

TEST FILL NO. 3 (RETEST)																					
LIFT NO. (2 & 4 COVERAGES)	2 COVERAGES (UNIT NO. 5)				4 COVERAGES (UNIT NO. 3)				6 COVERAGES (UNIT NO. 1)				6 COVERAGES (UNIT NO. 4)				8 COVERAGES (UNIT NO. 2)				LIFT NO. (6 & 8 COVERAGES)
	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %	
1A	5.0 to 6.3 *5.7	109.2 to 117.3 112.9	150 & 205 178	4.8 to 14.0 9.5	5.7 to 6.4 *6.0	112.3 to 119.8 116.0	190 & 255 222	11.8 to 15.9 13.8					5.1 to 6.6 *5.9	105.5 to 121.1 116.4	215 & 265 240	10.0 to 20.9 16.1	5.1 to 9.0 *6.2	118.6 to 124.8 121.1	320 & 355 338	6.2 to 20.1 14.1	1
2A	4.6 to 6.0 *5.3	111.7 to 119.2 115.6	320 & 340 330	15.0 to 23.7 19.5	4.6 to 8.0 *6.3	114.2 to 119.8 118.0	350 & 380 365	19.3 to 23.0 21.2	5.9 to 7.3 *6.7	115.4 to 124.8 119.3	430 & 470 450	22.5 to 26.5 23.9	5.8 to 9.0 *6.6	114.8 to 126.0 122.3	400 & 465 433	17.0 to 34.9 24.7	5.3 to 7.9 *6.3	116.1 to 125.4 121.8	455 & 515 485	20.0 to 33.6 25.2	2
2	6.8 to 8.4 *7.4	116.7 to 124.2 121.1	360 & 515 437	18.7 to 26.3 22.5	3.5 to 7.9 *6.4	112.9 to 122.9 120.3	400 & 410 405	21.3 to 27.2 24.4	6.6 to 8.5 *7.6	114.8 to 124.8 119.8	21.0 to 33.5 26.5	21.0 to 33.5 26.5	5.8 to 6.7 *6.4	119.2 to 125.4 122.2		29.2 to 32.3 30.7	6.0 to 7.6 *6.6	122.3 to 126.0 123.8		24.3 to 28.0 25.7	3
3	6.7 to 8.6 *7.2	120.4 to 124.2 122.3		17.7 to 33.0 25.7	5.0 to 7.0 *5.9	115.4 to 124.2 120.2		25.6 to 28.8 27.6	6.7 to 7.6 *7.0	117.9 to 127.9 121.4	21.8 to 32.2 26.7	21.8 to 32.2 26.7	6.1 to 6.8 *6.5	112.9 to 125.4 121.3		30.0 to 35.2 33.3	6.9 to 8.6 *7.3	121.1 to 125.4 123.4		28.3 to 49.8 39.5	4
4	5.9 to 7.8 *7.2	116.7 to 124.8 121.4		18.9 to 33.0 26.1	4.1 to 7.6 *5.5	116.7 to 124.2 119.9		36.9 to 39.2 38.2	3.8 to 7.2 5.4	117.3 to 119.8 118.9	24.4 to 27.0 25.6	24.4 to 27.0 25.6	3.6 to 7.0 5.7	104.2 to 122.3 115.7		32.5 to 40.5 35.7	7.1 to 8.5 7.5	112.3 to 119.2 116.3		32.6 to 36.8 34.5	Compacted Subgrade 0" to 9"
Compacted Subgrade 0" to 9"	7.9 & 9.2 8.5	95.5 & 115.4 105.5		25.3 to 28.0 26.4	7.2 & 8.1 7.6	117.9 & 118.6 118.2		30.7 to 34.5 32.8	6.7 & 7.9 7.3	113.6 & 118.6 116.1			4.0 to 7.8 6.1	106.7 to 112.3 108.8			5.2 to 6.7 6.1	109.8 to 116.1 112.3			Compacted Subgrade 9" to 18"
Compacted Subgrade 9" to 18"	7.5 & 8.9 8.2	108.0 & 111.1 109.5			7.1 & 7.2 7.1	109.8 & 112.9 111.3			4.8 & 6.0 5.4	108.0 & 111.7 109.8			2.7 & 3.4 3.0	104.8 & 100.5 102.6			4.5 & 4.6 4.5	107.3 & 109.8 108.5			Subgrade Before Compaction
Subgrade Before Compaction	2.4 & 4.0 3.2	94.8 & 101.7 98.2			4.9 & 5.8 5.4	109.8 & 110.4 110.1															

NOTES: — TEST FILL NO. 3
Minimum to maximum values
recorded thus: 107.3 to 109.8
Average value recorded thus:
108.7

* Indicates lift spread by
bulldozer (Units Nos. 1 to 5).

• Indicates lift spread by motor
patrol and not scarified.

Units Nos. 6 to 9 placed in loose
lifts and scarified. Compaction
on upper surface of units only.

TEST FILL NO. 1				
LIFT NO.	1 1/2 COVERAGES (UNIT NOS. 1, 2 & 3)			
	W%	γ_b (PCF)	K (PCI)	CBR %
Compacted Fill	1.4 to 8.5 4.6		110 & 165 137	9.2 & 10.9 10.1
Subgrade (Uncompacted)	1.0 to 5.4 3.5		185 to 250 220	15.5 to 21.5 18.6

TEST FILL NO. 2														
LIFT NO.	6 COVERAGES (UNIT NO. 1)				6 COVERAGES (UNIT NO. 2)				6 COVERAGES (UNIT NO. 3)				LIFT NO.	
	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %	W%	γ_b (PCF)	K (PCI)	CBR %		
2 (12" to 18")	4.0 to 4.3 4.1	110.4 to 114.8 112.7	375 & 475 425	18.6 to 38.7 26.5	4.1 to 5.3 4.8	109.2 to 112.3 111.3	400 & 440 420	22.7 to 37.0 29.3	4.4 to 4.7 4.6	113.6 to 114.8 114.2	400 & 470 435	14.0 to 40.5 27.2		
Remainder of Test Fill	2.4 to 5.1 4.0	109.2 to 122.9 116.1			3.9 to 6.1 5.3	111.1 to 116.7 114.6			4.4 to 6.0 5.2	108.6 to 116.1 112.7				
Subgrade (Uncompacted)	1.0 & 1.5 1.2	106.1 & 112.3 109.2			1.0 & 2.9 2.0	113.6 & 113.6 113.6			3.3 & 4.4 3.8	104.2 & 111.7 107.9				

NOTES: — TEST FILL NO. 1

In-place dry density obtained by
balloon device is considered
valueless.

Subgrade consists of silty sand
of B horizon.

All other fill & subgrade materials
in all test fills are coarse to
fine sand with some gravel.

W%: Water content, in percent of dry
weight

γ_b (PCF): Bulk density, in pounds per
cubic foot

K (PCI): Modulus of subgrade reaction
in pounds per cubic inch

CBR %: California Bearing Ratio, in
percent

TEST FILL NO. 3									
LIFT NO.	2 COVERAGES (UNIT NO. 6)		4 COVERAGES (UNIT NO. 7)		6 COVERAGES (UNIT NO. 8)		8 COVERAGES (UNIT NO. 9)		LIFT NO.
	W%	γ_b (PCF)	W%	γ_b (PCF)	W%	γ_b (PCF)	W%	γ_b (PCF)	
1	7.1 to 9.1 8.1	105.5 to 115.4 112.8	5.7 to 8.2 6.4	116.7 to 118.6 117.9	6.9 to 8.5 7.7	121.1 to 122.9 121.8	6.6 to 8.7 7.6	117.9 to 121.7 119.2	1
2	5.8 to 8.7 6.5	114.2 to 116.7 115.8	5.8 to 6.8 6.4	117.3 to 120.4 119.4	5.9 to 8.3 6.8	117.3 to 120.4 119.0	6.1 to 7.4 7.0	119.2 to 124.2 121.2	2
3	6.0 to 7.6 6.5	105.5 to 115.4 111.4	5.0 to 8.6 6.9	116.1 to 117.9 116.9	5.2 to 6.4 6.0	111.1 to 116.1 113.7	6.2 to 7.2 6.7	112.3 to 118.6 115.0	3
4	5.7 to 6.1 5.9	104.8 to 114.8 110.9	6.5 & 6.9 6.7	112.9 & 112.9 112.9	5.8 & 6.2 6.0	111.7 & 111.7 111.7	6.3 & 7.0 6.6	108.6 to 111.7 110.1	4

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by Skidmore, Owings, and Merrill, and Moran, Proctor,
Mueser, and Rutledge Consulting Engineers, to the Air
Force Academy Construction Agency

SUMMARY OF FIELD TESTS FOR AIRFIELD TEST FILLS, UNITED STATES AIR FORCE ACADEMY SITE, COLORADO