not responsible for permitting or permit compliance, and is not liable for fines resulting from noncompliance with permit conditions:

    a. For areas outside the Project Zone;

    b. For Construction Activity and Support Activities outside the Project Zone; and

    c. For commercial plants, commercial material sources, and commercial disposal sites.

641-1.07 UTILITY.

Relocation Coverage. A Utility company is not an Operator when utility relocation is performed concurrently with the Project, as outlined in Section 105-1.06. The Department maintains operational control over the Utility's plans and specifications for coordination with project construction elements, and the Contractor has day-to-day control over the various utility construction activities that occur in support of the Project. A Utility company is considered a subcontractor for concurrent relocation.

After the Contractor has an active NOI for the Project, a Utility Company performing advance relocation work under a separate SWPPP no longer has Operator status and files the NOT for the Utility Company's SWPPP covering only the completed utility work. Remaining utility relocation work is included in and performed under the Project SWPPP.

641-1.08 USE of SWPPPTRACK. The Contractor is responsible for purchasing and contracting with SWPPPTrack AK LTD for the use of the SWPPPTrack software application and services until final stabilization is achieved and the eNOT has been completed. Contact SWPPPTrack Alaska Support at (888) 401-1993 or AKSupport@SWPPPTrack.com for project fees, setup coordination, device requirements, and training.

Perform and document all inspections required by the CGP and the SWPPP with SWPPPTrack and populate all inspection fields accurately to represent current project conditions. Complete the following forms using SWPPPTrack:

1. SWPPP Construction Site Inspection Report (25D-100)

2. SWPPP Grading & Stabilization Activities Log (25D-110)

3. SWPPP Corrective Action Log (25D-112)

4. SWPPP Amendment Log (25D-114)

5. SWPPP Daily Record of Rainfall (25D-115)

6. SWPPP Training Log (25D-125)

7. SWPPP Project Staff Tracking (25D-127)

641-2.01 STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS.

1. SWPPP Preparer and Pre-Construction Site Visit.

   Use a SWPPP Preparer to develop the SWPPP according to the CGP, DEC and Department SWPPP Template. Subsection 641-1.02.01 provides directions to templates.

   The SWPPP Preparer must conduct a pre-construction inspection at the Project site before construction activity begins. If the SWPPP Preparer is not a Contractor employee, the SWPPP Preparer must visit the site accompanied by the Contractor. Give the Department at least seven days advance notice of the site visit, so that the Department may participate.

   Document the SWPPP Preparer's pre-construction inspection in the SWPPP on Form 25D-106, SWPPP Pre-Construction Site Visit, include the names of attendees and the date.

2. Developing the SWPPP.

   a. Meet all CGP requirements.

   b. Use the Department's ESCP, Environmental commitments, and other Contract documents as a starting point for developing the SWPPP.

   c. Develop the SWPPP with sections and appendices according to the DEC CGP SWPPP Template and DOT&PF SWPPP Template. Include the information required by the Contract and described in the CGP Part 5.0. Use the forms available at the DOT&PF Construction Forms website.

   d. Compile the SWPPP in three ring binders with tabbed and labeled dividers for each appendix. Submit the SWPPP according to Subsection 641-1.03.

3. SWPPP Considerations and Contents.

   a. The SWPPP must provide erosion and sediment control measures for all Construction Activity within the Project Zone.

      Construction activity outside the Project Zone must have permit coverage. Document permit compliance according to SWPPP2 requirements.

   b. The SWPPP must consider the activities of the Contractor and all subcontractors and utility companies performing work in the Project Zone. Describe the roles and responsibilities of the Contractor, subcontractors, utility companies, and the Department with regard to implementation of the SWPPP. Include the utility companies and other operators performing Construction Activity.

      Identify areas:

      (1) Over which each operator has operational control; and

      (2) Where the Department and Contractor are co-operators.

   c. For work outside the Project Zone the SWPPP must identify the entity that has storm water permit coverage, the operator, and areas that are:

      (1) Dedicated to the Project and where the Department is not an operator; and
      (2) Not dedicated to the project, but used for the project.

   d. If the project discharges to a Tier III, Outstanding Natural Resource Water, comply with the CGP Part 2.1.6. Submittal deadlines apply prior to filing an eNOI and beginning construction activities. As of the issuance of the CGP 2021, no Tier III, Outstanding Natural Resource Water is designated in the State of Alaska.

   e. There are special requirements in the CGP Part 3.2, for storm water discharges into an impaired water body. Monitoring of storm water discharges may be required. The Contractor is responsible for monitoring and reporting inside and outside the project zone.

f. Describe the sequence and timing of activities that disturb soils and BMP implementation and removal. Phase earth-disturbing activities to minimize unstabilized areas, and to achieve temporary or final stabilization. Whenever practicable incorporate final stabilization work into excavation, embankment, and grading activities. Include drawings showing each phase of the project with the BMPs implemented in the Phase.

g. Delineate the site according to the CGP Part 4.2.1.

h. Minimize the amount of soil exposed and preserve natural topsoil on site, unless infeasible according to the CGP Part 4.2.2.

i. Describe methods and time limits, to initiate temporary or final soil stabilization. Comply with stabilization requirements in the CGP Part 4.5.

j. If construction will cease during winter months, describe all requirements for winter shutdown according to the CGP Part 4.12.

k. Plans for ATS must meet with the requirements in the CGP Part 2.1.5 and 4.6.

l. Design all temporary BMPs to accommodate a two year 24-hour storm event. Describe and document all installed control measures in the SWPPP according to the CGP Part 5.3.6. Include a citation from a published BMP Manual, publication, or manufacturers specification used as a source, or include a statement "No BMP Manual was used for this design". If using out of state BMPs, follow the instructions in the DOT&PF SWPPP Guide.

m. Provide a legible site map or set of maps in the SWPPP, showing the entire site and identifying boundaries of the property where construction and earth-disturbing activities will occur. Include all elements described in the CGP Part 5.3.5 and the DEC CGP SWPPP Template Section 5.0.

n. Identify the inspection frequency in the SWPPP according to the CGP Part 6.1; except, inspect once every seven calendar days regardless of the precipitation amount.

o. Linear Project Inspections, described in CGP Part 6.5, are not applicable to this Contract.

p. The SWPPP must cite and incorporate applicable requirements of the Project permits, environmental commitments, COE permit, and commitments related to historic preservation. Make additional consultations or obtain permits as necessary for Contractor specific activities that were not included in the Department’s permitting and consultation.

q. The SWPPP is a dynamic document. Keep the SWPPP current by noting installation, modification, and removal of BMPs, and by using amendments, SWPPP amendment logs, Inspection Reports, corrective action logs, records of land disturbance and stabilization, and any other records necessary to document storm water pollution prevention activities and to satisfy the requirements of the CGP and this specification. See Subsection 641-3.03 for more information.

4. Recording Personnel and Contact Information in the SWPPP.

Identify the SWPPP Manager as the Storm Water Lead and Storm Water Inspector positions in the SWPPP. Document the SWPPP Manager’s responsibilities in Section 2.0 Storm Water Contacts, of the SWPPP Template and:

a. Identify that the SWPPP Manager does not have authority to sign inspection reports (unless the SWPPP Manager is also the designated project Superintendent).

b. Identify that the SWPPP Manager cannot prepare the SWPPP unless the SWPPP Manager meets the Contract requirements for the SWPPP Preparer.

Include in the SWPPP proof of AK-CESCL, or equivalent certifications for the Superintendent and SWPPP Manager, and for any acting Superintendent and acting SWPPP Managers. If the Superintendent or SWPPP Manager is replaced, permanently or temporarily, by an acting Superintendent or acting SWPPP Manager; record in the SWPPP, on Form 25D-127, the names of the replacement personnel, and date of replacement. For temporary personnel, record their beginning and ending dates.

Provide 24-hour contact information for the Superintendent and SWPPP Manager. The Superintendent and SWPPP Manager must have 24-hour contact information for all Subcontractor SWPPP Coordinators and Utility SWPPP Coordinators.

Include in the SWPPP, proof of AK-CESCL or equivalent certifications of ATS operators. Record names of ATS operators and their beginning and ending dates, on Form 25D-127.

The Department will provide proof of AK-CESCL, or equivalent certifications for the Department's Project Engineer, Storm Water Inspectors, and Monitoring Person, and names and dates they are acting in that position. Include Department's staff certifications in SWPPP Appendix E. Include the Department's staff names, dates acting, and assignments in Section 2.0 of the SWPPP and on Form 25D-127.

641-2.02 HAZARDOUS MATERIAL CONTROL PLAN (HMCP) REQUIREMENTS.

Prepare the HMCP using the Department template for the prevention of pollution from storage, use, containment, cleanup, and disposal of all hazardous material, including petroleum products related to construction activities and equipment. Include the HMCP as an appendix to the SWPPP. Compile Material Safety Data Sheets in one location and reference that location in the HMCP.

641-2.03 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLAN (SPCC Plan) REQUIREMENTS.

Prepare and implement an SPCC Plan, required by 40 CFR 112; when both of the following conditions are present on the project:

1. Oil or petroleum products from a spill may reach navigable waters (defined in 40 CFR 112), and

2. Total above ground storage capacity for oil and any petroleum products is greater than 1,320 gallons (not including onboard tanks for fuel or hydraulic fluid used primarily to power the movement of a motor vehicle or ancillary onboard oil-filled operational equipment, and not including containers with a storage capacity of less than 55 gallons).

Reference the SPCC Plan in the HMCP and SWPPP.

641-2.04 RESPONSIBILITY AND AUTHORITY OF THE SUPERINTENDENT AND SWPPP MANAGER.

The Superintendent shall certify the SWPPP, Inspection Reports, and other reports required by the CGP, except the eNOI and eNOT. The Superintendent may not delegate the task or responsibility of certifying these documents.

The Superintendent may assign certain duties to the SWPPP Manager.

1. Ensuring Contractor's and subcontractor's compliance with the SWPPP and CGP;

2. Ensuring the control of erosion, sedimentation, or discharge of pollutants;

3. Directing and overseeing installation, maintenance, and removal of BMPs;

4. Performing Inspections; and

5. Updating the SWPPP including adding amendments and forms.

When Bid Item 641.0007.____ is part of the Contract, the SWPPP Manager must be a different person than the Superintendent, be available at all times to administer SWPPP requirements, and be physically present within the Project Zone or the project office, when construction activities are occurring.

The Superintendent and SWPPP Manager shall be knowledgeable in the requirements of Section 641, the SWPPP, CGP, BMPs, HMCP, SPCC Plan, environmental permits, and environmental commitments.

The Superintendent and SWPPP Manager shall have the Contractor's complete authority and be responsible for suspending construction activities that do not conform to the SWPPP or CGP.

641-2.05 MATERIALS.

Use materials suitable to withstand hydraulic, wind, and soil forces, and to control erosion and trap sediments according to the requirements of the CGP and the Specifications.

Use the seed mixture specified in the Contract or as directed by the Engineer.

Use soil stabilization material as specified in Section 727.

Use silt fences as specified in Section 729.

Use straw and straw products certified weed free of prohibited and restricted noxious weed seed and quarantined pests, according to Alaska Administrative Code, Title 11, Chapter 34 (11 AAC 34). When straw or straw products certified according to 11 AAC 34 are not available, use non-certified products manufactured within Alaska before certified products manufactured in another state, country, or territory. Non-certified straw or straw products manufactured in another state, country, or territory shall not be used. Grass, legumes, or any other herbaceous plants produced as hay, shall not be substituted for straw, or straw products.

641-3.01 CONSTRUCTION REQUIREMENTS.

Comply with the SWPPP and the requirements of the CGP Part 5.0.

1. Before Construction.

   The following actions must be completed before Construction Activity begins:

   a. The SWPPP Preparer must visit the Project. Document the visit on SWPPP Form 25D-106. The SWPPP must be developed, or amended with the findings from the visit.

   b. The SWPPP must be approved by the Engineer on Form 25D-109.

   c. The Contractor must be authorized to begin work by the Engineer.

   d. The Project must have an eNOI for the Department and for the Contractor.

   e. The Department approved SWPPP must be submitted to DEC and Local Governments per CGP Part 2.1.2, Part 2.1.4, and Part 2.4.1.

   f. The Contractor has transmitted to the Engineer an electronic copy of the approved SWPPP.

   g. The Delegation of Authority, Forms 25D-108 and 25D-107, for both the Contractor and Engineer are signed.

   h. Main entrance signage must meet the requirements of CGP Part 5.10.2.

      Post notices on the outside wall of the Contractor's project office, and near the main entrances of the construction project. Protect postings from the weather. Locate postings so the public can safely read them without obstructing construction activities or the traveling public (for example, at an existing pullout). Do not use retroreflective signs for the SWPPP posting. Do not locate SWPPP signs in locations where the signs may be confused with traffic control signs or devices. Update the notices if the listed information changes.

i. Track precipitation according to CGP Part 7.3.9. Submit the method to track precipitation to the Engineer for approval.

J. Complete all setup and training required to implement SWPPPTrack.

k. Complete the upload of the BMP inventory into SWPPPTrack.

2. 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:

a. the Contractor has previously been notified and subsequent inspection reports repeat the same or similar error,
b. multiple inspection reports are submitted after the submission due date and the same or similar errors are repeated on multiple overdue reports,
c. an error in recording the inspector's AK-CESCL certification date results in an inspector performing the inspection during a period when their certification was lapsed or was otherwise invalid

See Subsection 641-3.04 Failure to Perform Work, for additional work and payment requirements.

Item 641.0001.____ Erosion, Sediment, and Pollution Control Administration. At the Contract lump sum price for administration of all work under this Section. Includes, but is not limited to, SWPPP and HMCP and SPCC Plan preparation, agency fees for SWPPP reviews, SWPPP amendments, pre-construction Inspections, Inspections, monitoring, reporting, and recordkeeping or copying Records related to the SWPPP and required by the CGP, and Record retention.

Item 641.0005.____ Temporary Erosion, Sediment and Pollution Control by Directive. At the contingent sum prices specified in the Directive using time and materials to authorize the work, for all labor, supervision, materials, equipment, and incidentals to install, maintain, remove and dispose of temporary erosion, sedimentation, and pollution control BMPs. Prices for this item will be by time and materials according to Subsection 109-1.05, or by mutual agreement between the Engineer and Contractor. All additional Erosion, Sediment, and Pollution Control Administration necessary due to this item will not be paid for separately but will be subsidiary to other bid items.

Item 641.0006.____ Withholding. The Engineer may withhold an amount equal to Liquidated Damages, assessed according to Section 641, from payment due the Contractor. Liquidated Damages for violations of the Contract, CWA, and CGP are determined by the Engineer according to Table 641-2. The Engineer may withhold payment due the Contractors until the Contractor pays the Liquidated Damages to the Department.

The Department will not release performance bonds until Liquidated Damages assessed according to Section 641 are paid to the Department, and all requirements according to Subsection 103-1.05 are satisfied.

Item 641.0007.____ SWPPP Manager. At the Contract lump sum price for a SWPPP Manager that conforms to this specification. When Item 641.0007.____ appears in the Bid Schedule, the SWPPP Manager must be a different person than the superintendent, and must be physically present during construction activity with duties and authority as described in Subsection 641-2.04. When Item 641.0007.____ does not appear in the Bid Schedule, the SWPPP Manager is subsidiary to Item 641.0001.____.

Item 641.0008.____ SWPPPTrack. Payment for purchasing and contracting with SWPPPTrack AK LTD for the use of the SWPPPTrack software application and services will be based on paid receipts plus a 5 percent markup.

Subsidiary Items. Temporary erosion, sediment, and pollution control measures that are required outside the Project Zone are subsidiary. Work required by the HMCP and SPCC Plan including hazardous material storage, containment, removal, cleanup and disposal, are subsidiary to Item 641.0001.____ Erosion, Sediment and Pollution Control Administration.

Work under other pay items. Work that is paid for directly or indirectly under other pay items will not be measured and paid for under Section 641. This work includes but is not limited to:

1. Dewatering;
2. Shoring;
3. Bailing;
4. Permanent seeding;
5. Installation and removal of temporary work pads;
6. Temporary accesses;
7. Temporary drainage pipes and structures;
8. Diversion channels;
9. Settling impoundment; and
10. Filtration.

Permanent erosion, sediment, and pollution control measures will be measured and paid for under other Contract items, when shown on the bid schedule.

Work at the Contractor's Expense. Temporary erosion, sediment, and pollution control measures that are required due to carelessness, negligence, or failure to install temporary or permanent controls as scheduled or ordered by the Engineer, or for the Contractor's convenience, are at the Contractor's expense.

Payment will be made under:

PAY ITEM

Item Number	Item Description	Unit
641.0001.____	Erosion, Sediment and Pollution Control Administration	LS
641.0005.____	Temporary Erosion, Sediment and Pollution Control by Directive	CS
641.0006.____	Withholding	CS
641.0007.____	SWPPP Manager	LS
641.0008.____	SWPPPTrack	CS

CR641-24.0401

Special Provision

Replace Section 642 with the following:

SECTION 642
CONSTRUCTION SURVEYING AND MONUMENTS

642-1.01 DESCRIPTION. Perform surveying and staking essential for the completion of the project and perform the necessary calculations required to accomplish the work in conformance with the Plans and Specifications and industry standard engineering and survey practice.

Furnish and maintain facilities, equipment, and services specified in this section for Digital Terrain Modeling (DTM). All furnished facilities and equipment remain your property when you complete the work.

642-1.02 DEFINITIONS.

1. Break Line: A break line defines the horizontal location where TIN lines must break, and snap to the vertical location of the break line.

2. Catch Point: In the cross section of a road, the point at which the fill or cut slope intersects the edge of the existing ground.

3. CAD: Computer-Aided Design.

4. CORS: Continuously Operating Reference Station.

5. DTM: Digital Terrain Model. A computer generated 3D model representing the project terrain, and based on the association of features such as alignments, profiles, sections, grading lines, points, and surfaces.

6. GLONASS: A radio-based satellite navigation system operated by Russia. GLONASS is an alternative and is complementary to the United States Global Positioning System.

7. GNSS: Global Navigation Satellite System.

8. GPS: Global Positioning System; A radio-based satellite navigation system operated by the United States.

9. Hinge Point: In the cross section of a road, the point at which any slope intersects another slope of different angle.

10. Monument: A fixed physical object marking a point on the surface of the earth; used to commence or control a survey; mark the boundaries of a parcel of land; or the centerline of a right-of-way corridor. Monuments will be Primary or Secondary, as shown in the Plans.

11. Neat-line: Defines the geometric limits of a material, as indicated by the typical section, profile, and alignment.

12. NGS: National Geodetic Survey; United States Government Agency that provides information and products related to the definition and management of the NSRS.

13. NSRS: The National Spatial Reference System.

14. OPUS: On-line Positioning User Service; The National Geodetic Survey operates OPUS as a means to provide GPS users easier access to the NSRS.

15. Point: An identified spot located on the surface of the earth. For the purpose of this definition, a point can be either physical or electronic depending on the context in which it is used. Physical points include PK nails, wooden hubs, rebar, large nails, or other structures capable of being utilized as a marker. Electronic points include all points generated by computers or electronic surveying equipment.

16. PPK: Post Processed Kinematic; PPK surveys are similar to RTK surveys, except there is no radio communication between the reference station and the rover, so the rover cannot process a position in “real time”. Survey data from both the reference station and rover is imported into GPS processing software to determine the measured position.

17. Reference Monument: A monument placed at a known distance and direction from a property corner or other survey point, usually not on a property or survey line. A reference monument is employed to perpetuate a corner/point that cannot be monumented at its true location or where the corner monument is subject to destruction.

18. RTK: Real Time Kinematic; RTK surveys utilize two or more receivers with at least one receiver remaining stationary over a known coordinate. The radio at the reference station broadcasts its position to the rovers and the system processes the baselines in “real time” allowing for project coordinate information to be gathered and analyzed during the actual field survey.

19. Slope Staking: The process of using measurements and calculations to determine where to begin a cut or fill, the slope ratio, and the depth of the cut or fill.

20. Static: Static survey methods require multiple GPS receivers to collect data over the course of a long period of time. The data collected by the receivers is downloaded into a GPS processing software program to determine the measured position.

21. Surveyor: The Contractor’s Professional Land Surveyor placed in “responsible charge”, and currently registered in the State of Alaska as defined in AS 08.48.341.

22. Tessellation Spacing: The distance along a line or an arc that a TIN point is created.

23. TIN: Triangulated Irregular Network; A vector based representation of a physical land surface.

24. Witness Corner: A point or monument placed at a known distance and direction from a property corner or other survey point. A witness corner is employed to witness the location of a corner/point that cannot be monumented at its true location.

25. Weeding: A procedure used to limit the frequency of information displayed.

642-2.01 MATERIALS.

1. Monument Cases: Use castings meeting AASHTO M 105, Class No. 30A. Coat castings with a bituminous damp-proof coating. Bolting tops shall be used.

2. Primary Monument: A minimum 2 3/8” diameter nonferrous pipe at least 30 inches long, with a minimum 4-inch flange at the bottom and having magnets attached at the top and bottom. A minimum 3 1/4” diameter nonferrous metal cap shall be permanently attached to the top. Mark the cap around the outside edge with the words “STATE OF ALASKA DOT&PF". Permanently stamp every monument with the Surveyor’s registration number, the year set, and the point/corner identification. Orient cap so that the data may be read when the reader is facing north, except for centerline monuments that will be oriented to be read facing up-station.

3. Secondary Monument: A minimum 5/8 inch x 30 inch rebar with a 2-inch aluminum cap attached to the top. Permanently stamp every secondary monument with the Surveyor’s registration number, the point/corner identification, and the year set.

CONSTRUCTION REQUIREMENTS

642-3.01 GENERAL REQUIREMENTS. Work classified as Land Surveying under AS 08.48, and work involving the location, control, and monumentation of construction centerline and right-of-way, shall be performed by or directly under the responsible charge of the Surveyor.

Use competent, qualified personnel and suitable equipment for construction surveying activities. The Surveyor’s personnel shall be supervised and trained in the avoidance of systematic errors. The

Surveyor's personnel shall be familiar with geodetic concepts and least-squares adjustments. Correcting errors resulting from the operations of said personnel shall be at the Contractor expense. The Contractor is responsible for the accuracy of the work.

Schedule a mandatory Pre-Survey Conference with the Engineer, Contractor, Surveyor, and all personnel who are to be involved in the survey work, two weeks prior to beginning survey work. The purpose of this meeting will be to discuss methods and practices of accomplishing the required survey work.

Furnish computer services to accomplish the work. All data shall be signed by the Surveyor for completeness and accuracy. As soon as practical after completion of the work, and in no case later than acceptance of the project, deliver field books, computer forms and computer output data to the Engineer. Furnish all computer generated data in a file format and medium that is compatible with Department software. This data becomes the property of the State of Alaska.

Furnish field survey notes. Keep field notes in standard bound notebooks in a clear, orderly, and neat manner consistent with the *State of Alaska DOT&PF Construction Surveying Requirements*. Make field books available for inspection by the Engineer's project personnel at any time. Copies of the field books shall be kept in a separate secure location.

Furnish all equipment including but not limited to vehicles, stakes, measuring tapes, levels, rods, lasers, GPS receivers, total stations, traffic control devices, safety devices and other equipment necessary for establishing, checking and maintaining the required points, lines and grades.

Furnish traffic control necessary for surveying activities in accordance with Section 643, and the latest edition of the Alaska Traffic Manual (ATM). Outfit all field employees with appropriate High Visibility Clothing as defined in Section 643, Subsection 3.11.

The Engineer may randomly spot check the Contractor's surveys, staking, and computations. The Department assumes no responsibility for the accuracy of the work.

The Engineer has the right to communicate directly with the Surveyor. Any communication regarding changes to the original scope of work shall go through the Contractor.

The Surveyor is responsible for:

1. Maintaining registration as a Professional Land Surveyor in the State of Alaska.

2. Maintaining familiarity with the site conditions and progress of the project.

3. Determining the accuracy required for each survey stake.

4. Following the State of Alaska DOT&PF Construction Surveying Requirements.

5. Notifying the Engineer of conflicts and changes necessary due to utilities, match point variations, design revisions, or other variables.

6. Slope Staking.

7. Staking all clearing and/or grubbing limits. Clearly identify all trees that are specified to remain.

8. Staking and hubbing all layers of material shown in the typical sections, including the bottom of excavation, top of borrow, top of base course, and top of surcharge.

9. Staking all culverts, curbs, inlets, and other drainage appurtenances.

10. Staking all bridge and pedestrian over/under-crossings.

11. Staking all right-of-way and material source limits.

12. Rabbit tracking for temporary and permanent pavement striping, and pavement marking devices.

13. Development of DTM's, and plotted cross sections.

14. As-built and Topographic surveying.

15. Removal and disposal of all flagging, lath, stakes and other staking material after the Project is completed. Burning of material is not allowed on the project.

16. All other surveying and staking necessary to complete the project.

642-3.02 MONUMENTS. The Department will reference and replace all monuments identified on the plans. The Surveyor shall notify the Engineer immediately of any monuments encountered that are not identified on the plans. The Engineer will determine whether the monuments encountered are to be referenced or adjusted by the Surveyor or the Department.

If directed by the Engineer, the adjustment of monument cases or the referencing of monuments not identified on the plans will be considered additional work and paid by 642(3), Three Person Survey Party. Set existing monument cases to be adjusted to new elevations in the manner and at the elevations directed.

The Surveyor shall complete and stamp a *State of Alaska Land Survey Monument Record* form for each primary and secondary monument referenced. Provide the required survey information on the form in accordance with statutory requirements, including the project name/number, section, township, and range. Meet requirements for recording at the District Recorder's Office in which the project is located for each monument record. Deliver conforming copies of the recorded forms to the Engineer before monument removal or disturbance.

642-3.03 SURVEY CONTROL. The basis of project control is identified in the *Survey Control Sheet*. Use the calibration parameters shown in the *Survey Control Sheet* to Calibrate/Localize/Convert to the local project coordinate system. Contact the AK DOT&PF Central Region Survey Manager through the Engineer for calibration parameters if they are not shown in the plans. Independently recover and verify all survey control points shown in the *Survey Control Sheet*. Establish and verify new reference points where required, to replace missing points. Notify the Engineer immediately if a reference point is discovered to be in error, or a reset point is not in harmonious relationship to the existing control points. Provide the Engineer a signed hard copy verifying vertical loop closure of project control points.

The use of RTK is not an acceptable method for establishing additional horizontal or vertical control. Horizontal control points may be established using Static GPS or conventional traversing methods. Vertical control points shall be established with differential levels.

Survey accuracy requirements shall conform to the minimums listed in the *State of Alaska DOT&PF Construction Surveying Requirements*.

642-3.04 GPS SURVEYS. The specifications described in this Section are not intended to discourage the use of new GPS procedures and techniques. Procedures that are not defined by this specification may be allowed if approved by the AK DOT&PF Central Region Survey Manager, through the Engineer.

1. General Requirements:
   a. All surveying shall be done in the local project coordinate system.

   b. OPUS shall be used for the determination of Reference Station positions only, and shall not be used directly for producing final positions for any Static, Fast Static, RTK or PPK surveys. OPUS may be used as a tool for verification of the final positions obtained from these types of surveys.

2. GPS Equipment: Survey Grade dual frequency GPS receivers shall be used. For static surveys these shall be set up on adjustable leg tripods at a minimum. Fast or Rapid Static GPS surveys require a bipod at a minimum. RTK or PPK surveys may use fixed or adjustable poles, or secure lashings to vehicles.

3. GPS Reference Stations:

a. All Reference Stations shall be approved by the AK DOT&PF Central Region Survey Manager through the Engineer, prior to conducting any GPS surveys.

b. Primary Reference Stations shall meet current NGS CORS standards. Secondary Reference Stations may be used temporarily when a Primary Reference Station is not available.

c. Primary Reference Stations shall be permanently mounted and shall not change throughout the duration of the project.

d. Secondary Reference Stations may be tripod mounted, however, GPS receivers shall never be mounted on aluminum tripods.

e. All Reference Stations shall be tied to an OPUS derived position, and on the NAD83 datum. Submit GPS data files for a minimum of 2 days, 12 hours per day, 5 second epoch to OPUS to determine the final position. The OPUS derived position shall be determined at the beginning of the project, and shall not change throughout the duration of the project unless approved by the Engineer. Notify all users immediately if any changes are made to the Reference Station's position. If OPUS is unable to process a position, the Reference Station shall be tied to existing project control.

f. Reference Stations shall be physically located in clear view of the sky. Avoid locations near cellular towers or other areas that may disrupt satellite signal reception. Avoid locations near large flat surfaces such as buildings, large signs, fences, and other objects that may cause multi-path interference.

g. Reference Stations shall be located to provide maximum coverage of the project area.

h. Store 5 second epoch data, and post data online for use by the Engineer.

i. GNSS enabled Reference Stations are allowed.

4. RTK Surveys:
   a. The Surveyor shall follow prudent practices when conducting RTK surveys. The NGS has published a draft manual titled *National Geodetic Survey User Guidelines For Classical Real Time GNSS Positioning*, v.2.0.3 issued in September, 2008. The Surveyor shall become familiar with this manual, in order to better understand prudent practices. Copies of the draft manual may be available upon request or may be downloaded from the following web site: http://www.ngs.noaa.gov/PUBS_LIB/NGSRealTimeUserGuidelines.v2.0.4.pdf.

   b. RTK surveys may not be used to permanently mark or delineate Right-Of-Way.

5. Local Coordinate Calibration:
   a. Use GPS calibration parameters if they are provided on the *Survey Control Sheet.* If GPS calibration parameters are not given, develop a local site calibration based on existing project control. All included control points shall have WGS84 positions that were observed by either a GPS Static or Fast Static network, as well as the final adjusted project control coordinate values that match the values listed on the *Survey Control Sheet*. The calibration shall consist of the following conversion parameters; Rotation, Translation, Scale, and GPS derived orthometric heights. Values listed on the *Survey Control Sheet* shall be held fixed in any adjustment, barring any large residuals. Notify the Engineer of any large residuals so that the problems can be identified and corrected. Submit a signed hard copy of the calibration parameters, residuals, and related control points to the Engineer for approval before staking activities begin.

   b. Perform a local calibration each time the coordinates of the reference station change.

6. GPS Data Summary Report:
   a. Generate reports for all surveyed points, including the Point Number, Northing, Easting, Elevation, Point Code, Annotation(s), Date, Time, residuals, observation (start and stop) times, and antenna height information. Summary reports shall bear the signature and seal of the Surveyor.

b. The Engineer may require the Contractor to re-survey specified points at no cost to the Department if the Survey doesn't meet the minimum accuracy requirements defined in the *State of Alaska DOT&PF Construction Surveying Requirements*.

7. Weather Conditions: The Surveyor shall follow prudent practices when conducting GPS surveys in inclement weather. The following is recommended as a guideline:
   a. Regularly observe surface and solar weather forecasts prior to planning survey activities.

   b. Use sound practical judgment when performing surveys during inclement weather conditions.

   c. Observations should never be conducted during an electrical storm.

   d. Note significant or unusual weather conditions in the field notes, data collector, or receiver.

642-3.05 TOPOGRAPHIC SURVEYS. Topographic surveys shall be conducted under the direct supervision of the Surveyor. The purpose of a topographic survey is to gather field data to determine the configuration (relief) of the surface of the earth (ground). Use all data collected to generate topographic DTM surfaces as defined in Section 642-3.07, Digital Terrain Models. All data becomes the property of the State of Alaska. Conduct topographic surveys as follows:

1. General Requirements:
   a. Collect topographic data within the right-of-way limits.

   b. Keep all shots 50 ft or closer, as necessary to accurately define all surface features within the roadway corridor.

   c. Keep a field book of notes describing changes or errors of rod heights, point descriptors, or other annotations necessary to verify all electronic data.
   d. Identify each point with a point number. Multiple points with the same point number are not permitted.
   e. Identify each shot with the appropriate point code. Break line points shall be separately identifiable from ground shots.
   f. Append any additional information required to further describe a point with point annotations.

   g. Develop a summary of standard point codes for all points used on the project.

   h. Develop a summary of standard point descriptors to identify all point codes used on the project (i.e. *Edge of Pavement* is the point descriptor corresponding to the *EP* point code).

2. Functional Requirements: The purpose of a topographic survey is to develop an appropriate DTM as defined in Section 642-3.07. Conduct a topographic survey to meet the appropriate functional requirements as defined below:
   a. *As-built Surfaces* – Conduct a survey of all finished roadway surfaces, embankments, ditches and other topographic features as required to accurately define the project topography.

   b. *Excavation Surfaces* – Conduct a survey of original grade (upper) surfaces, and bottom of excavation (lower) surfaces, as necessary to produce DTM volumetric quantities. Follow the requirements listed below:
      (1) Upper surface – Survey prior to excavation. Topographic data may be collected prior to grubbing and pavement removal, and adjusted by the average depth removed as measured in the field.
      (2) Lower surface – Survey after the final grade has been established by excavation.

   c. *Embankment Surfaces* – Conduct a survey of excavated or original grade (lower) surfaces, and top of embankment (upper) surfaces, as necessary to produce DTM volumetric quantities. Follow the requirements listed below:
      (1) Upper surface – Survey after the final grade has been established.
      (2) Lower surface – Survey prior to the placement of embankment. If only grubbing or pavement removal is required prior to placement of embankment, the topographic data may be collected prior to grubbing and pavement removal and adjusted by the average depth

removed, as measured in the field. If excavation is required prior to placement of embankment, survey only after excavation activities have been completed.

3. Accuracy Tolerance Limits: The Surveyor shall check into and collect primary control monument locations to ensure the data being collected meets the minimum *Horizontal* and *Vertical Accuracy Tolerances*. This shall serve as a basis of acceptance for the topographic data collected by the Surveyor. The *Horizontal* and *Vertical Accuracy Tolerances* will be used to check for systematic error, and will be evaluated by comparing all control check shots taken during the topographic survey to the monument's location as defined on the *Survey Control Sheet*. The *Volumetric Accuracy Tolerance* will be used to check for random and operator error, and will be evaluated by comparing the Contractor furnished DTM with an independent DTM developed by the Department. The *Volumetric Accuracy Tolerance* shall be applied only to survey data that is used to calculate volumetric quantities.

   a. *Horizontal Accuracy Tolerance* – Check shots shall be within ± five hundredths (0.05) of a foot of the monument's horizontal position. If any of the data doesn't meet the minimum the horizontal tolerance, the Engineer may require the Contractor to re-survey the non-conforming points at no additional cost to the Department.
   b. *Vertical Accuracy Tolerance* – Check shots shall be within ± one tenth (0.10) of a foot of the monument's vertical position. If any of the data doesn't meet the minimum vertical tolerance, the Engineer may direct the Contractor to re-survey the non-conforming points at no additional cost to the Department.

   c. *Volumetric Accuracy Tolerance* – The Department will determine the volumetric error on randomly selected areas, including at least 20% of the area within the slope limits. The Department will calculate the volumetric error as follows:
      (1) Determine the *net volume* by comparing the Contractor's DTM to the Department's DTM.
      (2) Determine the *accepted volume* by comparing the Department's DTM to the appropriate neat-line surface.
      (3) Determine the volumetric error by dividing the *net volume* by the *accepted volume*.

      The Engineer may require the Contractor to re-survey any areas that exceed 5% error at no additional cost to the Department.

4. Control Check Requirements: Collect local project control data at the following minimum frequency:
   a. Every time the instrument is turned on, at the beginning of the survey session.

   b. Prior to every time the instrument is turned off, at the end of the survey session.

   c. Every time the instrument is moved (radial survey).

   d. Every time the backsight is moved (radial survey).

   e. Every time the actual or broadcasted position of the Reference Station changes (GPS survey).

5. Deliverables: Provide copies of the following to the Engineer:
   a. Plotted and electronic as-built surfaces (developed per Section 642-3.07) showing major and minor contours. Standard contour intervals shall be 5 ft (major) and 1 ft (minor).

   b. All field books noting any errors, corrections, or changes to the data.

   c. All electronic survey data in a comma delimited ASCII file in PNEZD format (Point number, Northing, Easting, Elevation, and Description).

   d. Letter of conformance signed and sealed by the Surveyor, certifying that the Topographic Survey meets the minimum *Horizontal* and *Vertical* accuracy requirements. Attach all backup data and calculations.

642-3.06 AS-BUILT SURVEYS. As-built surveys shall be conducted under the supervision of the Surveyor. The as-built survey shall document the final locations of roadways, topographic surfaces, structures, and utilities within the ROW project limits. The Surveyor shall maintain communication with the Contractor, Sub-Contractor or Utility Company as necessary to coordinate surveying activities. Surveying

activities shall be conducted as soon as possible as each phase of the project is completed, and to avoid scheduling conflicts. The survey will be used to verify that the contracted work items conform to the plans and specifications. All survey data becomes the property of the State of Alaska.

1. General Requirements:
   a. Topographic Survey of all roadway and pedestrian corridors, in accordance with Section 642-3.05, Topographic Surveys.

   b. Utility Survey of all existing and re-located utilities. Record the horizontal and vertical location of all underground and overhead utilities. Take digital photos of all exposed utility crossings. Identify the location of each photo taken, including the approximate northing, easting, and bearing.

   c. Structural Survey of all existing and re-located structures, including bridges, tunnels, manholes, signs, fences, guard rails, walls, and foundations.

2. Deliverables: Provide copies of the following to the Engineer:
   a. Plotted as-built drawings showing the final surveyed locations of all roadways, topographic surfaces, structures, and utilities. Plotted drawings shall be identified by the Project name and number, and bear the signature and seal of the Surveyor.

   b. Printed color photos, identifying the location of all underground utility crossings.

   c. All field books used to conduct the as-built survey.

   d. All DTM and point data files generated by the as-built survey.

642-3.07 DIGITAL TERRAIN MODELS. Develop all Digital Terrain Models using CAD software that is compatible with the latest release of software used by the Department. All DTM's shall be approved by the Engineer.

1. DTM Development Methods: Develop all DTM's using the appropriate method as defined below:
   a. *Engineering Method* - Use this method to define all neat-line surfaces. Develop the DTM by associating all appropriate engineered features such as alignments, profiles, sections, daylight surfaces, grading lines, and other features.
      (1) CAD software shall generate and automatically update surfaces based on the association of alignments, profiles, sections, grading lines, and other parameters necessary to accurately represent neat-line geometry.
      (2) Limit tessellation spacing to allow an accurate representation of a surface feature. The Engineer may require changes to the tessellation spacing, if necessary to allow an accurate representation of the feature.
      (3) If the Contractor excavates or fills beyond the neat-line limit without the direction of the Engineer, only the neat-line limit shall be used.

   b. *Topographic Method* - Use this method to define all topographic surfaces. Each vertex of a triangle in the TIN shall be formed by a field measured data point, and shall be located by its (XYZ) coordinate. Develop the TIN surface by connecting Topographic Survey points to their nearest neighboring points (in XY), except as outlined below:
      (1) Break Lines – Create break lines by connecting Topographic Survey points that are identified by their appropriate break line descriptors. Break lines shall snap to vertices on adjacent break lines when two break lines intersect. Break lines shall not cross. Use break lines to establish the following features:
         (a) Centerline of roadway.
         (b) Lane separations (for multiple lane roadways).
         (c) Edge of pavement.
         (d) Shoulder hinge points.
         (e) Bottom of ditch.
         (f) Ditch back slope catch point.
         (g) For curb and gutter sections, break lines shall be collected at the flow line and back of curb.
         (h) Ridge lines.
         (i) Rim of pits or significant depressions.

(j) Areas of slope change or undulations in slope.
(k) Bottom of valleys or draws.
(l) Hydraulic features.
(m) Around buildings and structures (including top and bottom of walls).

(2) Boundaries – Boundaries break the TIN lines and define the edge of the surface. Use boundaries to trim all non-relevant edges from the DTM. Use either non-destructive or destructive trimming as necessary to preserve the accuracy of the DTM. Use boundaries to establish the following features:
(a) Outer boundary of the DTM.
(b) Edge of a void inside the surface.
(c) Edge of an island inside of a void.

(3) Surface Editing – Surface Editing allows changes that more accurately represent the actual terrain. Use surface editing to delete or swap edges of the triangulated network as necessary to best represent the actual site condition. Mathematically computed points for the purpose of surface smoothing may be used only if approved by the Engineer. The creation of contour lines for the purpose of DTM surface extraction is not acceptable.

c. *Combination Method* - Use this method when the Engineer approves a change to the neat-line limit.
(1) In areas where the Engineer approves a change to the neat-line limit, develop new surfaces using the *Topographic Method*.
(2) Replace the neat-line surface with the new topographic surfaces to create an appropriate single surface.

642-3.08 CONTRACTOR FURNISHED COMPUTATIONS. Provide computations for volumetric pay items using DTM's developed per Section 642-3.07. Cross sections developed from the appropriate DTM's will be used as a supplementary quality control check on DTM parameters and quantities, and not for pay. The Contractor may use the *Average End Area Method* in accordance with Section 109, only if approved in writing by the Engineer.

1. Deliverables: Provide copies of the following to the Engineer:
a. Plotted cross sections from the DTM surfaces. Develop separate cross sections for each volumetric pay item. More than one pay item per plotted cross section is not allowed.
(1) Plot every 50 ft on Station, including intermediate stations as required to define angle points, curves, or other significant changes in the roadway geometry.
(2) Show the elevation and offset information for all vertex points. Weeding vertex point labels is not allowed. Elevation and offset information may be shown on a separate report if the amount of information exceeds what can be legibly shown on the plot.
(3) Show the area for each cross section.
(4) Label each plot with the project name, project number, pay item number, and pay item name.
(5) Label each plot with the Surveyor's Company name and address.

b. Plotted profiles from the DTM surfaces. Develop separate plots for each volumetric pay item. Each plot shall only identify the profiles appropriate to the volumetric pay item.
(1) Plot the profile along the alignment centerline as shown in the plans.
(2) Label each profile as original ground, bottom of excavation, and the top or bottom of embankment, as appropriate.
(3) Label topographic profiles with elevation and station information, using a weeding frequency of every 100 ft, or as necessary to match the frequency shown on the plans.
(4) Label the neat-line profiles with elevation and station information every 100 ft, and for the beginning, end, and VPI of all vertical curves and grade breaks. Label the percent slope between all grade breaks, to the fourth significant decimal.
(5) Label each plot with the project name, project number, pay item number, and pay item name.
(6) Label each plot with the Surveyor's Company name and address.

c. Electronic Data
(1) Provide copies of all Topographic, Neat-line, and Combination surfaces to the Engineer. Include all electronic features (alignments, profiles, sections, etc.) used to generate the surfaces.

(2) All data shall be delivered on a clearly labeled CD-ROM or DVD, unless specified otherwise by the Engineer. The label shall include the project name, project number, Surveyor's company name, and date. All data becomes the property of the State of Alaska.
(3) DTM files shall be saved in Autodesk, TIN, XML, or other approved formats compatible with Department software.

d. Volume Reports
(1) Provide interim volume reports showing quantities between every 50 ft station. The volume reports shall be summarized to allow the Department to reference the quantities per individual plan sheet, or as defined in any earthwork summary shown on the plan sheets.
(2) Provide a final volume report reflecting the final total quantity. Attach all data, calculations, and plots to the report. The report shall be signed, sealed, and dated by the Surveyor. This report shall be used as the basis for final pay.

642-3.09 CONTRACTOR FURNISHED ENGINEERING TOOLS. Furnish and maintain Engineering Tools as directed by the Engineer, for the exclusive use of the Engineer throughout the duration of the project. The Contractor shall furnish all equipment specifications to the Engineer for approval, prior to furnishing equipment. The equipment shall be in good working condition not more than 1 model year old. The Contractor shall insure and indemnify the Department against normal wear and tear, damage, theft, and all other events that may cause a loss of function of the furnished tools. The equipment shall be returned to the Contractor upon completion of the project, or when services are terminated by the Engineer. Furnish training for the Engineer's staff, as directed by the Engineer.

1. GPS Rover Unit – All components shall be fully compatible to provide a stand-alone GPS Rover Unit. The Rover Unit shall be an "all on the pole" system equipped with the following:
a. Receiver
(1) Bluetooth compatible.
(2) Meet waterproof specification IPX7.
(3) Shockproof for a drop onto a hard surface from a height of 4 feet.
(4) Dual frequency receiver capable of tracking at least twelve (12) satellites simultaneously on parallel channels.
(5) Capable of RTK, Static, and Fast Static occupations.
(6) Capable of receiving L1, L2, and GNSS frequencies.
(7) Antenna model shall have undergone antenna calibration by the NGS.
(8) Ensure the receiver contains the manufacturer's latest firmware upgrades.
(9) Provide the manufacturer's user guide.

b. Controller
(1) Bluetooth compatible.
(2) Equipped with onboard software allowing for the configuration of RTK, PPK, or Static rover modes.
(3) Meet waterproof specification IPX7.
(4) Shockproof for a drop onto a hard surface from a height of 4 feet.
(5) Full QWERTY keyboard with numeric keypad, and/or equivalent touch screen interface.
(6) Capable of collecting data in WGS84 and displaying local project coordinates.
(7) Equipped with onboard software that allows automatic point logging.
(8) Capable of creating and storing line-work in DFX or DWG format.
(9) Equipped with onboard software to allow the user to stake-out points, 3D lines, and DTM surfaces. Software shall allow the user to read cut/fill elevations relative to a DTM surface.
(10) Capable of importing, exporting, and storing point, line, and DTM data.
(11) Capable of showing satellite, radio, and battery status.
(12) Equipped with onboard software that allow the user to create and manage survey jobs, point data, coordinate systems, and alignments.
(13) Equipped with a removable memory storage device with a minimum capacity of 512MB.
(14) Capable of storing custom configuration settings for the GPS Rover Unit.
(15) Ensure the controller contains the manufacturer's latest firmware upgrades.
(16) Provide the manufacturer's user guide.

c. Radio System
(1) Meet waterproof specification IPX7.
(2) Support a frequency compatible with the Reference Station.

(3) Capable of storing multiple radio frequencies.
(4) Compatible with the Reference Station's broadcasting format and protocol.
(5) Power and programming cables.
(6) Provide the manufacturer's user guide.

d. Batteries
(1) Provide all batteries required to fully power and operate the GPS Rover Unit.
(2) Batteries shall be capable of powering their respective equipment continuously, for not less than 6 hours under normal operating conditions.
(3) Each battery shall be rechargeable and commercially available.
(4) Provide an identical replacement backup battery for each primary battery required.
(5) Provide all power connectors necessary to connect the batteries to the equipment.
(6) Provide battery chargers to allow all onboard batteries to be charged simultaneously, and that safeguard against overcharging.

e. Rod
(1) Fixed height (non-adjustable).
(2) Mounting hardware for GPS controller and radio.
(3) Pole grip with bubble level.
(4) Detachable bipod.
(5) Interchangeable flat and pointed footings.
(6) Quick release adapter for the GPS receiver.

f. Carrying Case
(1) Hard Shell.
(2) Shockproof.
(3) Waterproof.
(4) Capacity to hold all components of the GPS rover, minus the rod.

2. Continually Operating Reference Station – The location of the CORS shall not change for the duration of the project. The CORS shall be permanently mounted per NGS CORS standards. All structures, mounting hardware, power supply, computers, software, networking, and personnel required to support and operate the CORS is considered subsidiary to this item. Store CORS data for the duration of the project, and post online for use by the Engineer. The CORS shall include and conform to the following requirements:
a. GPS Receiver
(1) Choke-ring antenna, model shall have undergone antenna calibration by the NGS.
(2) Meet waterproof specification IPX7.
(3) Shockproof for a drop onto a hard surface from a height of 4 feet.
(4) Able to operate in temperatures between -20º F to +140º F.
(5) Capable of logging L1/L2 data continuously for 180 days, and storing at 1 second intervals. If onboard memory storage capacity is insufficient, backup all data on an external memory storage device.
(6) Support multiple, simultaneous data logging sessions at different collection rates.
(7) Equipped with a dual frequency receiver capable of tracking L1, L2, and GNSS frequencies on at least 12 satellites. Receiver shall have a minimum of 24 channels.
(8) Support CMR/CMR+ and RTCM output simultaneously via separate ports.
(9) Use multi-path mitigation techniques.
(10) Satellite acquisition technology shall provide improved tracking in areas of high radio interference such as under power lines, around airports, near radio-intensive construction sites.
(11) Capable of 1PPS output with an accuracy of 1*u*sec.
(12) Equipped with 1 primary and 1 secondary power input port.
(13) The system shall automatically switch between power sources.
(14) Equipped with over-voltage protection on all power inputs.
(15) Capable of reporting Signal-to-Noise Ratio (SNR) values for L1 and L2.
(16) Capable of logging data at operator selected intervals of 0.5, 1, 5, and 30 seconds.
(17) Provide the manufacturer's user guide.

b. Radio
(1) Transmission power, 25 watt minimum.

(2) Meet waterproof specification IPX7.
(3) Ensure the radio has a current license to broadcast in accordance with FCC requirements.
(4) Ensure the radio broadcast frequency doesn't conflict with other nearby broadcasting sources.
(5) Provide the manufacturer's user guide.

c. CORS Facility – Provide a facility to mount and house CORS station equipment.
(1) Facility shall meet NGS CORS mounting requirements, and shall be approved by the Engineer.
(2) Shall be physically located in a clear view of the sky, away from objects that may cause multi-path interference.
(3) Location shall provide for maximum strength of geometry relative to the primary control network and the project limits.
(4) Shall be connected to a primary power source, and a backup power source capable of providing uninterrupted backup power for a minimum of 48 hours.

3. GPS Base/Repeater Station – All components shall be fully compatible to provide a stand-alone GPS Base/Repeater Station setup. The setup shall include the following:
a. Receiver
(1) Meet waterproof specification IPX7.
(2) Shockproof for a drop onto a hard surface from a height of 4 feet.
(3) Dual frequency receiver capable of tracking at least 12 satellites simultaneously on parallel channels.
(4) Antenna model shall have undergone antenna calibration by the NGS.
(5) Ensure the receiver contains the manufacturer's latest firmware upgrades.
(6) Carrying case.
(7) Tribrach with optical plummet and height rod.
(8) Provide the manufacturer's user guide.

b. Controller
(1) Equipped with onboard software allowing for configuration as a GPS reference station in RTK, PPK, Static, and Fast Static modes.
(2) Capable of logging raw observations for post processing.
(3) Capable of showing satellite, radio, and battery status.
(4) Meet waterproof specification IPX7.
(5) Shockproof for a drop onto a hard surface from a height of 4 feet.
(6) Full QWERTY keyboard with numeric keypad, and/or equivalent touch screen interface.
(7) Equipped with a removable memory storage device with a minimum capacity of 512MB.
(8) Equipped with 1 primary and 1 secondary power input port.
(9) Ensure the controller contains the manufacturer's latest firmware upgrades.
(10) Provide the manufacturer's user guide.

c. Radio
(1) Transmission power, 25 watt minimum.
(2) Meet waterproof specification IPX7.
(3) Shockproof for a drop onto a hard surface from a height of 4 feet.
(4) Support a frequency compatible with the Reference Station.
(5) Capable of storing multiple radio frequencies.
(6) Compatible with the CORS broadcasting format and protocol.
(7) Ensure the radio has a current license to broadcast in accordance with FCC requirements.
(8) Ensure the radio broadcast frequency doesn't conflict with other nearby broadcasting sources.
(9) Equipped with onboard software/firmware allowing for configuration as either a Reference Station or a Repeater Station.
(10) Carrying case.
(11) Antenna.
(12) Antenna/pole mounting adapter.
(13) Provide the manufacturer's user guide.

d. Tripods – Provide one of each:
(1) Conventional tripod with extendible range pole. Include carrying case.

(2) Conventional wood tripod.

e. Batteries
(1) Provide all batteries required to fully power and operate the GPS Base/Repeater Station.
(2) Batteries shall be capable powering their respective equipment continuously, for not less than 6 hours under normal operating conditions.
(3) Each battery shall be rechargeable and commercially available.
(4) Provide an identical replacement backup battery for each primary battery required.
(5) Provide all power connectors necessary to connect the batteries to the equipment.
(6) Provide battery chargers to allow all batteries to be properly charged, and that safeguard against overcharging.

4. Computer Hardware – Hardware shall meet the following minimum requirements:
a. Laptop Computer
(1) 2.8 GHz multi-core CPU.
(2) 120GB Internal Hard Drive.
(3) 4 GB System RAM.
(4) Display 13” with 1,600 x 1,200 resolution.
(5) 512MB video memory.
(6) DVD Burner Drive.
(7) Internal Bluetooth and Wi-fi.
(8) Internal Battery.
(9) 120v AC Adapter.
(10) 12v DC Adapter.
(11) Built-in CF, SD, and PCMCIA card ports.
(12) 4 USB 2.0 ports.
(13) 1394 (firewire) port.
(14) Mouse (wireless).
(15) Travel Case (hard) for laptop and accessories.

b. Laptop Computer Mount
(1) Permanently installed in a vehicle, as directed by the Engineer.
(2) Fastened to the passenger side of the vehicle.
(3) Shock and vibration resistant.
(4) Fully adjustable positioning with mechanically locking hinge points.

c. Desktop Computer
(1) 3 GHz multi-core CPU
(2) 120GB Internal Hard Drive
(3) 4 GB System RAM
(4) Compatible DVI 19” monitor with 1,600 x 1,200 resolution
(5) Internal video card/chip, 512MB, 2 DVI ports
(6) Internal DVD Burner Drive
(7) CF and SD media card reader
(8) 6 USB ports
(9) 1394 (firewire) port
(10) Internal wireless (IEEE 802.11 b/g) network card
(11) Internal Ethernet card (10/100 Mbps).
(12) Uninterruptible Power Source (UPS), 8 outlets, 390 Watt
(13) 250 GB Backup Hard Drive (external)
(14) Mouse and Keyboard

d. Laser Printer
(1) 45 pages per minute print speed.
(2) 1200 x 1200 dpi print quality.
(3) Main tray capacity shall hold no less than 500, 8.5 x 11 inch sheets.
(4) Multipurpose tray capable of custom sizes up to 11 x 17 inch sheets.
(5) 128 MB of onboard memory, minimum.

5. Computer Software – All software shall be licensed and fully operational. Provide software that is similar or approved equal in accordance with the following:

a. Operating System Software – Provide an operating system that supports the drivers of all onboard and auxiliary computer hardware systems. The operating system shall be of the latest release, with the most current updates installed. The operating system shall support all of the applications listed below.

b. CAD Software – Provide CAD software that is capable of dynamically associating and updating alignment, profile, section, grading, point, and surface data. The software shall be capable of saving all data to formats that are compatible with the latest release of CAD software currently used by the Department. Formatting shall preserve the dynamic relationship of all DTM features. Software that doesn't dynamically associate all DTM features is not acceptable.

c. Word Processing Software – Provide software that is compatible with the latest release of word processing software currently used by the Department.

d. Spreadsheet Processing Software – Provide software that is compatible with the latest release of spreadsheet processing software currently used by the Department.

e. Anti-Virus Software – Provide software to protect against viruses and other security threats. Software shall be equipped with a firewall containing industry standards of system protection. The software shall be capable of backing up all hard drive data.

f. GPS Processing Software – Provide GPS processing software of the latest release and from the same vendor as the GPS equipment furnished. Include all necessary hardware/software keys to enable L1 & L2 Static, PPK, and RTK processing, GNSS processing, network adjustments, datum and map transformations, and RINEX data importing and exporting.

642-4.01 METHOD OF MEASUREMENT. The work will be measured according to Section 109, and as follows:

Pay Item 642.0001.____ Construction Surveying. Prior to beginning work, develop a Lump Sum Agreement that itemizes major contract work requirements by percentage. Work will be measured by the percent completion of all major contract work requirements defined in the Lump Sum Agreement.

Pay Item 642.0003.____ Three Person Survey Party. By the hour for extra, additional, or unanticipated work made necessary by changes in the project, as directed, and as supported by certified payrolls.

If staking for extra, additional or unanticipated work, as stated above, is performed by a two person survey party, measurement will be made at 75 percent of the hours worked and paid under Item 642.0003.____, Three Person Survey Party. If a single person is required for additional office computations or other work requiring only one person, payment will be made at 32 percent of the hours worked and paid under Item 642.0003.____.

Item 642.2005.____ Contractor-Furnished Computations. Prior to beginning work, develop a Lump Sum Agreement that itemizes all plan sheets labeled "Plan and Profile" (or similar) by percentage. Work will be measured by the percent completion of all computations required, per plan sheet defined in the Lump Sum Agreement.

Item 642.2006.____ Contractor-Furnished Engineering Tools. Contingent sum work will be measured in accordance with the directive authorizing the work.

642-5.01 BASIS OF PAYMENT. Pay Items include all necessary personnel, equipment, transportation, traffic control, and supplies to accomplish the work described in the Contract, or directed by the Engineer.

Pay Item 642.0001.____ Construction Surveying. This item includes all surveying work described in the Contract except for work paid for under 642(3), 642(13), and 642(14). 5 percent of the contract lump sum bid price will be withheld until the final As-Built Survey is completed and accepted by the Engineer.

Pay Item 642.0003.____ Three Person Survey Party. Adjustment according to 109-1.04 is not allowed for this pay item. When directed by the Engineer to reference an existing monument not shown in the

plans, payment will be made after the Monument Record Forms are prepared and recorded in the local Recorder's Office and accepted by the Engineer.

Item 642.2005.____ Contractor-Furnished Computations. This item includes all work required to develop and furnish quantity computations in accordance with methods required by the contract. Earthwork computations, digital terrain model development, plotted cross sections, quantity reports, and associated topographic surveying are subsidiary to this item. The Engineer may withhold payment for this item if the minimum specifications are not met. 10 percent of the contract lump sum bid price will be withheld until final computations are accepted by the Engineer. If the Contractor excavates or fills beyond the neat-line limit without the direction of the Engineer, the calculated volume shall only extend to the neat-line limit.

Item 642.2006.____ Contractor-Furnished Engineering Tools. The Engineer shall issue a directive defining and authorizing the work. Payment for a GPS Rover, Base/Repeater Station, CORS, or Computer System will be made on a time and materials basis in accordance with Subsection 109-1.05-3e, Leased or Rented Equipment. Payment for training will be made on a time and materials basis in accordance with Section 109-1.05. If the training is beyond the Contractor's ability or expertise, payment will be made in accordance with Subsection 109-1.05-4, Work by a Specialty Subcontractor. The Engineer may withhold payment for this item if the minimum specifications are not met. The Engineer may issue a directive at any time to terminate or re-authorize the work, at no additional cost to the Department.

PAY ITEM

Item Number	Item Description	Unit
642.0001.____	Construction Surveying	LS
642.0003.____	Three Person Survey Party	HR
642.2005.____	Contractor-Furnished Computations	LS
642.2006.____	Contractor-Furnished Engineering Tools	CS

CFHWY00562

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 2, and the immediate area of work. Patch with hot mix asphalt less than 48 hours after removing the existing pavement.

If maintaining traffic on an unpaved surface, provide a smooth and even surface that public traffic can use at all times. Properly crown the roadbed surface for drainage. Before beginning other grading operations, place sufficient fill at culverts and bridges to permit traffic to cross smoothly and unimpeded. Use part-width construction techniques when routing traffic through roadway cuts or over embankments under construction. Excavate the material or place it in layers. Alternate the construction activities from one side to the other. Route the traffic over the side opposite the one under construction.

Detour traffic when the Plans or an approved TCP allows. Maintain detour routes so that traffic can proceed safely. When detours are no longer required, obliterate the detour. Topsoil and seed appropriate areas.

If two-way traffic cannot be maintained on the existing roadway or detour, use half-width construction or a road closure if it is shown on an approved TCP. Make sure the TCP indicates closure duration and conditions. Schedule the roadway closures to avoid delaying school buses, and peak-hour traffic. For road closures, post closure-start and road-reopen times at the closure site, within view of waiting traffic.

Pave lanes next to the median first. Pave lanes next to exit and entrance ramps last. Place temporary 12:1 sloped wedge of asphalt concrete against the abrupt pavement edge on lanes next to exit and entrance ramps. Do not open the roadway to traffic until slope wedges are in place.

643-3.03 PUBLIC NOTICE. Give notice at least 3 days before major changes, delays, lane restrictions, or road closures to local officials and transportation organizations, including but not necessarily limited to:

- Alaska Trucking Association
- Alaska State Troopers
- Division of Measurement Standards
- Local Police Department
- Local Fire Department
- Local Government Traffic Engineer
- School and Transit Authorities
- Local Emergency Medical Services
- Local Media (newspapers, radio, television)
- Railroads (where applicable)
- U.S. Postal Service
- Major Tour Operators

Provide local traffic enforcement and maintenance agencies 24-hour notice before shutting down a traffic signal system. Provide notice as required by utility companies before repairing or replacing a utility.

Provide the Alaska State Troopers, local police and fire department with the radio frequencies used on the project and the 24-hour telephone numbers of the Worksite Traffic Supervisor and the Project Superintendent. These telephone numbers are used to alert construction employees when emergency vehicles must pass through the project. When notified of emergencies make every necessary effort to expedite rapid passage.

Additional notices may be given through the Navigator or 511 System for selected projects. Check the special provisions for those requirements.

643-3.04 TRAFFIC CONTROL DEVICES. Before starting construction, erect permanent and temporary traffic control devices required by the approved TCPs. The Engineer will determine advisory speeds when necessary.

For lane closures on multilane roadways, use sequential arrow panels. During hours of darkness when required by the approved TCP, use flashing warning lights to mark obstructions or hazards and steady-burn lights for channelization.

Use only one type of traffic control device in a continuous line of delineating devices, unless otherwise noted on an approved TCP. Use drums or Type II barricades for lane drop tapers.

During non-working hours and after completing a particular construction operation, remove all unnecessary traffic control devices. Store all unused traffic control devices in a designated storage area which does not present a nuisance or visual distraction to traffic. If sign panels are post mounted and cannot be readily removed, cover them entirely with either metal or plywood sheeting. Completely cover signal heads with durable material that that fully blocks the view of signal head and will not be damaged or removed by weather.

Keep signs, drums, barricades, and other devices clean at all times.

Use only traffic control devices that meet the requirements of the “Acceptable” category in ATSSA (American Traffic Safety Services Association) “Quality Guidelines for Temporary Traffic Control Devices” and meet crashworthiness requirements per Section 643-2.02.

Immediately replace any devices provided under this Section that are lost, stolen, destroyed, inoperable or deemed unacceptable while used on the project. Stock repair parts for each Temporary Crash Cushion used on the project. Repair damaged crash cushions within 24 hours.

Maintain pre-existing roadside safety hardware at an equivalent or better level than existed prior to project implementation until the progress of construction necessitates removing the hardware. All existing hazards that are currently protected with roadside safety hardware or new hazards which result from project improvements shall be protected or delineated as required in the plans, specifications, and approved TCPs until permanent roadside safety hardware is installed. All temporary roadside safety hardware shall meet crashworthiness requirements of Subsection 643-2.02.

All items paid under this Section remain the property of the Contractor, unless noted otherwise in the contract. Remove them after completing the project.

1. **Embankments**. Close trenches and excavations at the end of each continuous work shift, except as indicated by the Engineer.

   Install portable concrete or steel barrier, plastic drums, barricades, tubular markers, plastic safety fence, and cones as specified on the Plans or TCPs to delineate open trenches, ditches, other excavations, and hazardous areas when they exist along the roadway for more than one continuous work shift.

2. **Adjacent Travel Lane Paving**. When paving lifts are 2 inches or greater and you cannot finish paving adjacent travel lanes or paved shoulders to the same elevation before the end of the paving shift, install: W8-11 (Uneven Lanes), W8-9 (Low Shoulder), W8-17 (Shoulder Drop-Off), W14-3 (No Passing Zone), R4-1 (Do Not Pass), R4-2 (Pass with Care), and W8-1 (Bump) signs as appropriate. Place additional signs every 1500 feet if the section is longer than 1/2 mile.

3. **Fixed Objects, Construction Vehicles and Equipment Working On or Next to the Traveled Way**. Do not park equipment in medians. Locate fixed objects at least 30 feet from the edge of traveled way. Fixed objects that exist prior to construction activity are not subject to this requirement unless the proposed temporary traffic routing moves the edge of traveled way closer to the pre-existing fixed object. Vehicles and other objects within parking lots in urban environments are considered preexisting fixed objects regardless of whether they are or are not present continuously throughout the day.

   When worksite restrictions, land features, right of way limitations, environmental restrictions, construction phasing, or other construction conditions allow no practicable location meeting the preceding requirements, the Engineer may approve alternate locations for fixed objects. Alternate locations shall be as far as practicable from the edge of traveled way. When the alternate location provides 15 feet or more separation from the edge of traveled way, the Engineer may verbally approve the alternate location. When the alternate location provides less than 15 feet separation, written approval is required.

   When the Engineer determines a fixed object or fixed objects present unacceptable hazard, use drums, or Type II barricades with flashing warning lights, or use portable concrete or steel barriers, or temporary crash cushion to delineate or shield the hazard, as approved by the Engineer.

   Remove obstructions greater than 4 inches above the nominal foreslope grade at the end of each continuous work shift.

4. **Flagging**. Furnish trained and competent flaggers and all necessary equipment, including lighting of the flagging position during nighttime operations, to control traffic through the traffic control zone. The Engineer will approve each flagging operation before it begins and direct adjustments as conditions change.

   Flaggers must be certified as one of the following:

   a. ATSSA Flagger
   b. ATSSA Flagging Instructor
   c. LIUNA Flagger
   d. LIUNA Traffic Control Technician
   e. IMSA Work Zone Temporary Traffic Control Technician

   After December 31, 2026, IMSA certification will not be accepted.

   Flaggers shall maintain current flagger certification. Flaggers must be able to show their flagger certification anytime they are on the project.

   Flaggers must maintain their assigned flagging location at all times, unless another qualified flagger relieves them, or the approved traffic control plan terminates the flagging requirements. Remove, fully cover, or lay down flagger signs when no flagger is present. Keep the flaggers' area free of encumbrances. Keep the flagger's vehicle well off the roadway and away from the flagging location so the flagger can be easily seen.

   Provide approved equipment for two-way radio communications between flaggers when flaggers are not in plain, unobstructed view of each other.

Obtain the Engineer's written approval before flagging signalized intersections. When flagging a signalized intersection, either turn off and cover the traffic signal or place it in the All-Red Flash mode. Coordinate changing traffic signal modes and turning off or turning on traffic signals with the agency responsible for signal maintenance and operation and the Engineer. Get their written approval in advance. Only uniformed police officers are permitted to direct traffic in an intersection with an operating traffic signal.

5. **Pilot Cars**. You may use pilot cars when part of an approved TCP, if the Engineer determines one-way traffic is necessary, or if the route through the traffic control zone is particularly hazardous, involved, or frequently altered to preclude adequate signing, Do not use pilot cars to avoid localized traffic control at several locations. Pilot car operators may not control Automated Flagger Assistance Devices while operating a pilot car.

   Organize construction operations so the total of all stoppages experienced by a vehicle traveling through a project does not exceed 20 minutes. However, this does not imply that you may allow 20 minutes in all cases. Coordinate multiple pilot-car operations within a project or adjoining projects to minimize inconvenience to the traveling public. Two or more pilot cars may be used to provide two-way traffic through the traffic control zone to reduce the waiting period. The flagger or pilot car operator must record each pilot car's departure time in a bound field book furnished by the Engineer. Whenever practical, the flagger should tell the motorist the reason for and approximate length of the delay. Make every reasonable effort to yield right-of-way to the public and prevent excessive delay.

   Use an automobile or pickup as the pilot car, with the company logo prominently displayed. Equip the pilot car with a two-way radio for contact with flaggers and other pilot cars. Mount a G20-4 sign (Pilot Car Follow Me) on the rear at least 5 feet above the driving surface. Use high intensity flashing strobe lights, oscillating beacons, or rotating beacons on all Pilot Cars. Vehicle hazard warning lights may supplement but are not permitted to be used instead of high intensity flashing strobe lights, oscillating beacons, or rotating beacons. Identify the last vehicle in the column.

   When pilot car operations are approved, establish all required pilot car traffic control devices before beginning work. Continue pilot car operations until no longer necessary and an approved TCP is in place for operations without pilot car, including all required traffic control devices.

6. **Street Sweeping and Power Brooming**. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material. Use equipment for brooming and sweeping as recommended by the manufacturer and the following:

   Dirt, dust and construction materials, mobilized as a result of power brooming and or sweeping, shall not be pushed, ejected, thrown or drift beyond the lesser of, 2 feet from the equipment perimeter or the edge of the paved surface.

   All equipment shall operate to typical industry standards. Maintain equipment to operate as designed by the manufacturer. Equipment will employ safety equipment, warning lights, and other as required by the Specifications and these Special Provisions.

   Sweeper and Broom Options: Table 643-5, Traffic Control Rate Schedule, Street Sweeping

   a. **Regenerative Sweeper**: Sweeper that blows a stream of air at the paved surface, causing fine particles to rise, and then caught through a vacuum system.

   b. **Vacuum Sweeper**: Sweeper that creates a vacuum at the paved, surface sucking dirt, dust, and debris into a collection system.

   c. **Mechanical Broom Sweeper**: Sweeper designed to pick up and collect larger size road debris, stones and litter, etc. In addition to the requirements noted in these Specifications, use of a mechanical broom sweeper requires the Engineer to approve the sweeper for the intended use.

d. **Power Broom**: Power brooming that wets, pushes and or ejects loose material directly into an attached collection/pickup container may be used when approved by the Engineer. The added moisture will be contained to the paved roadway surface.

   Dry Power Brooming is not permitted. Power brooming without direct/immediate means of collection/pickup is not permitted.

7. **Watering**. Furnish, haul, and place water for dust control and pavement flushing, as directed. Use water trucks that can provide a high-pressure water stream to flush the pavement and a light-water spray to control dust. If the flushing operations contaminate or fill adjacent catch basins, clean and restore them to their original condition. This requirement includes sections of roadway off the project where flushing is required. The Engineer will control water application.

   Obtain an Alaska Department of Natural Resources permit for water removal before taking water from a lake, stream, or other natural water body. Comply with the Alaska Department of Fish and Game screening requirements for all water removal operations.

8. **Portable Changeable Message Board Signs**. Furnish Changeable Message Signs when approved on a TCP. Display only messages approved on the TCP. Follow application guidelines in the ATM.

9. **Truck Mounted Attenuator (TMA)**. TMAs are mounted on the rear of work vehicles. Impact attenuators shall meet crashworthiness requirements of 643-2.02. TMAs shall be mounted on a vehicle with a minimum weight of 15,000 pounds and a maximum weight in accordance with the manufacturer's recommendations. TMAs shall have an adjustable height so that it can be placed at the correct elevation during usage and to a safe height for transporting. Approach ends of TMAs shall have impact attenuator markings in accordance with the ATM. Do not use a damaged attenuator in the work. Replace any damaged TMA at your expense.

10. **Traffic Control Vehicles**. Use high intensity flashing strobe lights, oscillating beacons, or rotating beacons on the Work Zone Supervisor's vehicle and on vehicles being used to transport and set-up traffic control devices. Vehicle hazard warning lights may supplement but are not permitted to be used instead of high intensity flashing strobe lights, oscillating beacons, or rotating beacons.

643-3.05 AUTHORITY OF THE ENGINEER. When existing conditions adversely affect the public's safety or convenience, the Contractor will receive an oral notice, and then a written notice according to Subsection 105-1.01, Authority of the Engineer. The notice will state the defect(s), the corrective action(s) required, and the time required to complete the corrective action(s). In no case shall this time exceed 24 hours. If corrective action(s) are not completed within the specified time, the Engineer may immediately suspend work on the offending operations until the defect(s) are corrected. The Engineer may require outside forces to correct unsafe conditions. The cost of work by outside forces will be deducted from any monies due under the terms of this Contract.

643-3.06 TRAFFIC PRICE ADJUSTMENT. A Traffic Price Adjustment, under Item 643.0023.____, will be assessed for unauthorized lane closures or reductions. Unauthorized lane reductions will be assessed as one full lane closure, for each lane reduced without authorization.

Authorized lane closures and/or lane reductions are those shown in the Contract, an approved TCP, or authorized in writing.

Unauthorized lane reductions include unacceptable roadway, pedestrian walkway or route, and bicycle route or pathway surfaces, such as severe bumps, ruts, washboarding, potholes, excessive dust or mud, and non-conforming or out of place traffic control devices. Failure to install temporary crash cushions or barriers, when required according to the Contract or TCP, is also considered an unauthorized lane reduction. The Engineer will make the sole determination whether unauthorized lane reductions or closures are present.

Failure to maintain an acceptable infrastructure or traffic control plan will result in a price adjustment equal to 100 percent of the applicable rate shown in Table 643-3, Adjustment Rates, for the time the roadway or pedestrian facility is in an unacceptable condition.

The rates are liquidated damages which represent highway user costs, based on Average Daily Traffic (ADT). The Engineer will use the rate shown for the current ADT for this project, as published in the Regional Traffic Volume Report prepared by the Department's Planning Section. Adjustment rates for unauthorized reduction or closure of each lane of pedestrian walkways or route, and bicycle route or pathway, are the same as for one full roadway lane closure.

TABLE 643-3
ADJUSTMENT RATES

Published ADT	Dollars/Minute of Unauthorized Lane Reduction or Closure
Less than 1,000	$6
1,000-4,999	$25
5,000-9,999	$75
10,000-29,999	$105
30,000+	$150

643-3.07 MAINTENANCE OF TRAFFIC DURING SUSPENSION OF WORK. Approximately one month before work is suspended for the season, schedule a preliminary meeting with the Engineer and Maintenance & Operations to outline the anticipated roadway condition and the work expected to be completed before shutdown. Schedule a field review with the Department for winter maintenance acceptance. At the field review, the Engineer will prepare a punch list for implementation before acceptance.

To be relieved of winter maintenance responsibility, leave all roads with a smooth and even surface for public use at all times. Properly crown the roadbed surface for drainage and install adequate safety facilities. Make sure all illumination and signals, including vehicle detectors, are in good working order.

After the project is accepted for winter maintenance and until ordered to resume construction operations, the Department is responsible for maintaining the facility. The Department will accept maintenance responsibility only for portions of the work that are open to the public, as determined by the Engineer. The Department will not accept maintenance responsibility for incomplete work adjacent to accepted roads. The contractor is responsible for maintaining all other portions of the work. The Engineer will issue a letter of “Acceptance for Winter Maintenance” that lists all portions of the work that the Department will maintain during a seasonal work suspension. The contractor retains all contractually required maintenance responsibilities until receipt of this letter.

If the contractor suspends work due to unfavorable weather (other than seasonal) or due to failure to correct unsafe conditions, carry out Contract provisions, or carry out the Engineer’s orders. All costs for traffic maintenance during the suspended period will be borne by the Contractor.

When work is resumed, replace or renew any work or materials lost or damaged during temporary use. If the Department caused damage during winter suspension, payment will be made for repairs by unit pay item or in accord with Subsection 109-1.05, Compensation for Extra Work. When the Engineer directs, remove any work or materials used in the temporary maintenance. Complete the project as though work has been continuous.

643-3.08 CONSTRUCTION SEQUENCING. The construction sequencing detailed in these provisions, the Special Provisions, and the Plans is suggested only. The Contractor may propose alternative construction sequencing.

Throughout the project, maintain the existing roadway, pedestrian walkway, or route, and bicycle route or pathway configuration (such as the number of lanes and their respective widths) except for restrictions to traffic allowed in the Special Provisions or on the Plans, and addressed through approved TCPs. A restriction to traffic is any roadway surface condition, work operation, or traffic control setup that reduces the number of lanes or impedes traffic. Obtain an approved TCP before restricting traffic.

Unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic during the times listed below:

1. **Monday through Friday**: 0530 hrs to 0800 hrs and 1630 hrs to 1900 hrs.

2. **Around any Holiday**:

    a. If a holiday falls on Sunday, Monday, or Tuesday, the above stipulations apply from 1200 hrs on the Friday before the holiday to 0300 hrs. on the day after the holiday.

    b. If a holiday falls on Wednesday, the above stipulations apply from 1200 hrs on the Tuesday before the holiday to 0300 hrs. on the Thursday after the holiday.

    c. If a holiday falls on Thursday, Friday, or Saturday, the above stipulations apply from 1200 hrs on the day before the holiday to 0300 hrs. on the Monday after the holiday.

Lane restrictions, if allowed, conducted so that no more than a 10 minute accumulated stopped delay, 40 vehicles, or 1/4 mile (1320 feet) of traffic detained, whichever occurs first, before releasing the detained motorists. During paving operations, a 20 minute stopped delay, 80 vehicles, or 1/2 mile (2640 feet) of traffic detained, allowed for motorists, except school buses. If a queue of traffic develops at a stop, empty the entire queue to include the last car that entered the queue at the time the queue was released.

Do not delay the school busses through the construction zone; obtain the local school bus schedule and coordinate work efforts. Submit the plan, as a TCP, to the Engineer for approval before the implementation of the school bus coordination plan.

643-3.09 INTERIM PAVEMENT MARKINGS. Place permanent or interim pavement markings according to this Subsection, details shown on the Plans, approved TCPs, and Parts III and VI of the ATM before opening existing paved roadways, temporary paved roadways, detours, interim paving lifts, and roadways with seal coats and surface treatments for more than one continuous work shift. This work may include restriping the existing roadway before beginning construction, before seasonal suspension, and/or after seasonal suspension.

Remove conflicting pavement markings according to Subsection 670-3.04, Paint Removal.

Mark existing roadway sections that will be opened to traffic during the winter. Mark over the existing lines and markings, unless shown otherwise on the Plans or an approved TCP.

Maintain all interim pavement markings for their intended life including reapplication when necessary. There will be no compensation to upgrade interim pavement markings required for work operations lasting up to 2 weeks.

Use only temporary raised pavement markers as interim pavement markings on final pavement surfaces. Completely remove and dispose of them when placing the final markings. Completely remove any residual adhesive that might misguide motorists. Place final pavement markings on finished pavement surfaces and interim pavement surfaces before suspending work for the winter.

Stage the construction to avoid routing traffic over conflicting markings, for more than one continuous work shift. If traffic is routed over conflicting markings during a work shift, delineate the roadway with a complement of warning signs, channelizing devices, and flaggers as required by the ATM.

Use only temporary raised pavement markers meeting Subsection 712-2.16 as interim markings on seal coat and surface treatment pavements. Install the markers according to the manufacturer's instructions before applying the asphalt surface material and cover coat. Remove the vinyl protective covers after applying the asphalt pavement.

On multicourse surface treatments, install the temporary raised pavement markers after applying the full width of the first layer of cover coat. Install the markers on each day's completed surface before removing the pilot car operations and allowing unescorted traffic on the surface treatment.

Apply final pavement markings according to Subsection 670-3.01, Construction Requirements, of these Special Provisions.

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.

    Two Portable Changeable Message Board Signs used for Permanent Construction Signing paid for under Item 643.0003.____ Permanent Construction Signs. Additional portable changeable message board signs will be paid for under 643.0025.____, Traffic Control.

13. **Plastic Safety Fence**. The contract price includes all resources required to install, maintain, and remove the fence.

14. **Temporary Sidewalk Surfacing**. The contract price includes all resources required to construct, maintain, and remove the surfacing.

15. **Temporary Guardrail**. The contract price includes all resources required to construct, maintain, and remove the guardrail.

16. **Portable Steel Barrier**. The contract price includes all resources required to provide, install, maintain, move, and remove each barrier.

17. **Lighting for Night Work**. Payment for illuminating night work areas and any required adjustments to work zone illumination is subsidiary to other items.

18. **Pavement Breaks**. Temporary hot mix asphalt at pavement breaks, as noted in Subsection 643-3.02. Gravel Surface Not Specified is subsidiary to Pay Item 401.0001.____.

19. **Temporary Pavement Markings**. Except where specified as an individual Pay Item (Interim Pavement Markings) temporary pavement markings are subsidiary to Section 670 Pay Items. Refer to Section 670 Traffic Markings, for further information.

20. **Temporary Crash Cushion / Redirective**. The price listed in the Traffic Control Rate Schedule, Table 643-5, will be full compensation for the purchase, installation, maintenance during construction, removal, and salvaging the Temporary Crash Cushion / Redirective unit(s). Deliver the salvaged unit(s) to the nearest ADOT & PF Maintenance & Operations Station or as directed by the Engineer.

Traffic control devices, barriers, and crash cushions required to delineate or shield fixed objects will not be measured or paid for separately, but will be subsidiary

Traffic control devices, barriers, and crash cushions required to delineate or shield guardrail posts or non-crashworthy ends will not be measured or paid for separately, but will be subsidiary, when required for failure to meet completion timelines in subsection 606-3.01.

TABLE 643-5
TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$6.50
Special Construction Signs	Square Foot	$31.00
Type II Barricade	Each/Day	$3.30
Type III Barricade	Each/Day	$11.00
Traffic Cone or Tubular Marker	Each/Day	$1.10
Drums	Each/Day	$3.30
Temporary Guardrail	Lineal Foot	$35.00
Portable Concrete or Steel F Shape Barrier (12.5 foot long or $8/foot for other lengths)	Each	$100.00
Temporary Crash Cushion / Non-redirective Water Filled Barrier (all required per end)	Each	$2500.00
Temporary Crash Cushion / Non-redirective Water Filled Barrels (all required per end)	Each	$3285.00
Temporary Crash Cushion / Non-redirective Sand Filled Barrels (all required per end)	Each	$4325.00
Temporary Crash Cushion / Redirective	Each	$9230.00
Plastic Safety Fence	Lineal Foot	$1.00
Temporary Sidewalk Surfacing	Square Foot	$2.00
Flexible Markers (Flat Whip, Reflective)	Each	$60.00
Cars and Trucks w/driver		
Pilot Car (4x2, 1/2 ton truck)	Hour	$128.00
Watering Truck – up to 4900 gallon capacity	M-Gallon	$40.00
Watering Truck – more than 4900 gallon	M-Gallon	$30.00
Street Sweeping: Regenerative Sweeper, Vacuum Sweeper, Mechanical or Power Broom with Vacuum	Hour	$214.00
40,000 GVW Truck with Crash Attenuator	Hour	$162.00
Electronic Boards, Panels, and Signals		
Sequential Arrow Panel	Each/Day	$60.00
Portable Changeable Message Board Sign	Calendar Day	$210.00

PAY ITEM

Item Number	Item Description	Unit
643.0001.____	Traffic Maintenance	CDAY
643.0002.____	Traffic Maintenance	LS
643.0003.____	Permanent Construction Signs	LS
643.0004.____	Construction Sign	Day
643.0005.____	Type II Barricade	Day
643.0006.____	Type III Barricade	Day
643.0007.____	Traffic Cone/Tubular Marker	Day
643.0008.____	Plastic Safety Fence	LF
643.0009.____	Drum	Day
643.0010.____	Sequential Arrow Panel, Type C	Day
643.0011.____	Special Construction Signs	SF
643.0012.____	Portable Concrete Barrier	Each
643.0013.____	Temporary Crash Cushion	Each
643.0014.____	Interim Pavement Marking	STA
643.0015.____	Flagging	HR
643.0016.____	Pilot Car	HR
643.0017.____	Street Sweeping	HR
643.0018.____	Watering	MGAL
643.0019.____	Lane Closure	HR
643.0020.____	Detour	Day
643.0021.____	Road Closure	Day
643.0022.____	One Lane Road	HR
643.0023.____	Traffic Price Adjustment	CS
643.0024.____	Portable Changeable Message Board Sign	Day
643.0025.____	Traffic Control	CS
643.0026.____	Temporary Sidewalk Surfacing	SY
643.0027.____	Temporary Guardrail	LF
643.0030.____	Portable Steel Barrier	LF
643.0031.____	Interim Pavement Marking	LS
643.0032.____	Flagging	CS
643.0033.____	Detour	LS

CR643-24.0401

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 closable 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 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.

CR644.FOCOM-080120

644-2.05 VEHICLES.

Replace the second and third paragraphs with the following:

Pickup(LT)/Sport Utility Vehicle (SUV): Furnish full-size, four-wheel drive vehicles, either pickup/light truck(s) with crew cabs or sport utility vehicle(s). Provide vehicles less than three model years old, in good condition, and with less than 36,000 miles on the odometer. Furnish all fuels, maintenance and parts, and insurance during the Department's operation and use.

Equip each vehicle with lightbars wired into the vehicle's electrical system with a dash mounted switch easily accessible to the vehicle operator. Provide Code 3; Reflex C5590AA 15.3-inch mini lightbar, or approved equal. Approved equal equipment shall have the following characteristics:

- (4) 55 watt rotators with amber filters
- 1200 flashes per minute
- (2) diamond mirrors
- 55 inches in length

Equip each vehicle with hands-free communication connectivity.

If you are working after October 1, provide four studded snow tires mounted on each vehicle.

You are responsible for normal wear and tear, and any other incidental damage including broken windshields, occurring during the Department's operation and use. The State of Alaska is responsible for damage to any vehicle caused by its own negligent operation.

CR644.LTSUV-113020

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 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 service 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

CR644.FOCOM-080120

644-4.01 METHOD OF MEASUREMENT.

Replace the third paragraph with following:

Vehicle (LT/SUV). For each vehicle provided. If a replacement vehicle is necessary, no additional measurement will be made.

CR644.LTSUV-113020

644-5.01 BASIS OF PAYMENT.

Add the following:

Pay Item 644.2007.____ Vehicle (LT/SUV):

1. A percentage of the Contract unit price, to be determined by the Engineer, will be paid as full compensation for furnishing the vehicle at the site.

2. The balance of the Contract unit price will be prorated over the anticipated active construction period with a portion included as part of each interim payment, for maintenance, repairs, and fuel and, at the end of the project, for removing it from the site. If anticipated construction period changes, the final increment will be held until final payment.

PAY ITEM

Item Number	Item Description	Unit
644.2007.____	Vehicle (LT/SUV)	Each

CR644.LTSUV-113020

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

CR644.FOCOM-080120

Special Provision

Add the following Section:

SECTION 645
TRAINING PROGRAM

645-1.01 DESCRIPTION. This Statewide Special Provision for on-the-job training (OJT) implements 23 CFR 230, Subpart A, Appendix B.

As part of the Equal Employment Opportunity Affirmative Action Program, the Contractor shall provide on-the-job training aimed at developing full journey status in the type of trade or job classification involved. The number of individuals to be trained and the number of hours of training to be provided under this contract will be as shown on the bid schedule.

645-2.01 OBJECTIVE. Training and upgrading of minorities and women toward journey status is the primary objective of this program. The Contractor shall enroll minorities and/or women, where possible, and document good faith efforts prior to the hire of non-minority males in order to demonstrate compliance with this Training Special Provision. Specific good faith efforts required under this Section for the recruitment and employment of minorities and women are found in the Federal EEO Bid Conditions, Form 25A-301.

645-3.01 GENERAL. The Contractor shall determine the distribution of the required number of apprentices/trainees and the required number of hours of training among the various work classifications based upon the type of work to be performed, the size of the workforce in each trade or job classification, and the shortage of minority and female journey workers within a reasonable area of recruitment.

Training will be provided in the skilled construction crafts unless the Contractor can establish prior to contract award that training in the skilled classifications is not possible on a project; if so, the Department may then approve training either in lower level management positions such as office engineers, estimators, and timekeepers, where the training is oriented toward construction applications, or in the unskilled classifications, provided that significant and meaningful training can be provided. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Credit for offsite training hours indicated above may only be made to the Contractor where the apprentices/trainees are concurrently employed on the project and the Contractor does one or more of the following: contributes to the cost of the training, provides the instruction to the apprentice/trainee, or pays the apprentice's/trainee's wages during the offsite training period.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

Prior to award of the contract, the Contractor shall submit Form 25A-311, Training Utilization Report, indicating the training program to be used, the number of apprentices/trainees to be trained in each selected classification, the number of hours of training to be provided, and the anticipated starting time for training in each of the classifications.

Training must begin within 2 weeks of the anticipated start date(s); unless otherwise authorized by a Directive. Such authorization will be made only after submission of documentation by the Contractor, and approval by the Engineer, of efforts made in good faith which substantiate the necessity for a change.

Contractors may use a training program approved by the U.S. Department of Labor, Office of Apprenticeship (USDOL/OA); or one developed by the Contractor using Form 25A-310 and approved prior to contract award by the OJT Coordinator in the DOT&PF Civil Rights Office.

The minimum length and type of training for each classification will be established in the training program selected by the Contractor. Training program approval by the Department for use under this section is on a project by project basis.

It is expected that each apprentice/trainee will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist or until training has been completed. It is not required that apprentices/trainees be continuously employed for the duration of the contract.

If, in the judgment of the Contractor, an apprentice/trainee becomes proficient enough to qualify as a journey worker before the end of the prescribed training period and the Contractor employs that individual as a journey worker in that classification for as long as work in that area remains, the individual's training program will be considered completed and the balance of training hours required for that apprentice/trainee shall be waived.

The Contractor shall furnish each ADOT&PF training program trainee a copy of the program (Form 25A-310) to be followed during training on the project, and with a written certification showing the type and length of training completed on the project. Existing USDOL/OA apprentices should already have a copy of their program. No employee shall be employed for credit as an apprentice/trainee in a classification in which that employee has previously worked at journey status or has previously completed a training course leading to journey status.

The Contractor shall periodically review the training and promotion potential of minority and women employees and shall encourage eligible employees to apply for such training and promotion.

The Contractor shall provide for the maintenance of records and the furnishing of periodic reports documenting the progress of each apprentice/trainee. The Contractor must submit Form 25A-313 by the 15th of each month and provide each ADOT&PF trainee written evaluation reports for each unit of training provided as established on Form 25A-310.

645-3.02 WAGES. Trainees in ADOT&PF approved training programs will be paid prevailing Davis-Bacon fringe benefits plus at least 60 (but less than 100) percent of the appropriate minimum journey rate specified in the contract for the first half of the training period, at least 75 (but less than 100) percent for the third quarter of the training period, and at least 90 (but less than 100) percent for the last quarter of the training period. Trainee wages shall be identified on Form 25A-310. Apprentices in USDOL/OA training programs shall be paid in accordance with their approved program. Beginning wages of each trainee/apprentice enrolled in a Section 645 Training Program on the project shall be identified on Form 25A-312.

645-3.03 SUBCONTRACTS. In the event the Contractor subcontracts a portion of the work, he shall determine how many, if any, of the apprentices/trainees are to be trained by the subcontractor. Any such subcontracts shall include this Section 645, Form 25A-311 and Form 25A-310, where appropriate. However, the responsibility for meeting these training requirements remains with the Contractor; compliance or non-compliance with these provisions rests with the Contractor and sanctions and/or damages, if any, shall be applied to the Contractor in accordance with subsection 645-5.01, Basis of Payment.

645-4.01 METHOD OF MEASUREMENT. The Contractor will be credited for each approved apprentice/trainee employed on the project and reimbursed on the basis of hours worked, as listed in the certified payrolls. There shall be no credit for training provided under this section prior to the Contractor's submittal and approval by the Engineer of Form 25A-312 for each apprentice/trainee trained under this Section. Upon completion of each individual training program, no further measurement for payment shall be made.

645-5.01 BASIS OF PAYMENT. Payment will be made at the contract unit price for each hour of training credited. Where a trainee or apprentice, at the discretion of the Contractor, graduates early and is employed as a journey worker in accordance with the provisions of Subsection 645-3.01, the Contractor will receive payment only for those hours of training actually provided.

This payment will be made regardless of any other training program funds the Contractor may receive, unless such other funding sources specifically prohibit the Contractor from receiving other reimbursement.

Payment for training in excess of the number of hours specified on the approved Form 25A-311 may be made only when approved by the Engineer through Change Order.

Non-compliance with these specifications shall result in the withholding of progress payments until good faith efforts documentation has been submitted and acceptable remedial action has been taken.

Payment will be at the end of the project following the completion of all training programs approved for the project. No payment or partial payment will be made to the Contractor if he fails to do any of the following and where such failure indicates a lack of good faith in meeting these requirements:

1. provide the required hours of training (as shown in the Bid Schedule and approved Form 25A-311),

2. train the required number of trainees/apprentices in each training program (as shown in the Bid Schedule and approved Form 25A-311), or

3. hire the apprentice/trainee as a journey worker in that classification upon completion of the training program for as long as work in that area remains.

Failure to provide the required training damages the effectiveness and integrity of this affirmative action program and thwarts the Department's federal mandate to bring women and minorities into the construction industry. Although precise damages to the program are impractical to calculate, they are at a minimum, equivalent to the loss to the individuals who were the intended beneficiaries of the program. Therefore, where the Contractor has failed, by the end of the project, to provide the required number of hours of training and has failed to submit acceptable good faith efforts documentation which establishes why he was unable to do so, the Contractor will be assessed an amount equal to the following damages to be deducted from the final progress payment:

Number of hours of training not provided, times the journey worker hourly scale plus benefits. The journey worker scale is that for the classification identified in the approved programs.

PAY ITEM

Item Number	Item Description	Unit
645.0001.____	Training Program, __ Trainees/Apprentices	LH

HSP20.2-113020

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.

CR646.1-23.0501

Special Provisions

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.

CR647-110316R/CSHWY00562

Infrared Heater shall consume no more than 12,500 BTU per square foot of heated area and be capable of heating a 4 foot by 6 foot area to a temperature to 325 degrees to a depth of 2 inches.

CSHWY00562

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 payed 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: payed at the rate of $200/hour.

Pay Item 647.2002.____ Backhoe, 4WD, 1 CY Bucket, 75-HP Minimum, 15 ft Depth: payed at the rate of ___/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

CR647-110316R

Special Provisions

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

Call Centers will notify the following:

- Aircraft Service International Group (ASIG)
- Alaska Communications Systems (ACS)
- Alaska Fiber Star (WCI)
- Arctic Slope Telephone Assoc. (ASTAC)
- AT & T Alascom (AT&T)
- Chevron-Union Oil of California (UNOCAL)
- City of Wasilla (CWPW)
- ConocoPhillips Alaska, Inc. (CPA)
- Cook Inlet Pipeline Co. (CIPC)
- ENSTAR Natural Gas (ENS)
- GCI Communication Corp.
- Marathon Oil Company (MOC)
- Marathon Pipe Line LLC. (MARATHN)
- Matanuska Electric Association (MEA)
- Matanuska Telephone Association (MTA)
- Northern Utility services (NUS)
- Telalaska Inc. (Interior Phone, Eyecom TV & Mukluk Telecom)
- Tesoro Alaska (TESORO)
- United Utilities, Inc. (UNITED)
- XTO Energy (XTO)

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.

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

Project Name:	Project No.:
HSIP: Pittman Rd Shoulder Widening & Slope Flattening, Zehnder Rd to Church Road	0001752/ CFHWY00926

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.

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 11,000 feet parallel to the roadway(s), unless additional length is approved. Stabilize disturbed ground according to Section 641 Erosion, Sediment, and Pollution Control."

Special Provisions

Add the following Section:

SECTION 660
SIGNALS AND LIGHTING

Special Provisions

660-2.01 MATERIALS.

Add the following:

Precast Concrete Products	Subsection 550-2.03

CR660.2-060121R

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.

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.

HSM20.16-113020

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 660.2000.____ 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

CR660.1-060121R

SECTION 661
ELECTRICAL LOAD CENTERS

Special Provisions

661-1.01 DESCRIPTION.

Add the following:

Furnish and install load center assembly Type 1A with an integral uninterruptible power supply (secondary power source) to power intersection traffic and pedestrian signals (no lighting) and control equipment during interruptions to the utility power (primary power source).

Add the following load center type:

Type 1A with UPS: ..... Pad mounted with underground service (large)

Add the following Subsections 661-1.02 Acronyms, 661-1.03 Definitions:

661-1.02 ACRONYMS.

BBS ..... Battery Backup System
LC ..... Load Center
LCD ..... Liquid Crystal Display
LED ..... Light Emitting Diode
LC/UPS ..... Load Center with Integral Uninterruptible Power Supply
MBPS ..... Manual Bypass Switch
MMU ..... Malfunction Management Unit
PLC ..... Powerline Communications
PTS ..... Power Transfer Switch
THD ..... Total Harmonic Distortion
UPS ..... Uninterruptible Power Supply

661-1.03 DEFINITIONS.

BUCK-BOOST. Switch-mode voltage regulator in which voltage can be above or below the input voltage.

CR661.2-010120

661-2.01 MATERIALS.

Add the following:

Precast Concrete Products	Subsection 550-2.03

CR661.3-060121

Add the following:

Anchor Bolts	Subsection 740-2.02

Load Center.

Replace the 1st and 2nd paragraphs with the following two paragraphs:

NEMA 3R enclosure constructed of .125” thick aluminum, with no external screws, bolts, or nuts.

Shop coat cabinet components with a 2-part urethane paint undercoat and 2-part urethane finish coat. Finish coats must be standard white for removable panels and non-gloss silver-gray, closely matching AMS-STD-595 Color No. 36622, for the enclosure.

CR661.1-21.1231R1

Add the following:

1. Load Center with Integral Uninterruptible Power Supply (LC/UPS).

   Design, fabricate, deliver, and install as specified in the Specifications and Plans.

   a. Design of LC/UPS

      Design and manufacture for outdoor applications and the environment specific to the project location.

      The UPS shall be designed to provide for efficient fabrication and assembly using standard, readily available industry components facilitating the current project requirements. The design shall provide for future quick replacement of the complete system or the individual components. The design shall allow the maintenance department to quickly acquire a replacement UPS or replacement parts and personnel to easily remove the existing UPS and install the new UPS or UPS parts as may be needed (complete turnkey system with all necessary hardware). Special tools shall not be required to install the UPS.

      The design shall specifically include a shelf-mount, rack-mount, swing-tray mount, or combination thereof. The UPS and PTS units individually shall not exceed 5.25” in height. If swing-trays are used, a minimum of 6 bolts/fasteners shall be used to secure the tray to the cabinet rack.

   b. Submit.

      Submit shop drawings, equipment technical specifications, and certifications for review and approval. Do not begin manufacture of the LC/UPS prior to submitting and receiving approval of shop drawings and required certifications for the system assembly, the individual equipment pieces, components, and hardware. Provide documentation confirming delivery dates of the individual pieces of equipment and overall system in-place completion date satisfying the project construction schedule.

   c. Manufacturers.

      (1) Meyers Power Products, Inc.

         LC/UPS: Power Model MEUG35-PB Metered/Unmetered with MP2000 UPS

         Address:
         2950 E Philadelphia Street
         Ontario, CA 91761
         Ph: (909) 923-1800 or (866) 696-9377

      (2) Or equal:

         Manufacturers satisfying the requirements of the Plans, Specifications and Contractual requirements for the assembled system, including delivery, quality and timeliness of installation and responsive remote and onsite service, shall submit, as a substitution, for review and approval.

   d. UPS Run Time Capacity.

      Power intersection LED traffic, pedestrian signals, and control equipment for the consecutive time periods noted below: (lighting and traffic controller auxiliary circuits are not included)

RUN TIME CAPACITY	
Operation Mode	**Continuous Uninterruptible Operation Time***
Normal	2 Hours
Flash	2 Hours
Total (Normal + Flash)	4 hours

*Continuous uninterruptible operation time at 77 °F (25 °C) at load 875 W.

e. Operation.

The transfer from utility power to the UPS shall not interfere with the normal operation of the traffic controller, MMU and other peripheral devices within the traffic controller assembly.

The MBPS shall be rated at 240 VAC, 40 Amps minimum. The MBPS shall allow replacement of the UPS without interrupting power to the intersection. The MBPS and PTS shall be separate units. Without interrupting power to the intersection, the MBPS shall permit the replacement of the PTS, and the MBPS and PTS shall each permit replacement of the UPS.

The UPS shall use a temperature compensated battery charging system. The charging system shall compensate over a range of 2.5 to 4 mV / °C / Cell and be rated 10 Amps at 48 VDC. Batteries shall not be charged when battery temperature exceeds 122 °F ± 5.4 °F (50 °C ± 3 °C). The temperature sensor shall be external to the UPS unit and supplied with 9' - 10" of wire.

The UPS shall automatically and continually monitor and display the current percent of battery power available for use. A "Battery Not Connected" alarm shall be issued if battery power is not present. When utilizing battery power, the UPS output voltage shall be between 110 VAC and 125 VAC, pure sine wave output with THD < 3% at 60 Hz +/- 3 Hz.

The UPS shall provide adequate power capacity to supply an external fan with field programmable temperature setting capability located in the same or in a separate battery cabinet. The temperature setting shall be adjustable locally and remotely. The temperature range shall be from +68 °F to +131 °F (+20 °C to +55 °C) in 1 degree F increment.

In the event of UPS failure, battery failure, or complete battery discharge, the PTS shall revert to the utility or line mode (in a de-energized state) where utility power is supplying the cabinet.

f. Components:

The LC/UPS shall include all equipment, hardware, foundation and foundation materials, interconnecting wiring and other materials for a complete operable LC/UPS inclusive of materials and performance requirements specified herein, but not limited to:

(1) UPS
(2) UPS Controller Unit
    (a) Re-settable Inverter Event Counter
    (b) Cumulative Inverter Timer
    (c) Event log, Time and Dated (stores the last 100 events, minimum)
    (d) Self-Test (programmable in 1-minute increments from 1 min. to 255 min.)
    (e) Low Battery Alarm (programmable, adjustable in increments of .25 VDC)
    (f) Buck-Boost Mode (UPS shall be capable of Buck-Boost 10% ±)
(3) PTS (activated during Buck-Boost operations; transfer times 10 milliseconds)
(4) MBPS (non-electrical)
(5) Batteries and Battery Enclosure
(6) Battery Heater Mats
(7) Cabinets and Enclosures
(8) External Fan

g. UPS Access and Password Protection.

- Provide local and remote access.
- Provide the UPS with a default password.

Access:
(1) Local – provide an LCD display screen and touch pad as part of the UPS
(2) Remote
  (a) RS232 interface
  (b) USB interface

  Local and remote access shall provide same access use.

User:
(1) The "User" includes the Department Traffic Engineers and Maintenance Personnel.
(2) The User shall be able to monitor the following at the LC/UPS cabinet (locally) and remotely.

Use:
(1) Provide the Department with the default password and administrative authority to add/change password protection. Make the procedure intuitive and direct.
(2) Control, programming, maintenance, and inquiry (view and adjust) including but not limited to:

  Monitor:
  (a) Time,
  (b) Date,
  (c) Current battery charge status,
  (d) Input/output voltages,
  (e) Power output,
  (f) Battery temperature,
  (g) Field programmable relay settings

  Current status shall be indicated by LED lights:
  (a) Green – Flashing for battery back-up mode
  (b) Green – Steady ON for normal line mode operation
  (c) Red – Flashing for ALARM conditions
  (d) Red – Steady ON for FAULT conditions

  Maintenance Controls - password protect:
  (a) UPS Inverter ON/OF,
  (b) Battery Test,
  (c) Event Log (Retrieving, viewing and printing in plain English),
  (d) Changing Default Settings

  Other Settings:
  (a) Temperature Settings,
  (b) Re-Settable Inverter Event Counter,
  (c) Cumulative Inverter Timer,
  (d) Self-Test,
  (e) Low Battery Alarm

(3) Upload firmware software updates of the non-volatile, read-only memory type.

h. Specifications.

(1) Environmental:
  The operating temperature for the (UPS), (PTS) and (MBPS) shall be -34.6 °F to 165.2 °F (-37 °C to +74 °C).

(2) UPS Input/Output:

UPS SPECIFICATIONS

Input Specifications	
Nominal Input Voltage	120 VAC, Single Phase
Input Voltage Range	120 VAC ± 25%
Input Frequency	60 Hz ± 5%
Output Specifications	
Nominal Output Voltage	120 VAC, Single Phase
Power Rating*	2000 VA (1500 Watts)
Output Frequency	60 Hz ± 5%
Voltage Wave Form	Sine Wave, THD < 3%
Efficiency (nominal)	95 – 97%

*The UPS power rating of 2000 VA / 1500 Watts shall be with a minimum inverter efficiency of 80%.

(3) Loss/Restoration of Utility Power:

When the utility line voltage is outside the High and Low Limits (100 & 130 VAC respectively set as defaults), the UPS shall transfer the load to battery power. The UPS shall return to line mode when the utility power has been restored to above 105 VAC or below 125 VAC; or the UPS shall return to line mode when the utility power is back to nominal for more than 30 seconds (the line qualification time). The line qualification time shall be adjustable to 3, 10 or 30 seconds.

The maximum transfer time allowed, from disruption of normal utility line voltage to stabilized UPS line voltage from batteries, shall be 65 milliseconds. The same maximum allowable transfer time shall also apply when switching from UPS line voltage to utility line voltage.

(4) Battery(s):

(a) Batteries as part of the UPS provide the power.

Individual batteries shall be rated at 105 Amp-Hour minimum. Batteries shall be 12 VDC type and shall be easily replaced and commercially available off the shelf. The battery system used in the UPS shall consist of 4 batteries and shall be of a voltage not to exceed 60 VDC. Batteries shall be provided with quick disconnect terminals and a polarized - keyed battery cable for easy field installation.

Batteries shall be deep cycle, sealed prismatic lead-calcium based AGM/VRLA (Absorbed Glass Mat/Valve Regulated Lead Acid) batteries - able to withstand extreme temperature. Batteries shall be certified to operate over a temperature range of -4 °F to 165.2 °F (-20 °C to +74 °C). The batteries shall be provided with appropriate interconnect wiring and a corrosion-resistant stationary or swing-out mounting tray and/or brackets appropriate for the cabinet into which they will be installed as specified in “Design of LC/UPS”.

Batteries shall indicate maximum recharge data and recharging cycles. Recharge time for the battery from protective low cutoff to 80% or more of full battery charge capacity, shall not exceed twenty (20) hours.

(b) Battery Compartment:

The battery cabinet shall be vented through the use of louvered vents, filter, and one thermostatically controlled fan operated from the UPS. The fan will automatically turn ON at the temperature programmed into the UPS.

External battery compartments may be used to satisfy environmental and physical requirements. When submitting shop drawings, material and equipment submittals, request in writing and demonstrate graphically the need for an external compartment(s).

(c) Back-Feed and Other Protections:

The UPS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service per UL 1778, Section 48 "Back-Feed Protection Test". The upstream back-feed voltage from the UPS shall be less than 1 VAC for the protection of persons accessing the equipment.

The UPS shall have lightning surge protection compliant with IEEE/ANSI C.62.41 for 2000 VAC.

(5) Relay Contacts:

The UPS shall provide the user with 6 sets of fully programmable, relay contacts of type NO/NC, panel-mounted, potential free and rated 1 Amp, 120 VAC and labeled C1 through C6. Each relay's setting shall be programmable to activate under conditions through local access or remote access. The minimum number of relay settings is outlined below.

Independently configure relay contacts C1 through C6 to activate under the following conditions:

(a) ON BATTERY - relay activates when BBS switches to battery power.
(b) LOW BATTERY - relay activates when batteries have reached a specified level of remaining useful capacity while on battery power. The specified level shall be adjustable from 0 to 100%.
(c) TIMER- relay activates after being on battery power for a specified amount of time. The specified time shall be adjustable from 0 to 8 hours.
(d) ALARM - relay activates after a specific or general alarm is detected. These alarm conditions include:
    - Line frequency
    - Low output voltage
    - No temperature probe
    - Overload
    - Batteries not connected
    - High temperature
    - Low temperature

The relay shall be programmed to activate when any of these alarm conditions occur, or when a specified condition occurs.

(e) FAULT- relay activates after a specific or general fault is detected. These fault conditions include:
- Short circuit
- Low battery voltage
- High battery voltage
- High internal temperature
- Overload

The relay shall be programmed to activate when any of these fault conditions occur, or when a specific condition occurs.

(f) OFF- relay is disabled and shall not activate under any condition.

(6) Default Relay Settings:

(a) Relay C1 and C2 shall be set to activate whenever the UPS transfers to battery power and shall be labeled "ON BATT."
(b). Relays C3 and C4 shall be set to activate whenever the batteries reach 40% of remaining useful capacity and shall be labeled "LOW BATT."
(c) Relays C5 and C6 shall be set to activate whenever the UPS has been on battery power for 2 hours and shall be labeled "TIMER."

Terminal block position 19 & 20 shall be set to activate a self-test. This test confirms that a unit can transfer into and out of battery mode while supporting the output load.

(7) Load Center for Temporary Power:

Use the following load centers for distribution of power for temporary lighting and signals including the control systems. Provide work needed to modify load centers to provide functional temporary lighting and signal systems according to the NEC.

(a) Permanent load centers installed in their plan location.
(b) Existing load centers scheduled to remain intact until completion of the project. Relocate and reuse existing load centers only if approved.
(c) Approved temporary load centers with photoelectrical controlled lighting circuits. Provide a temporary load center when retiring an existing load center that is not approved, and when approved load centers are unavailable.

Approved load centers include load centers UL labeled as Service Equipment, or UL labeled as Industrial Control Equipment and marked “Suitable for use as service equipment.”

CR661.2-010120

Equipment List(s) and Drawings.

Replace No. 1. with the following:

1. Materials on the *Qualified Products List:* The Qualified Products List does not apply to the 661 Pay Items. Provide catalog cuts of materials to the Engineer for review and approval.

3. Materials Not Requiring Certification: Replace the 2nd sentence with the following:

Submit these materials for review and approval if included on the Materials Certification List (MCL) or requested by the Engineer.

Add the following materials:

Ground Rods. Furnish one piece 3/4” diameter by 10 feet long copper clad steel rods.

Ground Rod Clamps. Furnish one piece bronze clamps with a hex head setscrew that are suitable for direct burial and for use with copper clad ground rods.

Meters. Furnish meter sockets and landing pads rated for 200 Ampere Service.

Photoelectric Controls.

Delete the first sentence and substitute the following:

Use three wire photoelectric controls that directly switch a circuit from one conductor to another. Furnish two piece photoelectric controls that consist of a plug-in control unit and a locking type receptacle set in a cast aluminum adapter.

1. Plug-in Control Unit.

   Furnish photoelectric control units that consist of a light sensitive element connected directly to a normally closed, single-pole, single-throw, and control relay free of intermediate amplifications. For highway lighting, use horizontal or zenith type sensing units that:

   a. Operate at voltages between 120 and 277 VAC, 60 Hz,

   b. Handle loads up to 1,800 volt-amperes,

   c. Operate at temperatures from -40 °F to +150 °F,

   d. Consumes less than 10 watts of power,

   e. Feature a 3-prong, EEI-NEMA standard, twist-lock plug,

   f. Turn-on between 1.0 and 5.0 foot-candles and turn-off at light levels between 1.5 and 5.0 times those at turn-on.

   Measurements must meet the procedures in EEI-NEMA Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices used in the Control of Roadway Lighting.

   Screen the photoelectric control units to prevent artificial light from interfering with normal photoelectric control operation. Extend screens to the top of the control units. Use 3 inch wide x 0.063 inch thick (min) aluminum meeting ASTM B209, Alloy 3003-H14.

2. Locking Receptacles.

   Furnish twist lock type, phenolic resin receptacles set in one of the following cast-aluminum adapters.

   a. For photoelectric controls installed on signal poles and load centers, furnish a mounting adapter with a threaded connection that fits conduit outlet bodies threaded for 1/2 inch rigid metal conduit, General Electric model MB-PECTL or approved equal.

   b. For photoelectric controls installed atop lighting poles (with mast arms,) furnish a pole top adapter: equipped with a terminal block, made to slip over the ends of poles 3 1/2 to 4 1/2 inches in outside diameter, and secured by set-screws, General Electric model PTA-PECTL or approved equal.

661-3.01 CONSTRUCTION REQUIREMENTS.

Replace the 11th paragraph with the following:

Install two ground rods at least 8 feet apart at each load center. Connect the neutral bus to the ground rods with a soft drawn bare copper grounding electrode conductor sized per the NEC, 6 AWG minimum. Bond non-current carrying metal parts in each load center to the ground bus. At Type 1 load centers, install one ground rod inside the base, readily accessible though the removable cover, and the second ground rod outside the base. Route the grounding electrode conductor to the second ground rod through one of the knockouts.

Replace the 12th paragraph with the following:

Install photoelectric controls at the locations indicated. Orient photoelectric control units to face the north sky. Install a screen to prevent artificial light from interfering with normal photoelectric control operation.

For photoelectric controls installed on load centers, install a Myers hub in a cabinet wall shielded from traffic. To the hub, attach an assembly that consists of a Type LB conduit body, a length of conduit, and a Type C conduit body. Fabricate the conduit at least 3 ft long and locate the photoelectric control 1 ft above the top of the load center. Mount the photoelectric control adapter on the Type C conduit body. Install a conduit hanger to brace the top of the conduit.

For photoelectric controls installed on signal poles, install a Myers hub in the center of the rain cap. Attach a Type C conduit body to the hub with a close nipple. Mount the photoelectric control adapter on the conduit body. Use five conductor 14 AWG wire to connect the photoelectric control to the load center.

For photoelectric controls installed on electroliers, install a pole top adapter. When the photoelectric control is on a lighting standard with a slip base or frangible coupling style base, use an approved breakaway disconnect in the base of the light standard. Restrain the cable in a similar manner as the illumination cable in the pole base. Use five conductor 14 AWG wire to connect the photoelectric control to the load center.

Add the following:

Coordinate new load centers with existing and or new service utilities.

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.

661-5.01 BASIS OF PAYMENT.

Add the following:

The following work is subsidiary to 661 Pay Items:

- All necessary hardware for mounting (shelf angles, rack, shelving, harness, etc.).
- Removing existing load centers being replaced with new load centers, their foundations, and ground rods.
- Payment of fees required by the local authority for electrical inspection(s) and the costs of correcting the deficiencies noted during the inspection(s).
- All work including, but not limited to, contacting and coordinating with the utilities for service; maintenance and usage payments until the Engineer provides the notice of final acceptance.
- Replaced failed equipment, equipment components and repaired failed workmanship.

CR661.1-21.1231R1

Add the following Pay Item:

PAY ITEM

Item Number	Item Description	Unit
661.2001.____	Load Center, Type 1A with UPS (LC/UPS)	Each

CR661.2-010120

Special Provisions

Add the following Section:

SECTION 670
TRAFFIC MARKINGS

Special Provisions

670-1.01 DESCRIPTION. Add the following:

Furnish, locate and install Pavement Markings as shown on the Plans and as directed.

Pavement Marking Type: Methyl Methacrylate (MMA)

670-2.01 MATERIALS. Add the following:

Methyl Methacrylate Pavement Markings are a combination of methyl methacrylate, glass beads and anti-skid aggregate.

Replace the last sentence with the following:

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. Replace No. 4 with the following:

4. Methyl Methacrylate Pavement Markings (MMA).

   a. General. 15 days before starting work meet with the Engineer for a prestriping meeting. At this meeting, do the following:
      (1) Furnish a striping schedule showing areas and timing of work, placing materials and the Traffic Control Plans to be used.
      (2) Discuss placement of materials, potential problems.
      (3) Discuss work plan at off ramps, on ramps and intersections.
      (4) Discuss material handling procedures.
      (5) Provide copies of the manufacturer's installation instructions and copies of the Material Safety Data Sheets.

   b. Manufacturer's Representative. Provide the services of a manufacturer's representative (the "Manufacturer's Representative"). Ensure the Manufacturer's Representative observes the application of the pavement marking materials. Cooperate with the Manufacturer's Representative and the Engineer to ensure that the materials are placed according to these Specifications and the manufacturer's recommended procedures.

   c. Manufacturer Certified Installers. Install pavement markings using only striping installers certified by the marking materials manufacturer for the specific striping material and method. Submit these certifications to the Engineer at the Preconstruction Conference.

   d. Preparation. Prepare the roadway surface to receive pavement markings according to these Specifications and the manufacturer's recommendations. Clean and dry the roadway surface. Completely remove contaminants such as dirt, loose asphalt, curing agents, surface oils, or existing road marking materials before applying pavement marking material.

e. Equipment.

(1) Grooving Equipment.
Use grooving equipment that produces a dry cut. Use vacuum shrouded equipment or other equally effective containment procedures.

(2) Marking Equipment.
(a) Longitudinal Marking: Use truck mounted application equipment capable of installing a double centerline and a single shoulder line in a single pass. Use automatic bead applicators that place a uniform layer of beads on the lines. Hand units are not permitted.
(b) Other Markings: Use manual or automatic application equipment. Use stencils or extruders to form sharply defined markings.

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 ___ mils. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of __ mils.

(2) Other Markings.
(a) Transverse and Symbol Markings:
Groove the area for inlaid markings to a depth of 250 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 with 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.

Add the following:

Refer to the Survey Field Books identifying the no passing zones (see Subsection 642-3.01)

670-3.04 PAVEMENT MARKING REMOVAL. Add the following:

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.

Replace Subsection 670-3.06 with the following:

670-3.06 TOLERANCE FOR LANE STRIPING.

1. Length of Stripe. ± 2 inches.
2. Width of Stripe. ± 1/8 inch.
3. Lane Width. ± 4 inches from the width shown on the Plans.
4. Stripes on Tangent. Do not vary more than 1 inch laterally within a distance of 100 feet when using the edge of the stripe as a reference.
5. Stripes on Curves. Uniform in alignment with no apparent deviations from the true curvature.
6. All Stripes. Keep the center of the stripe within planned alignment.
7. Double Stripes. ± 1/4 inch.
8. Thickness of Surface Applied. Minimum specified to a maximum of + 30 mils.
9. Depth of Inlay Slot. Minimum specified to a maximum of + 40 mils.
10. Thickness of Inlaid Marking Material. Fill inlay area completely from the bottom of the inlay to the surface of the pavement.

If it is determined that the material is being placed too thin, the beads are not properly placed, the anti-skid aggregate is not visible, or otherwise not to specification, make immediate adjustments to correct the problem.

Pavement markings applied by any method will be unacceptable if:

1. Marking is not straight or wide enough.
2. Thickness of line is not uniform.
3. Thickness of line is less than specified.
4. Material is uncured.
5. Material blackens or is inconsistent in color.
6. Inlay slot is not the specified depth.
7. Inlay slot is not filled to the specified depth.
8. Edge of the markings is not clear cut and free of overspray.
9. Reflective elements are not properly embedded.
10. Retroreflectivity of the markings is less than specified.
11. Anti-skid aggregate is not visible in the marking material during application and the dried surface.
12. Markings exhibit poor adhesion.
13. Color is not as specified.

Perform repairs using equipment similar to the equipment initially used to place the materials. Do not perform repairs in a “patch work” manner. If more than one repair is required in a single 500 foot section, grind and repair the entire section.

670-4.01 METHOD OF MEASUREMENT. Add the following:

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.

Delete No. 2.

Replace No. 3 with the following:

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.

Replace No. 4 with the following:

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.

670-5.01 BASIS OF PAYMENT. Add the following:

For all phases of construction: 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

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

Add the following Pay Items:

Payment will be made under:

PAY ITEM

Item Number	Item Description	Unit
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

CR670.1-23.0501

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

CR682-010114R

DIVISION 700 — MATERIALS

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SECTION 702
ASPHALT MATERIALS

Standard Modification

Replace Subsection 701-2.01 with the following:

702-2.01 ASPHALT BINDER. Meet AASHTO M 320 or M 332 for the specified Performance Grade, except as indicated in Table 702-2.01-1 Exceptions to Performance-Graded Binder Specifications.

TABLE 702-2.01-1
EXCEPTIONS TO PERFORMANCE GRADED ASPHALT BINDER SPECIFICATIONS

Performance Grade	AASHTO Specification	Viscosity AASHTO T 316	MSCR, AASHTO T 350			PAV, Dynamic Shear AASHTO T 315	Direct Tension AASHTO T 314
			$J_{NR3.2}$ kPa^{-1}	J_{NR} Diff	% $Recovery_{3.2}$		
PG 52-28	M 320	None	—	—	—	None	Delete
PG 52-34 E	M 332	None	None	Delete	60 min.	None	Delete
PG 58-28 E	M 332	None	None	Delete	60 min.	None	Delete
PG 58-34 V	M 332	None	None	Delete	60 min.	None	Delete
PG 64-28 E	M332	None	None	Delete	60 min.	None	Delete
PG 52-40 E	M 332	None	None	Delete	75 min.	None	Delete
PG 58-34 E	M 332	None	0.25 max.	Delete	85 min.	None	Delete
PG 64-40 E	M 332	1 Pa•s max.	0.10 max.	Delete	95 min.	5000 max. @ 4°C	Delete

None indicates no exceptions from the listed test. Delete indicates this property is not required from the listed test.

Use asphalt binders without re-refined engine oil bottoms (REOB)/vacuum tower extenders (VTAE) as a modifier. REOB/VTAE are materials as defined in the Asphalt Institute document IS-235. Furnish a certificate of compliance according to Subsection 106-1.05.1 certifying that REOB/VTAE were not used as a modifier of asphalt binder.

HSM20.44-23.0801

702-2.03 EMULSIFIED ASPHALT.

Replace item 1. with the following:

1. Cationic Emulsified Asphalt. Meet AASHTO M 208, except CRS-2P meet AASHTO M316.

HSM20.32-21.1231

702-2.07 WARM MIX ASPHALT (WMA). Add the following to Table 702-3:

WMA Technology	Process Types	WMA Supplier
AD-here ULTRA 1	Chemical Additive	Arkema – Road Science
Cecabase RT	Chemical Additive	Arkema – Road Science

HSM20.44-23.0801

SECTION 703
AGGREGATES

Standard Modification

703-2.03 AGGREGATE FOR BASE AND SURFACE COURSE.

In Table 703-1 replace the line for Degradation Value with the following:

TABLE 703-1
AGGREGATE QUALITY PROPERTIES FOR BASE AND SURFACE COURSE

PROPERTY	BASE COURSE	SURFACE COURSE	TEST METHOD
Micro-Deval	15%, max.	15%, max.	AASHTO T 327

HSM20.40-050122

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	-	-	-	

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

CR703.1-050122

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.

HSM20.40-050122

Special Provision

703-2.07 SELECTED MATERIAL.

Replace 1. Type A with the following:

1. Type A. Aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as tested by ATM 204 and ATM 205. Meet the following gradation as tested by ATM 304:

Sieve	Percent Passing by Weight
No. 4	20-55%
No. 200	0-6%, determined on the minus 3-inch portion of the sample

CR703.1-050122

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.

HSM20.40-050122

703-2.10 POROUS BACKFILL MATERIAL.

Add the following to the end of the paragraph:

Use Gradation A unless otherwise specified.

HSM20.33-123121

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.

CR703.1-050122

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.

HSM20.35-123121

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.

CR712.1-010109R

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).

CR724-113020

Special Provision

Replace Section 726 with the following:

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

CR726-20.0101R

Replace Section 727 with the following:

SECTION 727
SOIL STABILIZATION MATERIAL

727-2.00 GENERAL. Free of restricted and prohibited noxious weeds (11 AAC 34), seeds, chemical printing ink, germination and growth inhibitors, herbicide residue, chlorine bleach, (except where specified: rock, metal, plastics) and other deleterious materials and not harmful to plants, animals and aquatic life. Wood cellulose "paper" fiber, wood chips, sawdust, and hay are not permitted as stand-alone stabilization materials.

727-2.01 MULCH. Flexible blanket/covering, temporary degradable (bio/photo) form of erosion control. Use one of the following:

Dry Erosion Control, Stabilization Products. Hand applied or spread with mulch blower equipment.

1. Straw. Use straw, in an air-dried condition, from oats, wheat, rye, barley, or other approved grain crops that are free from noxious weeds, seeds, mold, or other materials detrimental to plant life. Straw material shall be certified weed-free straw using North American Invasive Species Management Association (NAISMA) Standards. In-lieu of certified weed-free straw provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

2. Shredded Bark Mulch. Shredded bark and wood with the following characteristics:
   a. Not containing resin, tannin, or other compounds in quantities harmful to plant life.
   b. Maximum length of individual pieces is 2 inches with 75% passing through a 1 inch sieve.
   c. Will form a uniform ground cover/mat, have moisture absorption, retention, and percolation properties, not be susceptible to spreading by wind or rain providing a good growth medium.
   d. May contain up to 50% shredded wood material.
   e. Shredded wood material aged 1 year minimum prior to use.

Hydraulic Erosion Control Products (HECPs) Applied hydraulically.

A fiber mulch matrix: biodegradable and composed of wood, straw, coconut and other fibers natural and man-made. When applied, create a continuous, porous, absorbent high water holding, flexible blanket/mat/mulch/covering making intimate contact with, and adhering to sloped soil surface; permitting water infiltration; resists erosion and promotes rapid germination and accelerated plant growth. The fibers may be thermally processed, and cross-linked with a hydro-colloidal or linear anionic tackifier (curing period 24-48 hours) or mechanically-bonded (no curing period). When agitated in slurry tanks with water the fibers will become uniformly suspended, without clumping to form homogeneous slurry.

The HECPs shall be delivered premixed by the manufacturer. The HECP will contain only the materials provided in the sealed containers from the manufacturer. No added components are permitted after the manufacturer seals the product container, before application, during application or otherwise. Submit documentation dated within 3 years of application, from an independent accredited laboratory as approved by the Engineer, showing that the product's testing performance meets the requirements for the slope(s) to be protected on the project, according to the National Transportation Product Evaluation Program (NTPEP), Erosion Control Technology Council (ECTC) and or the Texas DOT/Texas Transportation Institute (TTI) Laboratory.

If the HECP contains cotton or straw provide documentation that the material is certified weed free using NAISMA Standards. In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw.

The HECP shall contain a dye to facilitate placement and inspection of the material.

1. Wood Strand, Fiber.
   A blend of angular, loose, long thin wood pieces with a high length to width ratio and that are frayed. Minimum 95% of strands between 2 inches and 10 inches, at least 50% of the length shall have a width thickness between 1/16 and 1/8 inch. No single strand shall have a width or thickness greater than 1/2 inch. Processed wood fiber with the following characteristics:
   a. Will remain in uniform suspension in water under agitation and will blend with grass seed, fertilizer and other additives to form homogeneous slurry.
   b. Will form a blotter-like uniform ground cover on application, have moisture absorption, retention and percolation properties, the ability to cover, and hold grass seed in contact with soil, and not create a hard crust upon drying providing a good growth medium.

2. Dried Peat Moss. Partially decomposed fibrous or cellular stems and leaves of any of several species of Sphagnum mosses with the following characteristics:
   a. Chopped or shredded to allow distribution through normal hydraulic type seeding equipment and capable of being suspended in water to form part of a homogeneous slurry.
   b. Free from woody substances and mineral matter such as sulfur or iron and with a pH value of between 4.0 and 6.5.
   c. Furnished in an air dry condition and containing less than 35% moisture by weight. Have a water holding capacity of not less than 800% by weight on an oven dry basis.

3. Fiber Matrix (FM) Mulch - Types.
   a. Stabilized Mulch Matrices (SMMs)
   b. Bonded Fiber Matrices (BFMs)
   c. Mechanical Bonded Fiber Matrix (MBFM)
   d. Polymer Stabilized Fiber Matrix (PSFM)
   e. Fiber Reinforced Matrices (FRMs)
      - Flexible Growth Medium (FGM)
      - Extended-Term Flexible Growth Medium (ET-FGM)

727-2.02 MATTING. Fiber mulches, mulch matrices, nets and turf reinforcement mats manufactured from wood fibers, straw, jute, coir, polyolefins, PVC, nylon and others creating dimensionally stable nets, meshes, geotextiles and blankets; creating a continuous, porous, absorbent, flexible blanket/mat/mulch/covering making intimate contact with and adhering to sloped soil surface, resisting erosion and promoting rapid germination and accelerated plant growth.

Rolled Erosion Control Products (RECPs) (Temporary Degradable and Permanent Erosion Control)
Use RECPs that bear the Quality and Date Oversight and Review (QDOR) Seal from the ECTC. Independent test results from the NTPEP, that the mulch, when tested according to ASTM 6459 Standard Test Method for Determination of Rolled Erosion Control Products (RECP), Performance in Protecting Hillslopes from Rainfall-Induced Erosion, meets the performance requirement using the Revised Universal Soil Loss Equation (RUSL).

Functional Longevity.

1. Temporary Degradable.

   a. Duration.

      1) Short-Term RECPs. (RECPs 3 - 12 months)
         C_{Factor} = .15 maximum
         Test Soil Type = Sandy Loam
         (National Resources Conservation Service (NCRS) Soil Texture Triangle)

      2) Moderate (Extended) -Term RECPs. (RECPs 24 months)
         C_{Factor} = .05 maximum
         Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)

3) Long-Term RECPs. (RECPs 36 months)
C $_{Factor}$ = .01 maximum
Test Soil Type = Sandy Loam (NCRS Soil Texture Triangle)

b. Product types.

1) Mulch-Control Nets (MCNs). Planar woven natural fiber or extruded geosynthetic mesh used to anchor loose fiber matting/mulches.

2) Erosion Control Blankets (ECBs). Processed natural and/or polymer fibers, yarns or twines mechanically, structurally, or chemically bound together to form a continuous matrix with a minimum weight of 8 oz/yd^2 and a limiting shear stress of 0.45 lb/ft^2.

3) Netless. Fibers mechanically interlocked and/or chemically adhered together.

4) Single-net and Double-net. Fibers mechanically bound together by single or double netting.

5) Open Weave Textiles (OWTs). Fibers woven into a continuous matrix.

c. Materials.

1) Burlap. Standard weave with a weight of 3.5 to 10 oz/yd^2.

2) Jute Mesh Fabric. Cloth of a uniform, open, plain weave of undyed and unbleached single jute yarn. Use yarn that is loosely twisted and not varying in thickness more than one-half its normal diameter. Furnish jute mesh in rolled strips meeting the following requirements:
   a) Width: 45 to 48 inches, ± 1 inch
   b) 78 warp-ends per width of cloth (minimum)
   c) 41 weft-ends per yard (minimum)
   d) Weight: 20 ounces per linear yard, ± 5%

3) Woven Paper or Sisal Mesh Netting. Woven from twisted yarns available in rolls 45 to 48 inches wide. Mesh may vary from closed to open weave, ranging from 1/8 to 1/4 inch openings. Shrinkage after wetting may not exceed 20% of the surface area.

4) Knitted Straw Mat. Commercially manufactured ECB. Use photodegradable netting and biodegradable thread. Use straw, in an air-dried condition, from oats, wheat, rye, barley, or other approved grain crops that are certified weed free of prohibited and restricted noxious weed seed and quarantined pests, according to Alaska Administrative Code, Title 11, Chapter 34 (11 AAC 34), and in conjunction with North American Invasive Species Management Association (NAISMA) standards, and free of mold, or other objectionable materials detrimental to plant life. When straw or straw products certified according to 11 AAC 34 are not available, use non-certified products manufactured within Alaska before certified products manufactured in another state, country, or territory. Non-certified products manufactured in Alaska In-lieu of certified weed-free straw, provide documentation that the material is steam or heat treated to kill seeds or provide U.S. or state's department of agriculture laboratory test reports, dated within 90 days prior to the date of application showing that there are no viable seeds in the straw. Non-certified straw or straw products manufactured in another state, country, or territory shall not be used. ECB may contain coconut or fiber to reinforce the straw.

5) Woven/Curled Wood blanket. Machine produced mat of curled wood shavings with a minimum of 80% 6-inch or longer fibers, with consistent thickness and the fibers evenly distributed over the entire area of the blanket. Smolder resistant without the use of chemical additives. Cover the top side of the blanket with biodegradable extruded plastic mesh.

6) Coconut (Coir Fiber). Machine produced mat, ECB of consistent thickness and coir fiber evenly distributed over the area of the mat. Use bio/photo degradable netting and thread.

2. Permanent.

   a. Product Types and Materials.

      1) Turf Reinforcement Mats (TRMs). A rolled erosion control product composed of non-degradable synthetic fibers, filaments, nets, wire mesh, and/or other elements, processed into a permanent, three-dimensional matrix of sufficient thickness with a minimum weight of 8 oz/yd^2 and a minimum limiting shear stress of 1.5 lb/ft^2. TRMs (may be supplemented with degradable components) shall impart immediate erosion protection, enhance vegetation establishment during and after maturation and permanent vegetation reinforcement providing long-term functionality.

727-2.03 SEDIMENT RETENTION FIBER ROLLS (SRFRs). Fiber rolls also referred to as wattles. Manufacture of photodegradable or biodegradable fabric netting without preservative treatment, evenly woven, free of crusted material, cuts, and tears. Manufacture stakes of photodegradable or biodegradable material (wood stakes, except as approved by the Engineer).

1. Filter Sock (Wattle)
   a. Fabric netting.
   b. Filled with wood fiber, straw, flax, rice, coconut fiber material.
   c. Minimum diameter 5 inches.

2. Compost Sock.
   a. Extra Heavy weight fabric netting with a minimum strand width of 5 mils.
   b. Filled with coarse compost.
   c. Minimum diameter 8 inches.

3. Coir Log.
   a. Woven wrap bristle coir twine netting.
   b. Filled with 100% coconut (coir) fiber uniformly compacted.
   c. Segments maximum length 20 foot, diameter as suited to the application and a density of 7 lbs/pcf or greater.
   d. Coir twine strength equal to 80 lb minimum weaved to a 2 inch x 2 inch opening pattern.
   e. Ties made of hemp rope by 1/4 inch diameter.

727-2.04 COMPOST. Suitable for serving as a soil amendment or an erosion control material. Sanitized, mature compost meeting local, state, and Federal quality requirements tested and certified by the U.S. Composting Council (USCC) under the Seal of Testing Assurance (STA) Program. Biosolids compost must meet the Standards for Class A biosolids outlined in 40 Code of Federal Regulations (CFR) Part 503. Additionally, meet the requirements of the AASHTO specifications:

1. Compost Blankets. Standard Practice for Compost for Erosion/Sediment Control (Compost Blankets) R 52.

2. Compost Filter Berms and Filter Socks. Standard Practice for Compost for Erosion/Sediment Control (Filter Berms and Filter socks) R 51.

727-2.05 TACKIFIER. Tackifier, viscous overspray, generally composed of dry powered vegetable gums derived from guar gum, psyllium and sodium alginase; asphaltic emulsions; petroleum distillates; co-polymer emulsions; and lignosulfonates and used to anchor soil, compost, seed, the mulch fibers to one another, and the ground. Contain no growth or germination inhibiting materials nor significantly reduce infiltration rates. Tackifier shall hydrate in water and readily blend with other slurry material. Tackifier options include:

1. Type A. Organic tackifier with certification of plant sources; or

2. Type B. Synthetic tackifier with certification confirming product is not harmful to plants, animals, or aquatic life.

727-2.06 POLYACRYLAMIDE (PAM). Use as a tie-down for soil, compost, seed and as a flocculent. Polyacrylamide (PAM) products shall meet the requirements of American National Standards Institute (ANSI)/National Sanitation Foundation International (NSF) Standard 60 for drinking water treatment, be anionic (not cationic), linear and not cross-linked with an average molecular weight greater than 5 Mg/mole, minimum 30 percent charge density; contain at least 80% active ingredients and a moisture content not exceeding 10% by weight.

Deliver PAM in a dry granular powder or liquid form.

727-2.07 GEOTEXTILE-ENCASED CHECK DAM AND SEDIMENT BARRIER. Urethane foam core encased in geotextile material (silt fence material Section 633), minimum 8 inches height by minimum base width of 16 inches by minimum 7 foot length. Overhang the geotextile 6 inch minimum each end with apron type ties by 24 inches each side of the foam core.

727-2.08 SANDBAG.

1. Sandbag Sack Fabric. Fabric shall be a nonwoven, needle punched design meeting the Minimum Average Roll Values (MARV) verified in accordance with ASTM D4759.

2. Seam Thread. Similar durability to the sandbag sack fabric.

3. Sandbag Fill Material.
   a. Selected Material 703-2.07 Type B

4. Cinch Ties. Plastic ties or equivalent tie recommended by the sandbag manufacturer.

727-2.09 MANUFACTURED INLET PROTECTION SYSTEM.

1. Manufacturers:
   a. Ultra Tech International – Ultra-DrainGuard
   b. Bowhead Environmental and Safety - StreamGuard Exert II Sediment Insert
   c. Enpac - Catch Basin Insert, Oil and Sediment or
   d. Approved equal.

727-2.10 CLEAR PLASTIC COVERING. A clear plastic covering meeting the requirements of the National Institute of Standards and Technology (NIST) voluntary Product Standard PS 17 - 69 for polyethylene sheeting having a minimum thickness of 6 mils.

727-2.11 STAPLES. U-shaped staples for anchoring matting, approximately 6 inches long and 1 inch wide. Machine-made: No. 11 gage or heavier steel wire. Hand-made: 12-inch lengths of No. 9 gage or heavier steel wire.

CR727-12.0508R2

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.

CR730.1-062204

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).

- Design Loads:
  - Impact load from snow thrown by snowplows
  - Weight of snow covering the pole (snow thrown from snowplows)
  - Wind loads (100 mph, 3 sec gust)
- Service Temperature Range: -40˚ F to +140˚ F.

- Pole:

  1. Material:

     - Steel, or
     - Stainless Steel, or
     - 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

  2. Dimensions

     - Top of Pole: 60 inches to 84 inches above top of guardrail
     - Width/Diameter: minimum = 1 1/4 inches, maximum = 2 inches (steel/stainless steel not be greater than 5/8 inch diameter)
     - Thickness: as required by design

  3. Visibility:

     - 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.
     - 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.
          (1) Flag: Single retroreflective sheet each face
          (2) Banding: Two bands completely around marker, 4 inches between bands

- Hardware and Fasteners:

  - Steel, and/or
  - Stainless Steel, or
  - 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.

CR730.2-122217

Special Provision

Replace Section 740 with the following

SECTION 740
SIGNALS AND LIGHTING MATERIALS

740-2.01 GENERAL. Use electrical materials, devices, fittings, and hardware that conform to applicable NEMA and ANSI standards.

Use electrical products that are Third Party Labeled or Listed (by an approved independent electrical testing laboratory such as UL, Electrical Testing Laboratories (ETL), Canadian Standards Association (CSA), etc.), unless otherwise indicated on the Materials Certification List (MCL).

Ensure that all material and workmanship, as determined by the Department, conform to the standards of the NEC, the NESC, and local safety codes as adopted and amended by the authority having jurisdiction.

740-2.02 SIGNAL AND LIGHTING STRUCTURES.

1. Design. Design and fabricate structures to conform to:

   a. Highway Lighting Structures. 2013 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals with 2013 Errata and 2015, 2019, and 2020 interim revisions and the highway lighting sheets in the Plans. Design must meet Fatigue Category II. Use a wind speed of 100 mph. Design each structure to support a sign with an area of 16 square feet with its centroid located 14 ft. above the pole base.

   b. Breakaway Traffic Signal Structures. 2001 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with interim revisions and Central Region Traffic Signal Details. Design must meet Fatigue Category II, a vibration mitigating device may be used in lieu of providing galloping computations, using a basic wind speed of 100 mph and Central Region standard loads.

   c. Mastarm Traffic Signal Structures. 2013 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals with 2013 Errata and 2015, 2019, and 2020 Interim Revisions, and signal sheets in the Plans. Design must meet Fatigue Category I, a vibration mitigating device may be used in lieu of providing galloping computations, using a basic wind speed of 100 mph.
   A vibration mitigation device is a non-aerodynamic damper system that is purpose-built to mitigate vertical movement of signal mast arms. Effectiveness shall be proven through analytical methods approved by the engineer. The system shall be self-adapting and must not require structure specific tuning. The device must provide an 85 percent or greater vibration reduction.

   A registered professional engineer shall design the structures and provide stamped shop drawings and calculations. Submit the stamped drawings and calculations for each pole to the Engineer for approval. Design for the complete-in-place structure including the supported hardware.

   a. In the stamped calculations, indicate the edition of Standard Specifications to which the poles are being designed and provide the input data used to design each pole and mast arm, including: design wind speed, cross section shape, yield strengths of the component materials, dimensions of the pole components, and a summary of the loads used. For highway lighting structures, submit the actual total combined mass of luminaire supports and attached fixtures.

   b. On the stamped shop drawings, provide design wind speed and the details for building the poles and mast arms, including: materials specifications, slip fit joint dimensions, pole component dimensions, welds that will be made, and the welding inspection that will be done.

   Submit the mill certifications for the steel items (piles, plates, bolts, and other related items) to the Engineer for approval.

2. Fabrication. Fabricate signal and lighting structures from tapered steel tubes with a round or 16 sided cross section. Orient handholes located near the base of poles to face downstream of traffic flow.

   Furnish poles and mast arms up to 40 feet long in one piece. Poles and mast arms longer than 40 feet may be furnished in one piece or in two segments with a slip type field splice. For slip type joints, provide the minimum overlap specified in the Plans. In mast arms, locate these splices at least one foot away from the Plan location of signal heads and signs. In signal poles, locate the edge of the female section at least 6 inches above the top of the signal mast arm connection.

   Fabricate tubes with walls up to 1/2 inch thick from the prequalified base metals listed in AWS D1.1. Fabricate elements greater than 1/2 inch thick from steel that conforms to AASHTO M270 and meets the Fracture Critical Impact Test requirements for Zone 3. The Department will not accept structures that use laminated steel elements.

   Fabricate the cross section of each tube from no more than 2 pieces of steel. When using 2 pieces, place the longitudinal welded seams directly opposite one another. Place the welded seams on adjacent sections to form continuous straight seams from the base to the top of the pole.

   When tenons are needed to install traffic signals and luminaires, make them from two inch nominal schedule 40 pipe that conform to ASTM A 53 Grade B.

   Fabricate breakaway signal poles in accordance with the Pole Sheet in the Plans. Fabricate signal poles 10 to 16 feet long from 7 gauge (US Standard) sheet steel. Fabricate each post with a minimum inside diameter at the base plate as shown in the Plans. Use 4 inch diameter by 4 inch Schedule 40, ASTM A53, Grade B pipe as a post-top adapter.

   The Department does not allow holes made for lifting purposes in the ends of tubular segments, except in the free ends of luminaire mast arms. To add lift points, weld them to the tube opposite the longitudinal seam weld on the outside of female segments and on the inside of male segments. Before shipment, remove lift points added to the outside of the tubes, grind the area smooth with the base metal, and hot stick repair the finish according to Subsection 660-3.01.8.a. Lift points added to the inside of tubes in place may be left in place.

   Hot-dip galvanize lighting and signal structures to meet AASHTO M 111 and these specifications. Galvanizing kettles will be large enough to completely submerge each element, the mast arm, and the pole. Submerge the complete/whole element in the galvanizing process. An element galvanized in sections will not be accepted. Galvanize bolts and fasteners to meet AASHTO M 232.

   After the poles and mast arms are galvanized, remove all excess zinc from all drip lines and points and surfaces of all tube ends that form slip type joints to provide a smooth finish.

   The Department will reject poles and mast arms that are:

   a. Not fabricated according to these specifications or the approved shop drawings,
   b. Bowed with sweeps exceeding 1 inch throughout the length of the pole, mast arm, or segment, if furnishing a 2-piece pole or mast arm,
   c. Out of round. Sections are out of round when the diameters of round members or the dimension across the flats of multisided members exceed 2 percent of the dimension specified on the shop drawings.

   Fabricate pile cap adapters from Grade X52 steel line pipe that conforms to API 5L and from steel plate that conforms to ASTM A 709 Grade 50. Attach the anchor plate to the pile section with a complete joint penetration (CJP) weld. Fabricate the anchor plate to match the base plate of the lighting standard.

3. Welding. Perform welding to conform to Subsection 504-3.01.7 and the 2013 Edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, the Central Region Traffic Signal Details, and the following:

   a. Make welds continuous. Grind exposed welds flush with the base metal at slip fit joints for the length of the slip fit joint plus one half the diameter of the female section.

   b. On steels 5/16 of an inch thick and thicker, inspect 100 Percent of CJP welds by either radiography (RT) or ultrasound (UT).

c. Inspect a random 25 percent of PJP and fillet welds by magnetic particle (MT). If a defect is found, inspect 100% of the PJP and fillet welds made to fill the order. In steels less than 1/8 inch thick, complete the tests according to AWS D1.1.

d. Only visually inspect welds made on luminaire mast arms.

4. Anchor Rods & Bolts. Furnish 2 inch diameter (nominal) anchor rods for signal poles that meet ASTM F1554 Grade 105, are 96 inch minimum length and conform to Supplemental Requirements; S2, Permanent Manufacturer's Identification, S3, Permanent Grade Identification and S-5 Charpy Impact Requirements. Hot dip galvanize according to AASHTO M232. Use nuts that conform to AASHTO Specification M292 of the grade, surface finish, and style for 2 inch diameter anchor rods. Washers shall conform to AASHTO M293.

5. Miscellaneous. Finish the edges of poles and mast arms to conform to the following requirements. Before hot dip galvanizing, neatly round the following features to the radius specified.

   a. On holes through which electrical conductors pass, provide a 1/16 inch radius on both the entrance and exit edges,

   b. On pole base plates, provide a 1/8 inch radius on edges along which plate thickness is measured and a smooth finish on all other exposed edges,

   c. On the ends of tubes that form slip type joints, complete the following tasks on the two surfaces that contact one another. First, provide 1/16 inch radii on the inside and outside edges of the female and male segments, respectively. Then for the length of the joint plus one half the diameter of the female section grind down welds until they feature a radius concentric with the mating surface and remove material protruding from the two surfaces.

   Provide caps to cover the free ends of poles and mast arms.

   Identify critical information for poles and arms with visible permanent aluminum tags that contain the information shown in Table 740-1. The measurements shown are for illustration purposes only. Use tags large enough to include required information using 1/4 inch high text, 3/8 inch of space between successive lines of text, and at least 3/8 inch of space between the edges of the tag and the text. Secure the tags with two 1/8 inch blind rivets at the base of poles and the underside of mast arms. If furnishing a two piece signal mast arm with slip type joint, mark both pieces with the same message. Provide the holes for the blind rivets before galvanizing.

TABLE 740-1
POLE MARKINGS

Note: Italic type indicates additional Tag Markings if poles have 2 luminaire or 2 signal mast arms.

POLES (Including Mast Arms)	**MEASUREMENTS**	**TAG MARKINGS**
Signal Poles		
Signal mast arm length	45 ft./55 ft.	SMA 45/*SMA 55*
Luminaire mast arm length	22 ft./18 ft.	LMA 22/*LMA 18*
Pole height	36 ft.	PH 36
Intersection number (if more than one) -pole number		1 - P 4
Sum of signal mast arm moments about centerline of signal pole		SM 4000/*SM 3200*
Design wind speed	100 mph	DWS 100
Light Poles		
Luminaire mast arm length	15 ft./15 ft.	LMA 15*/LMA 15*
Pole height	37 ft.	PH 37
Signal Mast Arm		
Mast arm length	40 ft.	SMA 40
Intersection number (if more than one) -pole number		1 - P 4
Sum of signal mast arm moments about centerline of signal pole		SM 3740
Design wind speed	100 mph	DWS 100
Luminaire Mast Arm		
Mast arm length	18 ft.	LMA 18
Pole number (if unique arm design)		P 4

740-2.03 WOOD POLES. Use wood poles for service or temporary installations of the class shown on the Plans or as specified in the Special Provisions.

Use 45-foot poles, except for service poles use 25-foot poles.

Use mast arms and tie rods for wood pole installations that conform to Subsection 740-2.02, and to the details shown on the Plans. Provide each mast arm with an insulated wire inlet and wood pole-mounting bracket for mast arm and tie rod crossarm.

Use structural timber meeting Section 713. Do not use poles that have more than 180 degrees twist in grain over the full length. Ensure that the sweep is no more than 4 inches. Pressure-treat wood poles, that are not to be painted, after fabrication. Meet Section 714.

740-2.04 RESERVED.

740-2.05 CONDUCTORS. Use conductor sizes based on the American Wire Gauge (AWG). Use sizes that conform to the Plans or, when not shown, to this subsection.

Use insulated conductors made of uncoated, stranded copper that conforms to the specifications of ASTM B8. Use grounding conductors that are bare copper of the gauge required by the NEC. They may be stranded, solid, or braided.

Provide the following markings on the outer coverings of conductors and cables on intervals of 2 feet or less: manufacturer, the number of conductors or pairs in cables, conductor size, 600V, the conductor or cable type and environmental conditions for which the conductor or cables are listed, and the symbol of an approved independent testing laboratory.

Use conductors meeting the referenced specifications for the following purposes:

1. Power Conductors. For individual conductors, install general-purpose building wire manufactured according to UL Standard 44, and NEMA No. WC7. Furnish conductors insulated with cross-linked polyethylene listed as type XHHW-2 and rated for 600 volts AC operation.

TABLE 740-2
CONDUCTOR TERMINATION TABLE

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
7	Vehicle Red	Red	14	Head No.
	Vehicle Yellow	Orange		
	Vehicle Green	Green		
	Common Neutral	White		
	Spare	White/Black		
	Spare	Black		
	Spare	Blue		
7	Vehicle Red Arrow	Red	14	Head No.
	Vehicle Yellow Arrow	Orange		
	Vehicle Green Arrow	Green		
	Common Neutral	White		
	Spare	White/Black		
	Spare	Black		
	Spare	Blue		
7	Vehicle Red	Red	14	Head No.
	Vehicle Yellow	Orange		
	Vehicle Green	Green		
	Common Neutral	White		
	Spare	White/Black		
	Vehicle Yellow Arrow	Black		
	Vehicle Green Arrow	Blue		
5 MOA Ped Signals	Pedestrian Don't Walk	Red	14	Head No.
	Pedestrian Walk	Green		
	Common Neutral	White		
	Spare	Orange		
	Spare	Black		

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG. NO.	BAND LEGEND
4 SOA Ped Signals	Pedestrian Don't Walk	Red	14	Head No.
	Pedestrian Walk	Green		
	Common Neutral	White		
	Spare	Black		
4 SOA Ped Buttons	Pedestrian Pushbutton	Black	14	Head No.
	Neutral	White		
	Spare	Red		
	Spare	Green		
3 MOA Ped Buttons	Pedestrian Pushbutton	Black	14	Head No.
	Neutral	White		
	Spare	Red		

TABLE 740-2
CONDUCTOR TERMINATION TABLE
(Continued)

CONDUCTORS PER CABLE	CIRCUIT	WIRE COLOR	AWG NO.	BAND LEGEND
3	Flashing Beacon	Black	14	Head No.
	Neutral	White		
	Spare	Red		
3	Per Manufacturer Installation Instructions	Orange	20	"PRE"
		Blue		
		Yellow		
3	Preemption Confirmation	Black	14	"PRECON"
	Neutral	White		
	Spare	Red		
3	Highway Luminaire	Black	8 or 6	Circuit No.
	Highway Luminaire	Red		Circuit No.
	Highway Luminaire Spare	White		
5	Photo Electric Control	Black	14	PEC
	Load to Contactor	Red		
	Neutral	White		
	Spare	Orange		

	Spare	Green		
3	Service to Controller	Black	6 or 4	"SIG"
	Neutral	White		No Band
	Spare	Red		No Band
3	Sign Luminaire	Black	8	SIGN
	Sign Luminaire	Red		SIGN
	Sign Spare	White		

Use size 10 AWG wire for illumination tap conductors. In an electrolier, the illumination tap conductors run from the fused disconnect kit to the ballast in the luminaire. Furnish conductors with black, red, or white colored insulation as required to identify the two phase and neutral conductors, respectively.

If conductors in controller cabinets carry the full signal load circuit, use size 10 AWG or larger conductors. Use orange-colored conductors from the flash transfer relay to program emergency flashing operation.

2. Illumination Cables. For cables that consist of three size 6 or 8 AWG conductors, furnish power cables that feature three conductors, each insulated with cross-linked polyethylene, and a black, low density, high molecular weight polyethylene jacket. Use insulated conductors listed as type XHHW-2. Furnish these cables with one black, one white, and one red colored conductor and no grounding conductor. Use cables rated for 600 volts AC operation.

   Use insulated conductors meeting UL Standard 44. The jacket must also meet NEMA No. WC70.

3. Power Cables. For cables that consist of three size 4 AWG and larger conductors, furnish tray cables that feature three conductors, each insulated with cross-linked polyethylene that meets the requirements of XHHW-2, and a polyvinyl chloride (PVC) jacket. Furnish these cables without an integral grounding conductor. Use cables manufactured according to UL Standard 1277, ICEA S-95-658, and NEMA No. WC70. Provide cables listed for direct burial and resistance to sunlight and rated for 600 volts AC operation.

   Furnish these cables with black conductor insulation with one printed number (1, 2, or 3) identifying each conductor.

4. Control Cables. Wire with signal cable meeting IMSA 20-1 all vehicular signal heads, pedestrian signal heads, pedestrian push button detectors, flashing beacons, hardwired local coordination and preemption devices, and photoelectric controls.

5. Detector Loops. Use No. 14 AWG conductors for detector inductive loops that meet IMSA Specification 51-3, Type RHW/USE, or IMSA Specification 51-5, when called for on the Plans or specified in the Special Provisions.

6. Loop Lead-In Cables. Unless otherwise specified, use a tray cable that conforms to the following specifications to connect the loop detectors to the terminal blocks in the controller cabinet. Furnish this cable, also known as Snyder Cable; manufactured according to UL Standard 1277. Supply these cables third party certified as Type TC and certified for use in underground conduit or as an aerial cable supported by a messenger and rated for 600 volts AC operation.

   Use size 18 AWG, 16 strand, tinned copper conductors per ASTM B33 insulated with wet-rated, cross-linked polyethylene similar to XHHW. Furnish conductors with insulation colors that match Table 660-1 twisted into pairs.

Provide each twisted pair with an overall aluminum foil coated mylar shield that provides 100% coverage and a 20 AWG tinned copper drain wire that is in constant contact with the foil side of the shield. Apply a tight-fitting polyvinyl chloride jacket over the conductor assembly.

Only use the following loop lead-in cable, also known as shielded data cable, to rewire existing traffic signals when specified. Use cables that consist of 7 twisted pairs that consist of stranded, size 18 AWG tinned copper wire and polyethylene or polypropylene insulation. Furnish each pair covered with an aluminum foil shield, stranded copper drain wire, and an overall PVC or PE jacket. Use cable rated for 300 volts and whose colored pairs match those specified in Table 660-1.

7. Telemetry Cable. Use interconnect cable that consists of solid copper conductors of the number of pairs called for in the Plans meeting the requirements of Rural Utilities Service (formerly the Rural Electrification Administration (REA) specification PE-39 for filled telephone cables. The shield may be either copper or aluminum.

TABLE 740-3

INTERCONNECT TERMINATION TABLE

TELEMETRY CABLE: Type PE-39, No. 19 AWG, Solid Copper, as noted on the Plans or in the Special Provisions					
Pair No.	**Tip**	**Ring**	**Pair No.**	**Tip**	**Ring**
1	White	Blue	14	Black	Brown
2	White	Orange	15	Black	Slate
3	White	Green	16	Yellow	Blue
4	White	Brown	17	Yellow	Orange
5	White	Slate	18	Yellow	Green
6	Red	Blue	19	Yellow	Brown
7	Red	Orange	20	Yellow	Slate
8	Red	Green	21	Violet	Blue
9	Red	Brown	22	Violet	Orange
10	Red	Slate	23	Violet	Green
11	Black	Blue	24	Violet	Brown
12	Black	Orange	25	Violet	Slate
13	Black	Green			

HARDWIRE CABLES: IMSA Type 20-1, (2) 7 conductor No. 14 AWG			
Cable No. 1		Cable No. 2	
Circuit	**Color**	**Circuit**	**Color**
Cycle 2	Green	Offset 1	Green
Cycle 3	Orange	Offset 2	Orange
Cycle 4	Red	Offset 3	Red
Free	Blue	Split 2	Blue
Common	White	Common	White
Spare	Black	Spare	Black
Spare	White/Black	Spare	White/Black

740-2.06 ELECTRICAL CONDUIT. Unless specified otherwise, use rigid metal conduit and fittings for raceways. Furnish galvanized rigid type conduit and elbows conforming to UL Standard 6 and are manufactured of mild steel according to ANSI C80.1. Furnish third party certified fittings designed for rigid metal conduit.

For loop detectors, use Schedule 80 polyvinyl chloride (PVC) conduit that conforms to UL Standard 651. Use PVC fittings meeting NEMA TC 3.

When polyethylene conduits are specified in the Plans, use a smooth wall, schedule 40, high-density polyethylene (HDPE) pipe that conforms to UL Standard 651 B and NEMA TC-7-2000.

Furnish insulated throat grounding bushings made of malleable iron or steel with a mechanically galvanized or zinc plated finish. Grounding lugs shall either be an integral part of the bushing or consist of an attached tin-plated copper saddle. Grounding lugs shall feature a stainless-steel screw, the

centerline of which falls within 20 degrees of conduit centerline. The bushings furnished shall also feature a stainless steel or brass mounting screw that locks the bushing onto the conduit end.

Furnish conduit outlet bodies and their covers with a hot dip galvanized finish and stainless-steel screws. For loop detectors, furnish Type X bodies and, for photoelectric control installation, furnish Types C and LB conduit bodies.

When Myers hubs are specified, furnish rain tight, grounding type hubs made of malleable iron with a hot dip or mechanically galvanized finish.

At expansion joints, provide watertight expansion fittings capable of the following movements without damaging the conduits attached to it or the conductors that pass through it. The movements include: axial expansion or contraction to 3/4 inch, angular misalignments in any direction to 30 degrees, and parallel misalignment of the conduits to 3/4 inch. The fittings shall also include a braided copper bonding jumper equal to an 8 AWG conductor, bushings to prevent scraping the conductors, and a smooth inner sleeve that maintains a constant diameter regardless of conduit alignment.

740-2.07 FUSED SPLICE CONNECTORS. Use fused, quick disconnect, splice connector that is weather tight and has two halves: a single-unit line side socket and a load-side plug. For LED fixtures, use fuses that are 5 amperes, midget (13/32" x 1-1/2") ferrule type with a time delay (slow blow) type design. For all other fixtures, use 10 amperes, midget (13/32" x 1-1/2") ferrule type with a fast acting current limiting design.

740-2.08 SIGN SWITCHES. Provide a NEMA 3R non-fused disconnect switch as shown on the Plans for each sign illumination installation.

740-2.17 FLASHING BEACONS. Furnish beacons that consist of one or more traffic signal sections meeting the requirements of Subsection 740-2.14 Vehicular Signal Heads. See the Plans for the number, size and color of the signal sections required for each beacon.

Use the flasher in signal controller cabinets to energize beacons that flash continuously and are installed near traffic signals. Otherwise, each flashing beacon controller assembly consists of the following 120 VAC equipment housed in a NEMA 3R enclosure: a circuit breaker, a radio interference suppressor, a transient voltage suppressor, a NEMA Type 3 flasher, neutral and ground busses, and terminal blocks. The cabinet assembly shall contain a thermostatically controlled incandescent cabinet light with a door activated bypass switch. The cabinet light fixture shall be an incandescent type porcelain lamp holder rated for 660W-250V AC/CA. the lamp shall be 75W.

Controller assemblies for school zone speed limit sign beacons shall also include a time switch.

The NEMA 3R enclosure shall feature a hinged door. Hinge shall run the full length of the enclosure and shall be attached to the left side of cabinet. The door locking mechanism shall contain a Best CX series lock with a Best blue construction core lock. Provide two keys for lock.

The AC transient voltage and radio interference suppressors shall meet the requirements of Subsections 740-2.11.1.k. (3) and (4), respectively.

Use a solid state NEMA Type 3 flasher meeting the requirements of NEMA Standard TS 1-1989, Traffic Control Systems.

Use 20 ampere, 600 volt barrier type phenolic terminal blocks with plated brass screw type terminals. Field wiring termination blocks shall be sized to accept No. 8 AWG conductors. Power feed termination block shall be a single three (3) position box lug type terminal block capable of accepting up to No. 6 AWG conductors for terminating power feed cable.

Furnish an RTC Manufacturing model AP22 time switch complete with wiring harness, or an approved, calendar programmable, solid state time switch with liquid crystal display, keyboard, input/output port, and wiring harness. The approved time switch shall:

1. Operate on line voltages from 95 to 135 VAC, operate in temperatures from -22° F to 165° F, and include a capacitor that provides 48 hours of backup power to retain programming and time when the unit is disconnected from AC voltage.

2. Include a backlit display and provide 2 lines of alphanumeric legend with 16 characters per line. The display shall automatically prompt the operator while programming the device through the keyboard for ease of use.
3. Include an input/output port and keyboard activated special functions that transfer the program to other units and download the program to a printer for a hard copy record of the program.
4. Automatically compensate for changes in Daylight Savings Time and leap years and include a keyboard activated special function to quickly change the dates for the begin and end of Daylight Savings Time.
5. Provide at least 10 basic plans for daily and/or weekly use and at least 200 program steps that are equally divided amongst the actual number of basic plans. Each program step shall be assignable to a single day, weekend, weekday, or every day. The time switch shall also include 20 plans that activate the basic plans to provide one year of time based control.
6. Include 2 single pole double throw, relay controlled outputs rated for 15 amperes of resistive load at 115 VAC. Each pole shall be independently activated for steady on or momentary on and be manually switched on through the keyboard.
7. Provide a 9 pin RS232 serial I/O port connector on the unit for programming via laptop, Ethernet, or cellular.

When a signal controller cabinet flasher is used to energize a beacon, furnish a two pole, fused block with built in fuse pullers to protect the flasher. Furnish third party certified blocks that hold 13/32" x 1-1/2" midget ferrule fuses, are rated for 30 amperes, and feature tubular screw terminals that accommodate conductors to 8 AWG. Furnish blocks with two fast acting, 3 ampere (BAF-3) fuses, and flat bases that can be directly mounted on a dead panel.

740-2.18 LUMINAIRES. Furnish roadway and intersection luminaires that conform to the following specifications and provide the light distributions specified. When luminaire performance criteria are specified, luminaires shall also:

1. Meet or exceed the minimum initial light levels indicated.
2. Provide light distribution uniformity ratios and veiling luminance ratios equal to or less than the maximums indicated.

When luminaire performance criteria are specified, submit the following information for each luminaire type and light distribution type specified: luminaire specifications, the lumen output of the lamps that will be furnished, and current electronic photometric data to the Engineer for approval. Furnish the photometric data in Illuminating Engineering Society (I.E.S.) format. The Engineer will use software that calculates light levels and uniformity ratios according to the American National Standard Practice for Roadway Lighting, A.N.S.I./I.E.S. RP-8 to verify each luminaire provides the light levels, uniformities, and veiling luminance ratios specified.

When cut off distributions are specified, furnish luminaires with flat glass lenses (when used) and a full cutoff light distribution as defined in the American National Standard Practice for Roadway Lighting, A.N.S.I./I.E.S. RP-8, dated 2014.

The following luminaires are proven to meet A.N.S.I/I.E.S. RP-8-14 light levels, uniformities, and veiling luminance ratios as specified in the plans, but are still subject to verification:

1. <u>Roadway luminaire</u>
   a. N/A
2. <u>Intersection luminaire</u>
   a. Cooper Verd – CA2
   b. Current ERL2
   c. Leoteck GCM3-60J

Luminaires General

Install luminaires that feature:

a. Corrosion resistant enclosures with gray painted finish, cooling elements not required to be painted, and space for the ballast.

   (1) Painted or finished luminaire surfaces exposed to the environment shall exceed a rating of six (6), after 1,000 hours or four (4) of 5,000 hours salt spray test according to ASTM D1654 and ASTM B117 testing. The coating shall exhibit no greater than 30% reduction of gloss, according to ASTM D523, after 500 hours of ASTM G154 Cycle 6 QUV® accelerated weathering testing.

b. All luminaires shall have ANSI C136.15 external labels and ANSI C136.22 internal labels. The luminaire shall be listed for wet locations by a nationally recognized testing laboratory (NRTL) as defined by OSHA and shall be in compliance with UL 8750 and UL 1598. It shall be identified as such by a tag/sticker on the inside of the luminaire.

c. All hardware shall be stainless steel or suitably corrosion resistant to match the 20-year expected life of the fixture. Captive screws are required on any component that requires maintenance after installation.

d. Glass lenses, unless polycarbonate resin refractors are specified.

e. Terminal blocks for attaching the illumination tap conductors.

f. Aluminum reflectors with an ALZAK or ALGLAS finish when using HPS fixtures.

g. Optical components free of substances that affect photometric performance, paint.

h. Housings cast with no provision for a photoelectric control receptacle.

i. For HPS fixtures; airtight reflector and lens units that breathe through activated charcoal filters and include elastomer gaskets to seal the gap between the two components, gasket material must withstand the temperatures involved and be securely held in place.

j. For HPS fixtures include plug in starting aids with lamps through 400 watts.

1. Luminaires – High Pressure Sodium; Cobrahead and Offset/Turnpike.

Furnish HPS fixtures that feature a rated life of 40,000 hours based on 10 hours per start and ballasts that conform to Subsection 740-2.21. Each cobrahead or offset luminaire shall also include:

a. An easily removed hinged door used exclusively for mounting the ballast.

b. A second door that frames the lens (for HPS), hinges on the house side, and fastens on the street side with an automatic type latch.

c. A two (2) or four (4) bolt mounting brackets that is designed to fit a 2-inch nominal diameter standard pipe and feature a center pivot for leveling the luminaire.

Offset luminaires shall also include knuckle style pole top adapters that are sized to fit 2 inch nominal diameter standard pipe and feature a wire way meeting NEC requirements for installing three size 10 AWG conductors between the pole and the terminal block located in the luminaire.

2. Luminaires – LED.

a. General. The luminaire shall be assembled in the United States and shall be assembled by and manufactured by the same Manufacturer. For easy removal, quick-connect/disconnect plugs shall be supplied between the discrete electrical components within the luminaire such as the driver, surge protection device, and optical assembly. The quick-connect/disconnect plugs shall be operable without the use of tools and while insulated gloves are worn. The luminaire shall be in

compliance with ANSI C136.37 LED light source(s), and driver(s) shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU.

(1) Manufacturer Experience. The luminaire shall be designed to be incorporated into a lighting system with an expected 20-year lifetime. The luminaire Manufacturer shall have a minimum of 20 years' experience manufacturing high-intensity discharge (HID) roadway luminaires and shall have a minimum of 5 years' experience manufacturing LED roadway luminaires. The Manufacturer shall have a minimum of 5,000 total LED roadway luminaires installed on a minimum of 30 separate installations, all within the United States.

b. Housing. The housing shall be designed to ensure maximum heat dissipation and to prevent the accumulation of water, ice, dirt, and debris. A passive cooling method with no moving or rotating parts shall be employed for heat management. The effective projected area of the luminaire shall not exceed 1.2 sq. ft. The total weight of the luminaire(s) and accessories shall not exceed 55 lb.

c. Optical Assembly. The LED optical assembly, consisting of LED packages, shall have a minimum ingress protection rating of 66 (IP66) as defined in ANSI/IEC 60529. Circuiting shall be designed to minimize the impact of individual LED failures on the operation of the other LEDs.

The optical assembly shall utilize high-brightness, long-life LEDs with a minimum color rendering index (CRI) of 70, 3000 K (+/- 200 K) color temperature, and binned according to ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass. Provisions for house-side shielding shall be specified along with means of attachment.

Lumen depreciation at 50,000 hours of operation shall not exceed 15% of initial lumen output at the specified LED drive current and an ambient temperature of 77°F (25°C).

The assembly shall have individual serial numbers or other means for Manufacturer tracking.

(1) Photometric Performance Testing. Luminaires shall be tested according to IES LM-79. The laboratory performing this test shall hold accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) under NIST. Submitted reports shall have a backlight, uplight, and glare (BUG) rating according to IESNA TM-15, including a luminaire classification system graph with both the recorded lumen value and percent lumens by zone.

Lumen maintenance shall be measured for the LEDs according to LM-80, or when available for the luminaires according to LM-84. The LM-80 report shall be based on a minimum of 6000 hours; however, 10,000-hour reports shall be provided for luminaires in cases in which tests have been completed.

Thermal testing shall be provided according to UL 1598. The luminaire shall start and operate in the ambient temperature range specified. The maximum rated case temperature of the driver, LEDs, and other internal components shall not be exceeded when the luminaire is operated in the ambient temperature range specified.

Mechanical design of protruding external surfaces such as heat sink fins shall facilitate hose-down cleaning and discourage debris accumulation. Testing shall be submitted when available to show that the maximum rated case temperature of the driver, LEDs, and other internal components are not exceeded when the luminaire is operated with the heat sink filled with debris.

(2) Calculations. Complete point-by-point luminance and veiling luminance calculations as well as listings of all indicated averages and ratios as applicable shall be provided according to IES RP-8 recommendations. Lighting calculations shall be performed using AGi32 software with calculations performed to two decimal places (i.e., x.xx cd/m2). Calculation results shall demonstrate that the submitted luminaire meets the lighting metrics specified in the plans. Scotopic or mesopic factors will not be allowed.

(3) Lumen Maintenance Projection. The LEDs shall have long-term lumen maintenance documented according to IESNA TM-21, or when available for the luminaires according to IESNA TM-28. The submitted calculations shall incorporate an in situ temperature measurement test (ISTMT) and LM-80 data with TM-21 inputs and reports according to the TM-21 calculator, or when available an ISTMT and LM-84 data with TM-28 inputs and reports according to the TM-28 calculator. Ambient temperature shall be 77°F (25°C).

d. Driver. The driver for the luminaire shall be integral to the unit. It shall be mounted in the rear of the luminaire on the inside of a removable door or on a removable mounting pad. The removable door or pad shall be secure when fastened in place, and all individual components shall be secured upon the removable element. Each component shall be readily removable from the removable door or pad for replacement.

The driver shall be installed in a manner to keep it mechanically separated from the LED array heat sink.

(1) Circuit Protection. The driver shall tolerate indefinitely open and short-circuit output conditions without damage.

(2) Ingress Protection. The driver itself shall have an IP65 or IP66 rating, not the housing. Do not gasket the driver door or seal in order to prevent condensation and allow for draining.

(3) Input Voltage. The driver shall be suitable for operation over a range of 120 to 277 V or 347 to 480 V as required by the system operating voltage.

(4) Operating Temperature. The driver shall have an operating ambient temperature range of -40°F to 131°F (-40°C to 55°C).

(5) Driver Life. The driver shall provide a lifetime of 100,000 hours at an ambient temperature of 77°F (25°C).

(6) Safety/UL. The driver shall be listed under UL 1012 or UL 1310.

(7) Power Factor. The driver shall maintain a power factor of 0.9 or higher and total harmonic distortion of less than 20%.

(8) Driver Efficiency. The driver shall have a minimum efficiency of 90% at maximum load and a minimum efficiency of 85% for the driver operating at 50% power, with driver efficiency defined as output power divided by input power.

(9) Electrical Interference. The driver shall meet the electromagnetic compatibility (EMC) requirements for Class A digital devices included in the FCC Rules and Regulations, Title 47, Part 15.

(10) Thermal Fold Back. The driver shall reduce the current to the LED module if the driver is overheating as a result of abnormal conditions.

(11) Dimming. The driver shall have 0 to 10 V dimming capability.

(12) Leakage Current. The driver shall comply with safety standards according to IEC 61347-1.

e. Surge Protection Device (SPD). SPD shall be labeled as Type 4 in accordance with UL 1449 and be an integral part of the luminaire. It shall provide a minimum system protection level of 10 kV, 10 kA. To protect for a 10 kV, 10 kA surge the required clamping voltage of the external metal oxide varistor (MOV) or other SPD shall be lower than 1 kV at 8 kA {(10 kV – 2 kV)/1 ohm = 8 kA}.

The SPD shall comply with the following standards:

(1) IEEE C62.41.1, IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits,

(2) IEEE C62.41.2, IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits,

(3) IEEE C62.45, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits, and

(4) ANSI C136.2, American National Standard for Roadway and Area Lighting Equipment — Luminaire Voltage Classification.

The SPD and performance parameters shall be posted at www.UL.com under category code VZCA2.

f. Photoelectric Control. Furnish fixtures with a built in ANSI C136.41 7-pin twist type photo cell receptacle. Receptacles shall be provided with shorting caps.

g. Failed Equipment and Workmanship. The luminaire and all of its components, for the term of the Contract, from initial installation through final acceptance 105-1.16, when directed, promptly replace failed equipment and repair failed workmanship.

(1) Negligible light output from more than 10% of the LED packages,

(2) Moisture inside the optical assembly,

(3) Driver that continues to operate at a reduced output, and/or

(4) Other failed conditions that do not meet specifications.

h. Submittal Requirements. The Contractor shall submit, for approval, an electronic version of all associated luminaire IES files, AGi32 files, and the TM-21 or TM-28 calculator spreadsheet with inputs and reports associated with the project luminaires. The Contractor shall also provide an electronic version of each of the following Manufacturers' product data sheets for each type of luminaire.

(1) Descriptive literature and catalog cuts for luminaire, LED package, driver, and surge protection device;

(2) LED drive current, total luminaire input wattage, and total luminaire current at the system operating voltage or voltage range and ambient temperature of 77°F (25°C);

(3) Luminaire efficacy expressed in lumens per watt (lpw) per luminaire;

(4) Initial delivered lumens at the specified color temperature, drive current, and ambient temperature;

(5) Computer photometric calculation reports;

(6) TM-15 BUG rating report;

(7) Certification of Manufacturers' experience and certification that luminaires were assembled in the United States;

(8) Supporting documentation of compliance with ANSI standards, as well as listing requirements;

(9) Supporting documentation of laboratory accreditations and certifications for specified testing;

(10)Thermal testing documents;

(11)IES LM-79, LM-80 (or LM-84), and TM-21 (or TM-28) reports;

(12)Salt spray (fog) test reports and certification;

(13)Vibration characteristics test reports and certification;

(14)IP test reports;

(15)Manufacturer written warranty; and

(16)Luminaire installation, maintenance, and washing instructions.

3. Lenses.

When polycarbonate resin lenses are specified, the fabricator shall furnish certified lenses conforming to the following criteria:

a. The lenses are molded in a single piece from virgin polycarbonate resin.

b. The lenses are free from cracks, blisters, burns, and flow lines, and furnished with the natural molded surface.

c. The lenses are of uniform density throughout and free from air, gas, or moisture pockets, and uncured areas.

d. The lenses are transparent with a clear bluish tint, produced from ultraviolet stabilized resin to reduce the effects of ultraviolet radiation on their color properties.

e. The resins used meet the requirements for the self-extinguishing classification of ASTM D 635 and feature a minimum impact strength, Izod notched of 12 foot pounds per inch when tested according to ASTM D 256, Method A, using a 1/8 inch by 1/2 inch bar molded according to ASTM recommended practice.

740-2.20 ILLUMINATION CONTROL.

When indicated in the plans, provide a GE LightGrid™ ELWC-Cellular node for each load center. Prior to installing the nodes, the Contractor shall deliver them to DOT&PF M&O for programming. After the nodes have been programmed, the Contractor shall retrieve and install them. For each node, attach the barcode sticker from the manufacturer to the inside of the load center door.

Otherwise, provide each load center with photoelectric controls capable of directly switching multiple lighting systems. Furnish photoelectric units designed for pole top mounting which include a slip-fitter, terminal block, and cable supports or clamps to support pole wires.

1. Photoelectric Unit. A light sensitive element connected directly to a normally closed, single-pole throw control relay without intermediate amplifications. Plug the unit into a phenolic resin twist lock receptacle set in a cast aluminum mounting bracket with a threaded base. Screen photoelectric units to prevent artificial light from causing cycling.

   Use either horizontal sensing or zenith sensing type units meeting the following:

   a. A supply voltage rating of 60 Hz, 105-277 volts

   b. A maximum rated load at a minimum of 1,800 volt-amperes

   c. An operating temperature range from -40 °F to +150 °F

   d. A power consumption of less than 10 watts

   e. A unit base with a 7-pin, EEI-NEMA standard, twist-lock plug mounting

Furnish units for highway lighting that have a “turn-on” between 10.8 and 54 lux and a “turn-off” at between 1.5 and 5 times “turn-on.”

Furnish units for illuminated signs that have a “turn-on” level of between 215 and 270 lux. (“Turn-on” level specified above corresponds to a switching level of approximately 430 to 540 lux measured in the horizontal plane.) "Turn-off" level must not exceed 3 times “turn-on” level.

Measurements must meet the procedures in EEI-NEMA *Standards for Physical and Electrical Interchangeability of Light-Sensitive Control Devices Used in the Control of Roadway Lighting*.

2. Temperature Switch. When mercury vapor sign lighting fixtures are used, provide a temperature switch in each photoelectric control circuit for lighting systems which will:

   a. bypass the photoelectric unit when the ambient temperature drops to -13 °F, and energize the mercury vapor light circuits;

   b. return switching functions to the photoelectric unit upon a temperature rise of 5 to 10 °F above the turn-on temperature; and

   c. have a minimum range of (-40 °F to +40 °F), and be setable in increments no greater than 5 °F.

APPENDIX A

CONSTRUCTION SURVEY REQUIREMENTS

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APPENDIX B

ENVIRONMENTAL PERMITS

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APPENDIX C

MATERIAL CERTIFICATION LIST

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HIGHWAY MATERIALS CERTIFICATION LIST

Project Name: Seldon Rd Extension Ph II: Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)

Project Number: 0001723/CFHWY00562

Project Engineer Signature:

Unshaded boxes indicate who approves the manufacturer's certificate of compliance or materials submittals. If two boxes aren't shaded, either approving authority may be used.

Materials Item	Specification	Construction		Design			Statewide Materials		Manufacturer/ Remarks	Certificate Location e.g.
	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
202 REMOVAL OF STRUCTURES AND OBSTRUCTIONS									CRSP = CR Special Provision	
Timber, Pressure Treated	202-2.01								CRSP	
Steel Pipe, Galvanized	202-2.01								CRSP	
Steel Fasteners, Galvanized	202-2.01								CRSP	
Reflectors	202-2.01								CRSP	
Mail Boxes	202-3.02/AK Std. Plans									
306 ASPHALT TREATED BASE COURSE										
Mix Design	306-3.01								CRSP	
Asphalt Binder	306-2.01								CRSP	
Anti-Strip Additives	306-2.01								CRSP	
401 HOT MIX ASPHALT PAVEMENT										
Mix Design	401-2.09								CRSP	
Liquid Anti-Strip Additive	Mix-Design									
Asphalt Binder	401-2.01								CRSP	
Joint Adhesive	401-2.03/702-2.05								CRSP	
Joint Sealant	401-2.04, 702-2.06								CRSP	
Warm Mix Asphalt	401-2.05/702-2.07								CRSP	
Asphalt Release Agent	401-2.06/702-2.08								CRSP	
603 CULVERTS AND STORM DRAINS										
Flexible Watertight Gaskets										

aded boxes under QPL do not indicate that the materials are currently on that list. They indicate materials with potential for being on the QPL once qualified.
ection 106-1.05 for submittal requirements.

Unshaded boxes indicate who approves the manufacturer's certificate of compliance or materials submittals. If two boxes aren't shaded, either approving authority may be used.

Materials Item	Specification	Construction		Design			Statewide Materials		Manufacturer/ Remarks	Certificate Location e.g.
	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
Ring Gaskets for Rigid Pipe & Precast Manhole Sections	705-2.05.1									
Ring Gaskets for Flexible Metal Pipe	705-2.05.2									
Elastomeric Seals for Plastic Pipe	705-2.05.3									
Non-Reinforced Concrete Pipe										
Non-Reinforced Concrete Pipe, __ inch	706-2.01									
Reinforced Concrete Pipe										
Round Pipe, __ Inch	706-2.02									
Elliptical Pipe, __ Inch	706-2.02									
End Section for __ inch Reinforced Concrete Pipe	603-2.01/Plans								CRSP	
Corrugated High Density Polyethylene (HDPE) Pipe										
Culverts, __ Inch	706-2.07								CRSP	
Underdrains, __ Inch	706-2.07								CRSP	
Corrugated Steel Pipe & Pipe Arches										
Zinc-Coated CSP, _ inch	707-2.01.1									
Zinc-Coated CSP Arch, _ inch	707-2.01.1									
Aluminum-Coated CSP Pipe, __ inch	707-2.01.2									
Aluminum-Coated CSP Pipe Arch, __ inch	707-2.01.2									
Aluminum-Zinc Alloy Coated CSP Pipe, __ inch	707-2.01.3									
Aluminum-Zinc Alloy Coated CSP Pipe Arch, __ inch	707-2.01.3									
Bituminous Coated Corrugated Steel Pipe, Pipe Arches and Underdrains, __ size	707-2.02									
End Sections for __ inch CSP Pipe	707-2.01/Plans									
End Sections for __ inch CSP Arch	707-2.01/Plans									
Corrugate Aluminum Pipe										

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ection 106-1.05 for submittal requirements.

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Materials Item	Specification	Construction		Design			Statewide Materials		Manufacturer/ Remarks	Certificate Location e.g.
	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
Corrugated Aluminum Alloy Pipe, __ inch	707-2.03									
End Section for __ inch Corrugated Aluminum Alloy Pipe, __ inch	707-2.03/Plans									
Galvanizing	716-2.07									
Culvert Marker Posts (Flexible Delineator Posts)	730-2.05								CRSP	
Culvert Marker Strap and Seals	603-2.01								CRSP	
607 FENCE										
Concrete Mix Design	550-2.02									
Barbed Wire	710-2.01									
Woven Wire	710-2.02									
Chain Link Fabric	710-2.03									
Fence Posts	710-2.05									
608 SIDEWALKS										
Asphalt Sidewalk										
Asphalt (HMA) Mix Design	608-2.01.2								CRSP	
Asphalt Binder	702-2.01								CRSP	
Detectable Warnings	608-3.04									
615 STANDARD SIGNS										
Sheet Aluminum	730-2.01/Plans									
High Density Overlaid Plywood	730-2.02									
Sign Framing Members	Plans								CR Detail	
Retroreflective Sheeting	730-2.03									
Orange Background Signs	615-2.01.2								CRSP	
Railroad Crossbucks & Vertical Crossbuck Support Panels	615-2.01.2								CRSP	
Non-Illuminated Overhead Signs	615-2.01.2								CRSP	

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	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
Fluorescent Yellow-Green School Area Signs	615-2.01.2								CRSP	
Reflective Sheeting Warranty	615-2.01.5								CRSP	
Sign Posts										
Metal Pipe Posts	730-2.04.1									
Perforated Steel Posts	730-2.04.2									
Finished Wooden Posts	730-2.04.3									
Pressure Treatment for Wooden Posts	730-2.04.3.b/714									
Preservative for Field cuts and holes	730-2.04.3.b									
Wide Flange Posts	730-2.04.4									
Flanged Channel Posts	730-2.04.5									
Square Non-Perforated Steel Tubes	730-2.04.6									
Zinc Coating for Repairs	730-2.04.6.b									
Flexible Delineator Posts	730-2.05								CRSP	
Acrylic Prismatic Reflectors	730-2.06									
Structural Tubing and W-Shape Beams.	730-2.04.7									
Sign Bases										
Slip Base	615-2.01.3/Plans								CRSP	
Breakaway Base	615-2.01.3/Plans								CRSP	
Frangible Couplings	615-2.01.3/ASP								CRSP	
Concrete Mix Design	615-2.01.3/ 501-2.02/550-2.02								CRSP	
618 SEEDING										
Seed	724									
Fertilizer	618-2.01/725								CRSP	
Soil Stabilization Material	727								CRSP	

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	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
630 GEOTEXTILE FOR EMBANKMENT SEPARATION AND STABILIZATION										
Geotextiles and Sewing Thread										
Separation	729-2.01.2									
Stabilization	729-2.01.3									
Reinforcement, Type __	729-2.01.5									
631 GEOTEXTILE FOR SUBSURFACE DRAINAGE AND EROSION CONTROL										
Geotextiles and Sewing Thread										
Subsurface Drainage	729-2.01.1									
Erosion Control	729-2.01.4									
633 SILT FENCE										
Geotextile, Erosion Control	729-2.01.4									
Silt Fence	729-2.02									
641 EROSION, SEDIMENT AND POLLUTION CONTROL										
Materials	641-2.05								CR Special Provision - 641 Control and Stabilization Materials identified and documented in SWPPP and approved on project.	
642 CONSTRUCTION SURVEYING AND MONUMENTS										
Monument Cases	642-2.01								CRSP	
Primary Monument	642-2.01								CRSP	
Secondary Monument	642-2.01								CRSP	
643 TRAFFIC MAINTENANCE										
Traffic Control Devices	643-3.04								CR Special Provision - 643 Materials approved on project with TCP conforming to Alaska Traffic Manual (ATM).	
670 TRAFFIC MARKINGS										
Traffic Paint, Glass Beads	708-2.03, 712-2.08									

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Materials Item	Specification	Construction		Design			Statewide Materials		Manufacturer/ Remarks	Certificate Location e.g.
	2020 or Std. Mod./Special Provisions, if noted	Project Engineer	Regional Materials or QA Engineer	Design Engineer of Record	State Bridge Engineer	Regional Traffic Engineer	*Qualified Products List (QPL)	State Materials or QA Engineer		Binder #
Methyl Methacrylate Pavement Markings, Beads, Anti-Skid Combined Cert.	712-2.17, 712-2.18								CRSP	
Raised and Recessed Pavement Markers	712-2.15/Plans									
Additional Materials										

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Project Name Seldon Rd Extension Ph II: Windy Bottom/Beverly Lakes Rd to Pittman Rd (MSB)

Project Number 0001723/CFHWY00562

Project Engineer Signature

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SECTION 660/661/669/740 MATERIALS CERTIFICATION LIST

Materials Item	Specification	Third Party Listing or Labeling Required? (Y/N)	Acceptance By:							Manufacturer/ Remarks	Certificate Location e.g. Binder #
			Construction		Design			Statewide Materials			
			Project Engineer	Regional Materials or QA Engineer	State Electrical Engineer	Regional Highway Data Manager	Regional Traffic Design Engineer	Qualified Products List (QPL)	State Materials or QA Engineer		
HIGHWAY LIGHTING SYSTEMS											
PCC STREET LIGHT POLE FOUNDATION: Cast in Place											
Concrete Mix Design	660-2.01	N									
Reinforcing Steel Bars	Std. Plans 709-2.01	N									
Anchor	Std. Plans	N									
Corrugated Metal Pipe	Std. Plans 660-3.02	N									
Frangible Couplings	Std. Plans	N									
PRECAST FOUNDATIONS	See Detail in Plans	N									
PIPE PILE ELECTROLIER FOUNDATION:											
Pipe Pile	See Detail in Plans 660-2.01 660-3.02	N									
Pile Adapter, Steel Plate	Plans 740-2.02	N									
JUNCTION BOXES:											
Type I / IA, II, III	See Detail in Plans 660-2.01 709-2.01 711-2.01	N									
Concrete Mix Design	501-2.02 660-2.01	N									
Curing Materials	711-2.01	N									
Reinforcing Steel	709-2.01	N									

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Materials Item	Specification	Third Party Listing or Labeling Required? (Y/N)	Acceptance By:							Manufacturer/ Remarks	Certificate Location e.g. Binder #
			Construction		Design			Statewide Materials			
			Project Engineer	Regional Materials or QA Engineer	State Electrical Engineer	Regional Highway Data Manager	Regional Traffic Design Engineer	Qualified Products List (QPL)	State Materials or QA Engineer		
Electronic ball marker	See Detail in Plans 660-3.04	N									
Junction Box Cover	See Detail in Plans 660-3.04	N									
LIGHTING STRUCTURES:											
Steel Poles	See Detail in Plans 740-2.02	N									
Galvanizing	740-2.02	N									
Shop Drawings	660-3.01 740-2.02	N									
Calculations	740-2.02	N									
Welding Plan	660-3.01 740-2.02	N									
Mill Certifications	740-2.02	N									
CONDUIT:											
Galvanized Rigid Metal Conduit (RMC)	740-2.06	Y									
High Density Polyethylene Conduit (HDPE)	740-2.06	Y									
High Density Polyethylene Couplings	660-3.03	Y									
Galvanized Couplings	740-2.06	Y									
Galvanized Split Couplings	740-2.06	Y									
Galvanized Elbows	740-2.06	Y									
Galvanized Nipples	740-2.06	Y									
Bore Casing	660-3.03	N									
Underground Marker Tape	660-3.03	N									
Pull Rope	660-3.03	N									
Type "C" and "LB" Conduit Outlet Bodies with Covers, Gaskets & Plugs	See Detail in Plans 740-2.06	Y									

SECTION 660/661/669/740 MATERIALS CERTIFICATION LIST

Materials Item	Specification	Third Party Listing or Labeling Required? (Y/N)	Acceptance By:							Manufacturer/ Remarks	Certificate Location e.g. Binder #
			Construction		Design			Statewide Materials			
			Project Engineer	Regional Materials or QA Engineer	State Electrical Engineer	Regional Highway Data Manager	Regional Traffic Design Engineer	Qualified Products List (QPL)	State Materials or QA Engineer		
BONDING & GROUNDING:											
Grounding Bushings	See Detail in Plans 740-2.06 660-3.01 660-3.06	Y									
Bare Copper Ground Wire	See Detail in Plans 660-3.06	N									
Braided Copper J-Box Lid Bonding Wire	See Detail in Plans 740-2.06 660-3.06	Y									
Irreversible Compression Type Connectors	See Details in Plans 660-3.02 660-3.06	Y									
CONDUCTORS / CABLES:											
Illumination Cable - PE Jacket	740-2.05	Y									
Power Cable - PE Jacket	740-2.05	Y									
Luminaire Tap Conductors	740-2.05	Y									
Identification Labels	660-3.05	N									
SPLICES:											
Heat Shrink Tubing	See Detail in Plans 660-3.05	Y									
Electrical Tape	See Detail in Plans 660-3.05	Y									
Power Cable Splice Kit (Lighting)	See Detail in Plans 660-3.05	Y									
Double Fuse Connector Kits (Lighting)	See Detail in Plans 740-2.07	Y									
Fuses for Double Fuse Connector Kits	See Detail in Plans 740-2.07	Y									

SECTION 660/661/669/740 MATERIALS CERTIFICATION LIST

Materials Item	Specification	Third Party Listing or Labeling Required? (Y/N)	Acceptance By:							Manufacturer/ Remarks	Certificate Location e.g. Binder #
			Construction		Design			Statewide Materials			
			Project Engineer	Regional Materials or QA Engineer	State Electrical Engineer	Regional Highway Data Manager	Regional Traffic Design Engineer	Qualified Products List (QPL)	State Materials or QA Engineer		
LIGHTING FIXTURES:											
LED Luminaire (include all additional requirements)	See Detail in Plans 740-2.18	Y									
HPS Luminaire, Lamp, Ballast	See Detail in Plans 740-2.18 740-2.21	Y									
Sign Lighting, Lamp, Ballast	See Detail in Plans 740-2.19	Y									
Underpass Luminaire, Lamp, Ballast	See Detail in Plans 740-2.23	Y									
ILLUMINATION CONTROL:											
Node	See Detail in Plans 740-2.20	N									
Gateway	See Detail in Plans 740-2.20	N									
Modem	See Detail in Plans 740-2.20	N									
661 ELECTRICAL LOAD CENTERS											
TYPE 1 & TYPE 1A FOUNDATIONS	Std. Plans 661-2.01	N									
Wood Posts (TYPE 2 & 3 FOUNDATIONS)	Std. Plans 661-2.01	N									
Treatment	Std. Plans 714-2.01	N									
BONDING & GROUNDING:											
Copper Ground Rod	Std. Plans 661-2.01	Y									
Ground Rod Clamps	661-2.01	Y									
Bare Copper Grounding Wire	Std. Plans 661-3.01	N									
COMPONENTS IN COMMON:											
Photoelectric Control	Std. Plans 740-2.20 661-2.01	Y									
Photocell Cable	Std. Plans 740-2.05	Y									

SECTION 660/661/669/740 MATERIALS CERTIFICATION LIST

Materials Item	Specification	Third Party Listing or Labeling Required? (Y/N)	Acceptance By:							Manufacturer/ Remarks	Certificate Location e.g. Binder #
			Construction		Design			Statewide Materials			
			Project Engineer	Regional Materials or QA Engineer	State Electrical Engineer	Regional Highway Data Manager	Regional Traffic Design Engineer	Qualified Products List (QPL)	State Materials or QA Engineer		
Contactor	Std. Plans 661-2.01	Y									
Load Panel	Std. Plans 661-2.01	Y									
Neutral Bus Bar System	Std. Plans 661-2.01	Y									
Ground Bus Bar System	Std. Plans 661-2.01	Y									
Terminals	661-2.01	Y									
Control Switch (selector switch)	Std. Plans 661-3.01	Y									
Uninterruptible Power Supply Cabinet	See Detail in Plans 661-2.01	Y									
Uninterruptible Power Supply Controller	See Detail in Plans 661-2.01	Y									
Uninterruptible Power Supply Batteries	See Detail in Plans 661-2.01	Y									
Power Transfer Switch	Std. Plans 661-2.01	Y									
Meter Socket	Std. Plans 661-2.01	Y									
Manual Circuit Closing Device	661-2.01	Y									
Circuit Breakers	Std. Plans 661-2.01	Y									
Galvanized Rigid Metal Conduit	Std. Plans 661-2.01	Y									
LOAD CENTER ASSEMBLIES:											
Type 1	Std. Plans 661-2.01	Y									
Type 1A	Std. Plans 661-2.01	Y									
Type 1A with UPS	See Details in Plans 661-2.01	Y									
Type 2	Std. Plans 661-2.01	Y									
Type 3	Std. Plans 661-2.01	Y									
TRANSFORMERS	661-2.01	Y									
ADDITIONAL MATERIALS:											

APPENDIX D

SIGN SHOP DRAWINGS

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APPENDIX E

TEMPORARY CONSTRUCTION EASEMENTS

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APPENDIX F

DRAFT PERMITS

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