

WACEL SOIL LABORATORY PROFESSIONAL SKILLS MATRIX

Skill	Soil Lab Technician
General Knowledge	
Can visually identify and classify soil in accordance with USCS.	✓
Has basic knowledge of and can interpret soils laboratory tests (moisture content, sieve analysis, Atterberg limits, Proctor tests).	✓
Can obtain, identify and transport soil samples.	✓
Familiar with typical properties including compaction behavior of different soil types and their suitability for different purposes.	✓
Understands different sample splitting techniques.	✓
Moisture Content (ASTM D2216)	
Knows the complete and proper ASTM procedure for moisture content testing.	✓
Can calculate moisture content from raw lab data.	✓
Familiar with requirements for checking ovens for hot spots.	✓
Grain Size Determination – Sieve Analysis (ASTM D421)	
Knows the complete procedure for mechanical sieve analysis testing.	✓
Can calculate percent passing/retained from raw lab data.	✓
Familiar with all requirements for checking sieves.	✓
Grain Size Determination – Hydrometer (ASTM D422)	
Knows the complete procedure for grain size analysis using the hydrometer method.	✓
Can plot grain size data from raw lab data.	✓
Familiar with all calibration requirements for test devices.	✓
Atterberg Limits (ASTM D4318)	
Knows the complete and proper ASTM procedure for Atterberg Limits testing.	✓
Can calculate moisture content from raw lab data.	✓
Familiar with all equipment and calibration requirements for Atterberg Limits testing.	✓
Proctor Tests (ASTM D698, D1557)	
Knows the complete and proper procedures for all three proctor types including variations in mold size for large aggregates.	✓
Is familiar with the calibration process of drop hammers and molds.	✓
Knows the proper sampling procedures for proctor tests including presoaking.	✓
California Bearing Ratio (ASTM D1883)	
Knows the complete ASTM procedure for CBR.	✓
Can calculate CBR test results and present data.	✓
Familiar with all equipment operation and calibration requirements.	✓
Specific Gravity Testing (ASTM D854)	
Knows the complete ASTM procedure.	✓
Familiar with the equipment and calibration requirements.	✓

Skill	Soil Lab Technician
Can calculate and plot data.	✓

WACEL, 7508 Wisconsin Avenue, 4th Floor, Bethesda, MD 20814 | 301-652-7925 | www.wacel.org