

U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL AVIATION ADMINISTRATION
 NORTHWEST MOUNTAIN REGION
 AIRPORT IMPROVEMENT PROGRAM

MODIFICATION OF AIRPORT DESIGN STANDARDS

BACKGROUND		
1. AIRPORT:	2. LOCATION(CITY,STATE):	3. LOC ID:
4. EFFECTED RUNWAY/TAXIWAY:	5. APPROACH (EACH RUNWAY): <input type="checkbox"/> PIR <input type="checkbox"/> NPI <input type="checkbox"/> VISUAL	6. AIRPORT REF. CODE (ARC):
7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY):		

MODIFICATION OF STANDARDS

8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT): Federal Aviation Administration, Advisory Circular (AC) 150/5370-10G, Standards for Specifying Construction of Airports. Item P-152 Description, and P-152 Construction Methods.

9. STANDARD/REQUIREMENT: Item P-152, Description, P-152, Construction Methods, P-152, Method of Measurement and Payment, and P-152, Basis of Payment.

10. PROPOSED: Add additional sections as follows:

To the end of Description:
“152-1.5 Quarry Spalls. Quarry spalls shall be hard, sound and durable broken stone, free from segregation, seams, cracks and other defects tending to destroy its resistance to weather and shall conform to the following requirements for quality:

Degradation Factor	15% maximum
Los Angeles Wear, 500 rev.	50% maximum
Specific Gravity	2.55 minimum

Quarry spalls shall meet the following requirements for gradation:”

Sieve Size	Percent Passing
8"	100
3"	40, max.
3/4"	10, max.

To the end of Description:
“152-1.6 Geotextile. Geotextile fabric shall meet the following material requirements:”

		Geotextile Property Requirements (Nonwoven)
PROPERTY	TEST METHOD	ENGLISH
Grab Tensile Strength (minimum) Machine and Cross Machine Directions	ASTM D4632	115 lbs
Grab Failure Strain (minimum) Machine and Cross Machine Directions	ASTM D4632	≥50%
Tear Strength (minimum)	ASTM D4533	40 lbs
Puncture Strength (minimum)	ASTM D6241	220 lbs
Apparent Opening Size (AOS) (maximum) U.S. Standard Sieve	ASTM D4751	40 US Sieve

Appendix 2

Permittivity (minimum)	ASTM D4491	0.50 Sec-1
Ultraviolet Stability Retained Strength (minimum) @ 500 Hours	ASTM D4355	50%

To the end of Construction Methods:

“152-2.11 Unsuitable Excavation. Excavation to remove unsuitable material shall be performed only at the direction of the Port and shall be made to the depth and extent determined by the Port.

No wheeled or tracked equipment shall be allowed to operate on the surface of the excavation. Use only a backhoe, grade-all, drag line, or equal.

Remove and replace subgrade soil disturbed as a result of Contractor’s excavation or backfilling methods as directed, at no added cost to the Port.

Unsuitable material shall be disposed of off Port property.

No compaction of excavation bottom is required. Install geotextile along bottom and sides of excavation, and backfill with quarry spalls, then place geotextile and remainder of the pavement section as specified in the drawings.”

To the end of Method of Measurement:

“152-3.5 Unsuitable Excavation. The quantity of unsuitable excavation to be paid for will be the number of cubic yards of material determined by the Port to be unsuitable and excavated and disposed of off Port property. The quantity will be measured in its original position and based on an average depth of cut at each location.”

Measurement of Unsuitable Excavation shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed. Unsuitable Excavation shall not include trench excavation which is covered in the applicable utility specification section.”

To the end of Method of Measurement:

“152-3.6 Geotextile. The quantity of geotextile material to be paid for will be the number of square yards installed and accepted. Geotextile fabric for subdrains is paid for in accordance with Item D-705 and is not included in this bid item.”

To the end of Basis of Payment:

“152-4.2 Unsuitable Excavation. Payment will be made at the contract unit price per cubic yard. The price includes haul and disposal of unsuitable material off of Port property, placement of geotextile along excavated areas, and the rock and quarry spalls as necessary to replace the areas of unsuitable excavation.”

To the end of Basis of Payment:

“152-4.3 Geotextile. Payment will be made at the contract unit price per square yard. The price will be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material, and for all labor, equipment, tools, and incidentals necessary to complete the items.”

Appendix 2

11. EXPLAIN WHY STANDARD CANNOT BE MET (FAA ORDER 5300.1E):

Many Port of Portland airports have been in service since the mid 1900's, and many of the airfields at these airports were constructed of dredge sand and other miscellaneous import fill. Because of the various sources and contents of import fill, pockets of unsuitable soil exist throughout these airfields, many times underneath areas to be paved. Without removal and replacement of unsuitable soil underneath areas to be paved, the risk of pavement failure increase significantly. Currently no specifications exist in AC 150/5370-10G to address how to replace areas of removed unsuitable soil underneath areas to be paved, and what material to replace these removed unsuitable soils with.

12. DISCUSS VIABLE ALTERNATIVES (FAA ORDER 5300.1E):

Currently there are two other methods commonly used for stabilization or replacement of soft soils. One method is by mass stabilization, one is by removal and replacement with controlled density fill. The method of mass stabilization is effective, but requires a mixing tool and stabilizers be brought to the site. The mixing tool is then inserted into the soil at numerous locations, and the stabilizer injected. This is a very labor intensive procedure, and costs more than using quarry spalls, usually in the \$6-12 per vertical square foot range.

The method of using controlled density fill does not provide significant advantages over quarry spalls because both are removal and replacement. In addition, controlled density fill usually costs more than quarry spalls, and creates a barrier to installation of utilities in the area of unsuitable soil, whereas quarry spalls can be more readily removed during subsequent utility trenching.

13. STATE WHY MODIFICATION WOULD PROVIDE ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP (FAA ORDER 5300.1E):

The addition of quarry spalls in areas of unsuitable soil located under areas to be paved can bridge the underlying "soft" soil, to give the pavement section the subgrade stability it requires to function correctly, and for the expected design pavement life. Without reinforcing these soft soils, pavement life is reduced, and the potential for large failures that may affect the ability for an aircraft to use the facility increase.

The Geotextile properties are pulled from the Oregon Department of Transportation (ODOT) Type 1, nonwoven geotextile properties for Drainage Geotextile. The Ports research indicates that the properties listed are met or exceeded by at least 4 manufacturers.

The Quarry Spalls properties are from Washington State Department of Transportation (WSDOT) standards. ODOT has a standard, but it is a light riprap with much larger rock sizes and is not as conducive to providing a stable, fully compacted base to build upon. Therefore, we propose the use of WSDOT standard Quarry Spalls which are readily available at all local rock quarries. The WSDOT standard materials also bridge soft spots well compact more readily to allow for construction.

ATTACH ADDITIONAL SHEETS AS NECESSARY – INCLUDE SKETCH/PLAN

MODIFICATION OF AIRPORT DESIGN STANDARDS

MODIFICATION:		LOCATION:			PAGE 2 OF 2
14. SIGNATURE OF ORIGINATOR:		15. ORIGINATOR'S ORGANIZATION:		16. TELEPHONE:	
17. DATE OF LATEST FAA SIGNED ALP:					
18. ADO RECOMMENDATION:		19. SIGNATURE:		20. DATE:	
21. FAA DIVISIONAL REVIEW (AT, AF, FS):					
ROUTING SYMBOL	SIGNATURE	DATE	CONCUR	NON-CONCUR	
COMMENTS:					
22. AIRPORTS' DIVISION FINAL ACTION:					
<input type="checkbox"/> UNCONDITIONAL APPROVAL		<input type="checkbox"/> CONDITIONAL APPROVAL		<input type="checkbox"/> DISAPPROVAL	
DATE:	SIGNATURE:		TITLE:		
CONDITIONS OF APPROVAL:					

MODIFICATION OF AIRPORT DESIGN STANDARDS

ITEMS 1-17 ARE TO BE COMPLETED BY THE AIRPORT SPONSOR(ORIGINATOR). ALL OTHER ITEMS WILL BE COMPLETED BY THE FAA.

THE COMPLETED FORM WILL BE TRANSMITTED BY THE ORIGINATOR TO THE APPLICABLE ADO/AFO. THE ADO/AFO WILL TRANSMIT THE FINAL FAA DETERMINATION TO THE ORIGINATOR.

MODIFICATION TO AIRPORT DESIGN STANDARDS REQUESTS SHOULD INCLUDE SKETCHES OR DRAWINGS WHICH CLEARLY ILLUSTRATE THE NONSTANDARD CONDITION.

ITEMS

1. LEGAL NAME OF AIRPORT.
2. ASSOCIATED CITY.
3. AIRPORT LOCATION IDENTIFIER (SEE APPROACH PLATES/AIRPORT FACILITY DIRECTORY).
4. IDENTIFY THE RUNWAY(S), TAXIWAY(S) OR OTHER FACILITIES EFFECTED BY THE PROPOSED MODIFICATION TO STANDARDS REQUEST.
5. IDENTIFY THE MOST CRITICAL APPROACH FOR EACH RUNWAY IDENTIFIED IN #4.
6. AIRPORT REFERENCE CODE - SEE PARAGRAPH 2, PAGE 1 AC 150/5300-13(CHANGE 4) - I.E. C-II, B-II, A-I (SMALL).
7. NOTE THE DESIGN AIRCRAFT (ARC OR SPECIFIC AIRCRAFT) FOR EACH FACILITY IDENTIFIED IN #4. A DESIGN AIRCRAFT MUST MAKE REGULAR USE OF THE FACILITY. NORMALLY, FAA CONSIDERS REGULAR USE TO BE 500 OR MORE ANNUAL INTINERANT OPERATIONS.

IF THE AIRPORT SERVES A WHOLE FAMILY OF AIRCRAFT IN A PARTICULAR GROUP, THE ARC (I.E. B-II) SHOULD BE SPECIFIED. IF, HOWEVER, THE AIRPORT IS USED BY ONLY 1 OR 2 OF A FAMILY OF AIRCRAFT (IX- BEECH KING AIR C90), THE MOST DEMANDING (APPROACH SPEED, WINGSPAN) AIRCRAFT SHOULD BE SPECIFIED.
8. IDENTIFY THE SPECIFIC NAME OF THE STANDARD THAT IS PROPOSED TO BE MODIFIED FOR THE SUBJECT LOCAL CONDITION.
9. DESCRIBE (WORDS AND NUMBERS) THE DIMENSIONS AND REQUIREMENTS OF THE STANDARD AS PROVIDED IN AC 150/5300-13.
10. STATE THE PROPOSED MODIFICATION TO THE STANDARD.
11. DISCUSS THE LOCAL CONDITIONS THAT MAKE IT IMPRACTICAL OR IMPOSSIBLE TO MEET THE STANDARD.
12. IDENTIFY ALTERNATIVES TO THE SUBJECT PROPOSED MODIFICATION, AND SHOW WHY THESE ALTERNATIVES ARE NOT VIABLE.
13. DISCUSS HOW THE PROPOSED MODIFICATION WOULD IMPACT AIRPORT SAFETY AND EXPLAIN WHY AN ACCEPTABLE LEVEL OF SAFETY, ECONOMY, DURABILITY, AND WORKMANSHIP WOULD STILL EXIST.
14. TYPED NAME AND SIGINATURE OF AIRPORT AUTHORITY REPRESLNTATIVE.
15. SELF-EXPLANATORY.
16. SELF-EXPLANATORY.
17. SELF-EXPLANATORY.
18. TO BE COMPLETED BY FAA