FAA ALASKA REGION

MODIFICATION OF AIRPORT STANDARDS

BACKGROUND ANC_2020_15994 (CONDITIONAL)

Airport	Location (City, State)	LOC ID
ANC	ANCHORAGE, AK	PANC

Runway	
Affected Taxiway/TDG	
Design Aircraft (Each Runway/Taxiway)	N/A, Applies to all ADOT airports, Statewide
AIP Grant Number	
Passenger Charge Code (PFC)	

MODIFICATION OF STANDARDS

AC Number	Chapter	Paragraph	Page Num
150/5370-10H	P-620	all	

Title of Standard Being Modified (Cite Reference Document)	AC Published Date
Standard Specifications for Construction of Airports	2018-12-21

EB Number

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Title of Airport Engineering Brief	EB Published Date

Category	Materials
Sub Category	Miscellaneous, P-600's

1. Standard/Requirement

AC 150/5370-10H, ITEM P-620 Runway and Taxiway Marking

2. Proposed

See attachment

3. Explain Why Standard Cannot be Met (FAA ORDER 5300.1)

See attached MOS justification table

4. Discuss Viable Alternatives (FAA ORDER 5300.1)

No deviation from 150/5370-10H

5. Explain Why the Modification is Necessary to Conform to Local Laws and Regulations (if Applicable)

Not applicable

6. State Why Modification Would Provide Acceptable Level of Safety, Economy, Durability, and Workmanship (FAA ORDER 5300.1)

Proposed modification of Item "P-620" has no impact on Safety. Economy, Durability, and Workmanship, meet or exceed the requirements of 1502/5370-10H, facilitate administration of the construction contract, and/or reduces the risk of contractor claims.

7. Explain any Special Operational Procedures and/or Restrictions Necessary to Accommodate the Modification of Standards

Not applicable, there are none

SPONSOR

Full Name	Position	Date
Jefferson Jeffers	Standard Specifications Engineer	02/18/2020

REGION

Date of Latest FAA Signed ALP

02/17/2017

Recommendation

Approval

Full Name	Position	Date
Kristi Warden	Acting Div Director	03/20/2020

HEADQUARTERS

Recommendation

Approved with conditions.

Full Name	Position	Date
Khalil Kodsi	Manager Airport Engineering Division	03/25/2020

POST APPROVAL

Effective Start Date	Post Implementation Complete Date
03/25/2020	

COORDINATION USERS

Date	Name	Coordination level	Concur

CONDITIONS

Date	Condition	ADO	RO
03/25/2020	Paragraph P620-2.2 a (1) ~~Delete second sentence (see AC 150/5370-10H P620-2.2 the statement regarding 100% polymer is only applicable to type III markings~~) 100% polymer is applicable to type I and II markings as well per 10H	Not required	Pat Zettler
03/25/2020	Paragraph P620-3.8 Note retroreflectance testing only applicable at P139 airports (may be difficult in AK to find subcontractors with the equipment)	Not required	Pat Zettler

Retro-reflectance testing eligible for AIP participation only at Part 139 certificated airports. Rename paragraph from "*620-3.8 RETRO-REFFLECTANCE*" to "***620-3.8 RETRO-REFFLECTANCE TESTING (Part 139 certificated airports only)***"

ITEM P-620 RUNWAY AND TAXIWAY MARKING

DESCRIPTION

620-1.1 This item consists of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification. This item includes removal of existing painted markings from pavement surfaces as shown on the plans or as designated by the Engineer. Complete this work within the limitations of the project Construction Safety and Phasing Plan.

MATERIALS

620-2.1 MATERIALS ACCEPTANCE. The Contractor shall furnish manufacturer’s certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer’s surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive, and application requirements must be submitted and approved by the Engineer prior to the initial application of markings. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the Engineer. Provide manufacturer certification (Material Safety Data Sheet) showing that each product does not contain mercury, lead, hexavalent chromium, halogenated solvents, nor any carcinogen as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

620-2.2 MARKING MATERIALS. Paint shall be waterborne or solvent-base. Paint colors shall comply with Federal Standard No. 595, and Table 620-1. Use black paint to outline a border at least 6 inch wide around markings on all light colored pavements.

TABLE 620-1. MARKING MATERIALS

Paint[1]				Glass Beads[2]	
Type	**Color**	**Fed Std. 595 Number**	**Application Rate Maximum**	**Type**	**Application Rate Minimum**
II	White	37925	115 ft^2/gal	Type I, Gradation A	7 lb/gal)
II	Red	31136	115 ft^2/gal	Type I, Gradation A	5 lb/gal
II	Yellow	33538 or 33655	115 ft^2/gal	Type I, Gradation A	7 lb/gal
II	Black	37038	115 ft^2/gal	Not used	Not Used
II	Pink	1 part 31136 to 2 parts 37925	115 ft^2/gal	Type I, Gradation A	5 lb/gal
II	Green	34108	115 ft^2/gal	Not Used	Not Used

[1] See subsection 620-2.2a
[2] See subsection 620-2.2b

a. Paint

(1) Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis. Use waterborne paint only for temporary markings.

(2) Solvent-Base. Paint shall meet the requirements of Commercial Item Description A-A-2886B Type II, Gradation A. Use solvent-based paint only for permanent markings.

b. Reflective media. Glass beads shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Glass beads shall comply with Table 620-1.

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with subsection 620-2.1. Discontinue painting when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Do not apply markings when weather conditions are forecasted to not be within the manufacturers' recommendations for application and dry time.

620-3.2 EQUIPMENT. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross sections and clear-cut edges without running or spattering and without over spray. Marking equipment for both paint and glass beads shall be calibrated daily.

620-3.3 PREPARATION OF SURFACES. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminates that would reduce the bond between the paint and the pavement.

a. PREPARATION OF NEW PAVEMENT SURFACES. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the Engineer to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface. Areas which cannot be satisfactorily cleaned by brooming and blowing shall be scrubbed as directed with a 10% solution of tri-sodium phosphate or an equally suitable solution. After scrubbing, the solution shall be rinsed off and the surface dried prior to painting.

b. PREPARATION OF PAVEMENT TO REMOVE EXISTING MARKINGS. Where indicated on the plans, use high pressure water to remove all visible indications of existing painted markings from pavement surfaces. Do not paint over existing markings. Remove pavement markings to the fullest extent possible without materially damaging the pavement surface, color, or texture. Group adjacent markings together into a larger rectangular removal area in conformance with FAA AC 150/5340-1, paragraph 1.3.f. and Figure 1-1, Figure 1-2, Figure 1-3 and Figure 1-4. Collect and dispose of all loose or waste material as needed to prevent interference with drainage or to prevent dusty conditions under traffic, wind, or propellers. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

c. PREPARATION OF PAVEMENT MARKINGS PRIOR TO REMARKING. Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the Engineer. After removal, the surface shall be cleaned of all residue or debris according to 620-3.3.a.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufacturer's application and surface preparation requirements must be submitted to the Engineer prior to the initial application of markings.

620-3.4 LAYOUT OF MARKINGS. The proposed markings shall be laid out in advance of the paint application. Layout markings and glass beads in advance of paint application at the locations shown on the Plans according to the tolerances in section 620-3.5 and according to the requirements of G-135. Space control points at such intervals to ensure accurate location of all markings. Provide an experienced technician to supervise the location, alignment, layout dimensions, and application of the paint.

620-3.5 APPLICATION. A period of 7 days minimum shall elapse between placement of surface course or seal coat and application of the permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the Plans. Paint shall not be applied until the layout and condition of the surface has been approved by the Engineer.

The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacing shall be within the tolerances shown in Table 620-2:

TABLE 620-2. MARKING DIMENSIONS AND SPACING TOLERANCE

Dimension and Spacing	Tolerance
36 inch or less	±1/2 inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 620-1. The addition of thinner will not be permitted.

Pressure apply glass beads upon the marked areas at the locations shown on the Plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 620-1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

Apply temporary markings, if required, as directed by the Engineer. If pavement is opened to traffic before the pavement curing period is complete, apply paint in two coats. Apply the first coat at least 12 hours after paving is completed at 30 to 50 percent of the total application rate. Apply an additional coat at 100 percent of the total application rate following pavement curing time and after pavement grooving operations in affected areas. The direction of the second application shall be 180 degrees from the first to ensure complete coverage. Apply glass beads, if required, in the second coat only.

Return all emptied containers to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.6 NOT USED.

620-3.7 CONTROL STRIP. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the Engineer. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the

prescribed application rate of paint and population of glass beads, according to Table 620-1, that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

620-3.8 RETRO-REFLECTANCE TESTING (PART 139 CERTIFICATED AIRPORTS ONLY). Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 reading shall be taken over a 6 square foot area with 3 readings taken from each direction. The average of all readings which are within 30% of each other shall be equal to or above the minimum levels shown in Table 620-3.

TABLE 620-3. MINIMUM RETRO-REFLECTANCE VALUES

Material	Retro-reflectance mcd/m^2/lux		
	White	**Yellow**	**Red**
Initial Type I	300	175	35
All materials, remark when less than[1]	100	75	10

[1] 'Prior to remarking determine if removal of contaminants on markings will restore retro-reflectance

620-3.9 PROTECTION AND CLEANUP. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1 RUNWAY AND TAXIWAY PAINTING BY UNIT AREA. If runway and taxiway painting by unit area appears in the bid schedule, then new painted markings will be so measured.

620-4.2 REFLECTIVE MEDIA. If reflective media by unit weight appears in the bid schedule, then this material will be so measured. If reflective media appears by lump sum in the bid schedule, or does not appear at all, it will not be measured.

620-4.3 RUNWAY AND TAXIWAY PAINTING BY LUMP SUM. If Runway and Taxiway painting by a lump-sum item appears in the bid schedule, new painted markings will not be measured for payment. Reflective media is subsidiary to the work.

620-4.4 PAINTED MARKING REMOVAL. If painted marking removal by unit area, it will be measured by area. If painted marking removal by lump sum appears in the bid schedule or is absent from the bid schedule, no measurement will be made and this item will be subsidiary to painting.

620-4.5 TEMPORARY RUNWAY AND TAXIWAY PAINTING. Lump Sum. Includes all necessary maintenance or reapplication of paint necessary during the time the numbers, markings, and stripes are required.

BASIS OF PAYMENT

620-5.1 Payment will be made at the respective contract unit or lump sum price for the pay items listed below that appear in the bid schedule.

Payment will be made under:

Item P620.010.0000	Runway and Taxiway Painting – per square foot
Item P620.020.0000	Runway and Taxiway Painting – per lump sum

Item P620.030.0000 Reflective Media – per pound
Item P620.040.0000 Reflective Media – per lump sum

TESTING REQUIREMENTS

ASTM C371	Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders
ASTM D92	Flash and Fire Points by Cleveland Open Cup
ASTM D711	No-Pick-Up Time of Traffic Paint
ASTM D968	Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Epoxy Content of Epoxy Resins
ASTM D2074	Total Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Rubber Products-Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM G53	Operating Light and Water-Exposure Apparatus (Florescent UV-Condensation Type) for Exposure of Nonmetallic Materials.
Federal Test Method Standard No. 141	Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing

MATERIAL REQUIREMENTS

ASTM D476	Titanium Dioxide Pigments
Code of Federal Regulations	40 CFR Part 60, Appendix A-7, Method 24. Determination volatile matter content, water content, density, volume solids, and weight solids of surface coatings
Code of Federal Regulations	29 CFR Part 1910.1200 – Hazard Communications
Fed. Spec. TT-B-1325D	Beads (Glass Spheres) Retroreflective
Fed. Spec. TT-P1952F	Paint, traffic and Airfield Marking, Waterborne
Federal Standard 595	Colors used in Government Procurement
Commercial Item Description	A-A-2886B Paint, Traffic, Solvent Based
Advisory Circular 150/5340-1	Standard for Airport Markings
Advisory Circular 150/5320-12	Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces