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Soil Classification and Compaction 171/172
Final Report Date: 4/22/2015

PSP Enrollment #3879
University of Arkansas
Fayetteville, Arkansas USA

Submitted by sgwill@uark.edu on 3/18/2015 at 12:07 PM

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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:

$$Z\text{-Score} = (\text{Laboratory Test Result} - \text{Average Value}) / (\text{Standard Deviation})$$

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
- If Z-Score > 2 And <= 2.5 Then Rating = 2
- 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.

For more information on ratings, please review [Proficiency Sample Ratings: Being Average Has Never Been So Good](#).

Particle Size Analysis of Soils by Hydrometer
Total material passing the 0.075-mm (No. 20) sieve (0.1 percent) - T88/D422

[View Youden Diagram](#) | [View Performance Chart](#)

Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
1	1217		99.56	**	**	**		99.46	**	**	**	**	**	**

Particle Size Analysis of Soils by Hydrometer
Total material passing the 0.425-mm (No. 40) sieve (0.1 percent) - T88/D422

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
2	1216	--	74.73	2.03	--	--	--	73.98	1.97	--	--	--	--	--

Particle Size Analysis of Soils by Hydrometer
Total material passing the 0.075-mm (No. 200) sieve (0.1 percent) - T88/D422

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
3	1220	--	52.55	1.49	--	--	--	51.94	1.35	--	--	--	--	--

Particle Size Analysis of Soils by Hydrometer
Total material smaller than 0.02 mm (0.1 percent) - T88/D422

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
4	1132	--	47.42	3.49	--	--	--	46.69	3.47	--	--	--	--	--

Particle Size Analysis of Soils by Hydrometer
Total material smaller than 0.002 mm (0.1 percent) - T88/D422

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
5	1129	--	22.91	3.42	--	--	--	22.88	3.36	--	--	--	--	--

Particle Size Analysis of Soils by Hydrometer
Total material smaller than 0.001 mm (0.1 percent) - T88/D422

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
6	1122	--	15.56	3.15	--	--	--	15.83	3.18	--	--	--	--	--

Liquid Limit of Soils (Atterberg Limits)

Liquid Limit (0.1 percent) - T89/D4318

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
7	1525	27.4	26.77	2.02	0.31	5	31.4	29.53	2.14	0.88	5	1.05	0.84	5

Plastic Limit of Soils (Atterberg Limits)

Plastic Limit (0.1 percent) - T90/D4318

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
8	1524	13.5	14.13	1.17	-0.54	-5	13.4	14.25	1.23	-0.69	-5	0.47	-0.32	-5

Shrinkage Factors of Soils by Wax Method

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

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Sample 171							Sample 172				Repeatability(within-lab)			
	Total Labs	Lab Data	Avg	1S	Z-Score	Rating	Lab Data	Avg	1S	Z-Score	Rating	1S	Z-Score	Lab Rating
9	64	--	10.52	1.15	--	--	--	10.71	1.32	--	--	--	--	--

**** Suppressed Items:**
Particle Size Analysis of Soils by Hydrometer (Total material passing the 2.00-mm (No. 10) sieve) - For informational purposes only.

