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Soil Classification and Compaction 169/170 Final Report Date: 4/23/2014

PSP Enrollment #3879 University of Arkansas Fayetteville, Arkansas USA

Submitted by sgwill@uark.edu on 4/7/2014 at 11:06 AM

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The Z-Score indicates the number of standard deviations from the average value. The Z-Score is determined by the following calculation:

Z-Score = (Laboratory Test Result - Average Value) / (Standard Deviation)

The laboratory Rating calculation is based on the absolute value of the Z-Score (or number of standard deviations from the average). The following describes the laboratory Rating system:

- If Z-Score <= 1 Then Rating = 5
- If Z-Score > 1 And <= 1.5 Then Rating = 4
- If Z-Score > 1.5 And <= 2 Then Rating = 3</li>
   If Z-Score > 2 And <= 2.5 Then Rating = 2</li>
- If Z-Score > 2.5 And <= 3 Then Rating = 1
- If Z-Score > 3 Then Rating = 0

A negative sign on a Z-Score or Rating indicates that the laboratory's result was below the average, while a positive Z-Score or Rating indicates that the laboratory's result was above the average

Particle Size Analysis of Soils by Hydrometer Total material passing the 2.00-mm (No. 10) sieve (0.1 percent) - T88/D422 View Youden Diagram | View Performance Chart

				Sample 169					Sample 170			Repeat	tability(withi	n-lab)
	Total Labs	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	15	Z-Score	Lab Rating
1	1209		91.65	1.40				92.83	1.26					

Particle Size Analysis of Soils by Hydrometer
Total material passing the 0.425-mm (No. 40) sieve (0.1 percent) - T88/D422
View Youden Diagram! View Performance Chart View Y

new ro	Juen Dia	granij view	renonna	Sample 169					Sample 170			Repeata	ability(within	n-lab)
	Total Labs	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
2	1209		65.28	3.09				68.71	3.04					

Particle Size Analysis of Soils by Hydrometer

Total material passing the 0.075-mm (No. 200) sieve (0.1 percent) - T88/D422

<u>View Youden Diagram</u> | <u>View Performance Chart</u>

	uucii biu	Braini View	· ciroiina	Sample 169					Sample 170			Repeat	ability(withi	n-lab)
	Total Labs	Lab Data	Avg	1\$	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
3	1215		53.08	2.94				57.56	2.96					

Particle Size Analysis of Soils by Hydrometer

Total material smaller than 0.02 mm (0.1 percent) - T88/D422 View Youden Diagram | View Performance Chart

VICVV IOC	auch Diu	STUTTI VICTO	CITOTITIA	icc criare											
				Sample 169					Sample 170			Repeat	ability(within	n-lab)	
	Total Labs	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating	
4	1118		46 38	4 29				50.08	4 29						

Particle Size Analysis of Soils by Hydrometer

Total material smaller than 0.002 mm (0.1 percent) - T88/D422 View Youden Diagram | View Performance Chart

				Sample 169					Sample 170			Repeat	ability(withi	n-lab)
	Total	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	15	Z-Score	Lab
	Labs													Rating
5	1115		21.73	3.34				26.30	3.34					"

Particle Size Analysis of Soils by Hydrometer

Total material smaller than 0.001 mm (0.1 percent) - T88/D422

View Youden Diagram | View Performance Chart

•	VIEW IO	auen Dia	grain view		Sample 169					Sample 170			Repeat	ability(withi	n-lab)
		Total Labs	Lab Data	Avg	1\$	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
	6	1104		15.28	3.19				20.04	3.18					

Liquid Limit of Soils (Atterberg Limits)
Liquid Limit (0.1 percent) - T89/D4318

View Youden Diagram | View Performance Chart

				Sample 169					Sample 170			Repeat	ability(withi	in-lab)
	Total	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab
	Labs													Rating
7	1494	32.4	32.46	2.03	-0.03	-5	64.2	54.73	3.51	2.70	1	2.30	2.93	1

Plastic Limit of Soils (Atterberg Limits)

Plastic Limit (0.1 percent) - T90/D4318

1	/iew You	uden Dia	gram  View	Pertorma	ance Chart										
					Sample 169					Sample 170			Repeat	ability(withi	n-lab)
ľ		Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	<b>1</b> S	Z-Score	Lab Rating
	0	1400	17.2	17.46	1 24	0.20	-	10 2	17 50	1 02	0.20	-	1.04	0.67	rating

Shrinkage Factors of Soils by Wax Method

Shrinkage Limit (Wax Method) (0.1 percent) - D4943 Viev

ew you	uden Diag	<u>gram i view i</u>	Pertorman	ice Chart										
				Sample 169					Sample 170			Repeata	ability(withi	n-lab)
	Total Labs	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
9	68		11.76	2.34				11.86	3.04					

Specific Gravity of Soils

Specific Gravity, Passing 2.00 mm (No. 10), TX / 20°C - T100/D854

	T 1.1	Libra		Sample 169	7.0	5	1.1.5.1		Sample 170	7.0	D .:		ability(with	
	Total Labs	Lab Data	Avg	15	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
10	897		2.6615	0.0291				2.6633	0.0340					
		(m )												
		(Proctor) o			·\ T00/D60	0								
		gram  View			.) - 199/009	0								
1000 10	uucii Diu	Granij vicev		Sample 169					Sample 170			Repeat	ability(with	in-lab)
	Total Labs	Lab Data	Avg	1\$	Z-Score	Rating	Lab Data	Avg	15	Z-Score	Rating	15	Z-Score	Lab Rating
11	1211	9.1	9.73	0.83	-0.76	-5	11.8	11.72	1.08	0.07	5	0.74	0.68	5
		(Proctor) o												
		ensity (Stan			0698									
iew vo	uden Dia	gram  View		Sample 169					Sample 170			Popost	ability(with	in Jahl
	Total	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab
	Labs	Lub Dutu	7.48	13	2 30010	nating	Lub Dutu	746	13	2 30010	Mating	13	2 30010	Rating
	Labs													
12	1211	126.9	124.53	1.52	1.56	3	121.5	118.07	1.86	1.85	3	1.16	0.64	<b>5</b>
	1211				1.56	3	121.5	118.07	1.86	1.85	3	1.16	0.64	
∕loistur	1211 e-Density	(Proctor) o	f Soils, Mod	ified Effort			121.5	118.07	1.86	1.85	3	1.16	0.64	
1oistur <b>ptimu</b>	1211 e-Density n Moistu	(Proctor) o	f Soils, Mod (Modified)	ified Effort (0.1 percent			121.5	118.07	1.86	1.85	3	1.16	0.64	
/loistur <b>)ptimu</b>	1211 e-Density n Moistu	(Proctor) o	f Soils, Mod (Modified) Performand	ified Effort (0.1 percent			121.5			1.85	3			5
loistur <b>ptimu</b>	1211 e-Density m Moistu uden Diag	(Proctor) o ire Content gram  View	f Soils, Mod (Modified) Performand	ified Effort (0.1 percent ce Chart Sample 169	t) - T180/D1	557			Sample 170			Repeat	ability(with	<b>5</b> in-lab)
loistur <b>ptimu</b>	1211 e-Density n Moistu	(Proctor) o	f Soils, Mod (Modified) Performand	ified Effort (0.1 percent			121.5 Lab Data			1.85 Z-Score	Rating			in-lab)
oistur <b>ptimu</b>	1211 e-Density n Moistu uden Diag	(Proctor) o ire Content gram  View	f Soils, Mod (Modified) Performand	ified Effort (0.1 percent ce Chart Sample 169	t) - T180/D1	557			Sample 170			Repeat	ability(with	<b>5</b> in-lab)
oistur ptimu ew Yo	e-Density n Moistu uden Diag  Total Labs 335	(Proctor) o Ire Content gram   View Lab Data	f Soils, Mod (Modified) Performand S Avg 6.92	ified Effort (0.1 percent e Chart sample 169 1S 0.75	t) - T180/D1	557		Avg	Sample 170 1S	Z-Score		Repeat 1S	ability(with	in-lab) Lab Rating
Noistur Optimu 'iew Yo 13	1211 e-Density n Moistu uden Diag  Total Labs 335 e-Density	(Proctor) o Ire Content gram   View Lab Data 	f Soils, Mod (Modified) Performand S Avg 6.92	ified Effort (0.1 percent ce Chart sample 169 1S 0.75	z) - T180/D1 Z-Score 	557		Avg	Sample 170 1S	Z-Score		Repeat 1S	ability(with	in-lab) Lab Rating
Noistur Optimu 'iew Yo 13 Noistur Naximu	1211 e-Density n Moistu uden Diag  Total Labs 335 e-Density m Dry De	(Proctor) o Ire Content gram   View Lab Data 	f Soils, Mod (Modified) Performanc S Avg 6.92 f Soils, Mod ified) (0.1 lk	ified Effort (0.1 percent e Chart lample 169 1S 0.75 ified Effort b/ft³) - T180,	z) - T180/D1 Z-Score 	557		Avg	Sample 170 1S	Z-Score		Repeat 1S	ability(with	in-lab) Lab Rating
Moistur Optimu View Yo  13 Moistur Maximu	1211 e-Density n Moistu uden Diag  Total Labs 335 e-Density m Dry De	(Proctor) o Ire Content gram   View Lab Data 	f Soils, Mod (Modified) Performanc S Avg 6.92 f Soils, Mod ified) (0.1 lk Performanc	ified Effort (0.1 percent ee Chart Sample 169 15 0.75 ified Effort o/ft³) - T180,	z) - T180/D1 Z-Score 	557		Avg 8.21	Sample 170 1S	Z-Score		Repeat 1S 	ability(with Z-Score 	in-lab) Lab Rating
Moistur Optimu View Yo  13 Moistur Maximu	1211 e-Density n Moistu uden Diag  Total Labs 335 e-Density m Dry De	(Proctor) o Ire Content gram   View Lab Data 	f Soils, Mod (Modified) Performance Avg 6.92 f Soils, Mod ified) (0.1 lk Performance	ified Effort (0.1 percent e Chart lample 169 1S 0.75 ified Effort b/ft³) - T180,	z) - T180/D1 Z-Score 	557 Rating		Avg 8.21	Sample 170 1S 0.86	Z-Score		Repeat 1S 	ability(with	in-lab) Lab Rating
13 1oistur 13 1oistur 1aximu	1211  e-Density m Moistu uden Diag  Total Labs 335  e-Density m Dry De uden Diag  Total Labs	(Proctor) o  Ire Content  gram   View  Lab Data   (Proctor) o  ensity (Mod  gram   View	f Soils, Mod (Modified) Performanc S Avg 6.92 f Soils, Mod ified) (0.1 lt Performanc S Avg	ified Effort (0.1 percent te Chart sample 169 1S 0.75 ified Effort to/ft³) - T180, te Chart sample 169	z-Score  /D1557	557	Lab Data 	Avg 8.21	Sample 170 1S 0.86 Sample 170	Z-Score 	Rating 	Repeat 1S  Repeat	ability(with Z-Score  ability(with	in-lab)  Lab Rating in-lab)
Moistur Dptimu /iew Yo  13 Moistur Maximu	n Moistu den Diag Total Labs 335 Pe-Density m Dry De uden Diag	(Proctor) o  Ire Content  gram   View  Lab Data   (Proctor) o  ensity (Mod  gram   View	f Soils, Mod (Modified) Performance Avg 6.92 f Soils, Mod ified) (0.1 lk Performance	ified Effort (0.1 percent te Chart Sample 169 1S 0.75 ified Effort o/ft³) - T180, te Chart Sample 169	z-Score  /D1557	557 Rating	Lab Data 	Avg 8.21	Sample 170 1S 0.86 Sample 170	Z-Score 	Rating 	Repeat 1S  Repeat	ability(with Z-Score  ability(with	in-lab) Lab Rating in-lab) Lab
Moistur Dptimu /iew Yo  13  Moistur Maximu /iew Yo  14	1211  e-Density m Moistu uden Diag  Total Labs 335  e-Density m Dry De uden Diag  Total Labs	(Proctor) of the Content gram   View Lab Data	f Soils, Mod (Modified) Performanc S Avg 6.92 f Soils, Mod ified) (0.1 lt Performanc S Avg	ified Effort (0.1 percent te Chart sample 169 1S 0.75 ified Effort to/ft³) - T180, te Chart sample 169	z-Score  /D1557 Z-Score	Rating Rating	Lab Data Lab Data	Avg 8.21 Avg 130.29	Sample 170 1S 0.86 Sample 170	Z-Score  Z-Score	Rating 	Repeat 1S  Repeat	ability(with Z-Score  ability(with	in-lab) Lab Rating in-lab) Lab



