

P-220 MOS			
Project Name:		Bethel Airport Parallel Runway Reconstruction	
Project #:		CFAPTO0429/AIP 3-02-0029-026-2019	
Design Reviewer:		Mitch Miller	
FAA Reviewer:		Ryan Feil	
Date:		5/20/2019	
#	Section	MOS Description	MOS Justification
1	P-220	Cement Treated Soil Base Course	<p>GENERAL: This project partially replaces an existing soil-cement layer that was constructed in 2008 (only portions of the runway are being impacted by this project). The original project stabilized the same material using the same specifications/techniques as is proposed for this project.</p> <p>The proposed <u>DOT&PF P-220 specification is closely modeled after the P-301 specification that controlled the original construction in 2008 (previously approved by FAA (AC-10G); Item number changed to P-220 in AC-10H).</u></p> <p>11 Samples recently taken from the existing layer exhibited unconfined compressive strengths ranging from 1,400 psi to 2,640 psi indicating a high quality bearing layer (higher than the recommended values given in P-220-3.1 Notes to Designer of 300-800 psi. The intent of this project is to mimic those results.</p>
2	P-220-2.1	Replace ASTM C150 with AASHTO M85 and eliminate AASHTO C595 (blended cements).	<p>AASHTO M85 is equivalent to ASTM C150. AASHTO C595 controls the use of blended cements; blended cements are historically not used in AK, presumably due to a lack of economic viability (there is no cost savings in using blended cements in AK).</p> <p>When possible, DOT&PF uses AASHTO testing standards rather than ASTM to provide consistent quality standards for highway and aviation projects. The majority DOT&PF acceptance procedures are performed according to AASHTO standards adopted or modified by the Western Alliance Quality Transportation Construction (WAQTC); 8 Western State DOT's and Western and Central Federal Lands Hwy Division of FHWA partnership who's purpose is to establish consistently high quality transportation projects in the western US.</p>
3	P-220-2.1	10H allows Type I, IA, II, or IIA. AK DOT allows only Type I or II cement.	The 'A' indicates air entrainment which isn't applicable when used to stabilize soil. The IA and IIA options were removed for this reason.
4	P-220-2.3	Table 1. Gradation Requirements	10H only requires the material to be 2.5-inch minus. The proposed gradation requirements are similar to 10G P-301 Soil-Cement Base Course; where no more than 45% of the material can be retained on the No. 4 sieve. DOT&PF specification also includes a maximum rock size of 1-inch and a maximum P200 content of 20%. The proposed ADOT&PF gradation was used in the original contract that constructed the existing soil-cement base and was developed as a result of testing. We would like to maintain these requirements in effort to maintain consistency between the new Soil-Cement material and the existing Soil-Cement material.
5	P-220-2.3	FAA Std requires sulfate content of less than 0.3%. AK Spec removes this requirement	1. In Bethel, there is not a Sulfate issue in soil. Soil can be used from a local source or on-site if it has been tested in accordance with this specification. 2. On previous projects, testing for sulfate content was not specified and the material performed adequately and did not show signs of expansion when sampled during the 2019 geotechnical investigation for this project. 3. due to thin cement treated layer (5 inches) the potential for significant expansion is minimal
6	P-220-3.1	Contractor's Soil-Cement Technician	ADOT&PF has required an experienced soil-mixing technician on many Aviation and Highway projects that included base stabilization; We have found them valuable in guiding the Contractor and State staff in regards to field adjustments required to deal with variations encountered during construction. This requirement was included in the original 2008 contract that constructed the existing soil-cement base course.
7	P-220-3.2	Composition of Mixture	This section is similar to 10H 220-3.1 Proportions; it addresses how the the estimated cement quantity was determined and how the actual cement quantity will be determined during construction (testing performed with material from the project).
8	P-220-3.3	Pre-Soil-Cement Production Meeting	Similar to Prepaving Meetings in the P401 section; DOT&PF has found these to be very useful in identifying methods and practices that will insure all the work is accomplished according specifications.
9	P-220-3.4	Weather Limitations, not designated as 10H P-220-4.2	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Weather Limitations (P-220-3.4). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.
10	P-220-3.5	Equipment, not designated as 10H P-220-4.2	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Equipment (P-220-3.5). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.

Ryan Feil's Comments

This should be added to the MOS list since you are proposing using AASHTO M85 rather than ASTM C595

The MOS for this section should include the proposed gradation since the 10H only requires soil be free of stones larger than 2-1/2 inches

Does not match 10H

Add to MOS list (new section)

Add to MOS list (new section)

220-3.4 is (10H) 220-4.2

220-3.5 is (10H) 220-4.4

11	P-220-3.6	Preparation, not designated as 10H P-220-4.5	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Preparation (P-220-3.6). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-3.5 is (10H) 220-4.5
12	P-220-3.7	Pulverization, not designated as 10H P-220-4.6	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Pulverization (P-220-3.7). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-3.5 is (10H) 220-4.6
13	P-220-3.8	Cement Application, Mixing, and Spreading, not designated as 10H P-220-4.7	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Cement Application, Mixing, and Spreading (P-220-3.8). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-3.5 is (10H) 220-4.7
14	P-220-3.9	Compaction, not designated as 10H P-220-4.8	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Compaction (P-220-3.9). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-3.5 is (10H) 220-4.8
15	P-220-3.10	Finishing, not designated as 10H P-220-4.9 Finishing and curing	DOT&PF Section 220-3.10 includes only requirements specifically related to finishing the soil-cement layer. It does not address all the requirements found in (10H) 220-4.9 Finishing and Curing; DOT&PF Section 220-3.12 Protection And Curing includes all the requirements of (10H) 220-4.9. Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Finishing (P-220-3.10). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Curing is included under section P-220-3.12 Protection and Curing.	220-3.10 is (10H) 220-4.9 (Add changes to MOS list)
16	P-220-3.11	Construction Joints, added new section	DOT&PF standard practice is to address joints in stabilized layers (both base courses and wearing courses) as independent sections due to the critical role these areas play in the durability of the finished product.	220-3.11 – Add to MOS list (new section) or combine into 220-3.13 to match 220-4.10 from - 10H
17	P-220-3.12	Protection and Curing, added new section.	This Section is the equivalent to 10H 220-4.9 Finishing and Curing. Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Protection and Curing (P-220-3.12). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. We cannot change our Statewide standard of formatting.	220-3.12 is 220-4.9 (Add changes to MOS list)
18	P-220-3.13	Construction Limitations, not designated as 10H P-220-4.10	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Construction Limitations (P-220-3.13). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. We cannot change our Statewide standard of formatting. Content is consistent with 10H.	220-3.13 is 220-4.10
19	P-220-3.14	Surface Tests, added new section	This section includes requirements described in 10H Section 220-4.11.a Surface Tolerance/Smoothness AND 10H Section 220-4.11.b Surface Tolerance / Grade.	220-3.14, 220-3.15 – Add to MOS list (new sections)
20	P-220-3.15	Thickness, added new section	This section is similar to 10H 220-4.12.b Thickness; DOT&PF spec requires more tests (1/500 SY) than the 10H Section 220-4.12.b (1/1200SY). Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Maintenance (P-220-3.12). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. We cannot change our Statewide standard of formatting.	220-3.14 , 220-3.15 – Add to MOS list (new sections)
21	P-220-3.16	Maintenance, not designated as 10H P-220-4.3	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. Construction Methods, Section 3, includes Maintenance (P-220-3.16). DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-3.16 is 220-4.3 (Should match -10H unless in MOS list)
22	P-220-10H	Section 220-4.11 from 10H is not included	Requirements in 10H Section 220-4.11 Surface Tolerance are included in DOT&PF Section 220-3.14 Surface Tests	220-4.11 and 220-4.12 are missing
23	P-220-10H	Section 220-4.12 from 10H is not included	Requirements in 10H Section 220-4.12 Acceptance Sampling and Testing are included in DOT&PF Section 220-3.9 Compaction AND 220-3.15 Thickness	
24	P-220-4.1	not designated as 10H P-220-5.1	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-4.1 is 220-5.1
25	P-220-4.1	DOT&PF removes this requirement for a Control Strip. The FAA Std. requires a control strip for the primary purpose of determining an allowable lift thickness (assumes a 12-inch min. layer thickness) and to determine a construction process that will provide the specified results (density, smoothness, etc).	Lift thickness on this project is limited to 5-inches. This will be constructed in a single lift which negates a major reason for the Control Strip. DOT&PF spec requires a pre soil-cement meeting where the Contractor outlines steps to assure production consistency , protection and curing of the soil-cement layer. DOT&PF Spec further requires the Contractor to employ a soil-mixing technician to guide the work. Specification also requires the Contractor to rework or replace areas of insufficient thickness or density at the Contractor's expense.	

26	P-220-4.2	not designated as 10H P-220-5.2	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. DOT&PF Standard Specifications format, Section 4, is Method of Measurement. Content is consistent with 10H.	220-4.2 is 220-5.2
27	P-220-4.8	(DOT&PF) P-220-3.9 COMPACTION: Replace ASTM D558 Std. Test Methods for Moisture-Density (Unit Weight) Relations of Soil Cement Mixtures with AASHTO T134 Std Method of Test for Moisture-Density Relations of Soil-Cement Mixtures	AASHTO T134 is the AASHTO equivalent to ASTM D558. This method was used during original construction that resulted in acceptable soil-cement strength and performance.	
28	P-220-4.8	(DOT&PF) P-220-3.9 COMPACTION: Replace ASTM D2216 with AASHTO T310. ASTM D2216 Std Test Methods for Laboratory Determination of Water (moisture) Content of Soil and Rock by Mass. AASHTO T310 In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods.	AASHTO T310 is the standard normally used by ADOT to determine in-place density in the field. This method was used during original construction that resulted in acceptable soil-cement strength and performance.	
29	P-220-5.1	not designated as 10H P-220-6.1	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. DOT&PF Standard Specifications format, Section 5, is Basis of Payment. Content is consistent with 10H.	220-5.1 is 220-6.1
30	P-220-5.2	not designated as 10H P-220-6.2	Section numbering conforms to DOT&PF Specifications prescribed by Statewide standard formatting. DOT&PF Standard Specifications format, Section 5, is Basis of Payment. Content is consistent with 10H.	220-5.2 is 220-6.2