# ACKENHEIL ENGINEERS, INC.
# 2026 FEE SCHEDULE

## SOIL TESTING

| Classification and Index Properties | Test Method | Test Notes |
|---|---|---|
| Classification of Soil | D2487 | Includes Sieve, Hydrometer, No. 200 Wash, and Atterberg Limits |
| Grain Size Distribution - Sieve Analysis with No. 200 Wash | D6913, T88, D1140 | |
| Hydrometer Analysis | D422 | |
| Atterberg Limits | D4318, T89, T90 | Liquid Limit, Plastic Limit, and Plasticity Index |
| Shrinkage Limit | D4943 | Wax Method |
| Visual/Manual Description and Identification | D2488 | |
| Portion of Soil Passing No. 200 Sieve Only | D1140 | |
| Specific Gravity - Fine Aggregate | D854, T100 | |
| Specific Gravity - Course Aggregate | T85 | |
| Organic Content (Loss on Ignition) | D2974, T267 | |

| Aggregate | Test Method | Test Notes |
|---|---|---|
| Sieve Analysis of Aggregate | C136 | |
| Classification of Aggregate for Road Construction | D448 | |
| Specific Gravity | C127 | |
| Coarse Aggregate Soundness | C88, PTM 510, T104 | Sieve Analysis Required |
| With no extra sample preparation | | |
| Crushing to Specified Aggregate Size | | |
| Coarse Aggregate Resistance to Abrasion (LA Abrasion) | | Sieve Analysis Required |
| Small Size - no extra sample preparation | C131, T96 | |
| Large Size - no extra sample preparation | C535 | |
| Crushing to small or large size | | |

| Density and Moisture | Test Method | Test Notes |
|---|---|---|
| Natural Density and Moisture Content | T233 | |
| Moisture Content | D2216, T265 | |
| Correction of Natural Density for Oversize Particles | D4718 | |

| Compaction (Maximum Dry Density at Optimum Moisture Content) | Test Method | Test Notes |
|---|---|---|
| Standard Proctor | D698, T99, PTM106 | |
| Modified Proctor | D1557, T180 | |
| Standard Soil/Cement Mixtures Proctor | D558, T134 | |
| Relative Density for Free-Draining Soils | | |
| Maximum Density | D4253 | |
| Minimum Density | D4254 | |
| Correction of Maximum Density for Oversize Particles | D4718 | When required based on particle size. |

| Pavement Design | Test Method | Test Notes |
|---|---|---|
| California Bearing Ratio | D1883, T193, PTM 113 | |
| One Point | | Includes Proctor |
| Three Points | | |
| Cement Amended - One Point | | |
| Cement Amended - Three Point | | |

| Settlement and Expansivity | Test Method | Test Notes |
|---|---|---|
| Consolidation (1/4, 1/2, 1, 2, 4, 8, 16 tsf) | D2435, T216 | Includes: plot of strain vs. log pressure, strain vs. log of time |
| Additional Loads beyond 16 tsf (each) | | |
| Rebound – Specified by Client | | |
| One-Dimensional Swell or Collapse | D4546 | |
| Method A – 4 Points | | |
| Method B – 1 Point | | |
| Method C – 1 Point with D2435 | | |
| Expansion Index | D4829 | |
| Potential Expansion of Steel Slag | PTM 130 | One compaction point - does not include proctor |
| Per Additional Point | | |

## SOIL TESTING CONTINUED

| Strength | Test Method | Test Notes |
|---|---|---|
| Unconfined Compression (Soil) - Undisturbed | D2166 / T208 | |
| Unconfined Compression (Soil) - Remolded | D2166 / T208 | |
| Direct Shear - 3 Points | D3080 | CD type, test results will include plots of shear stress vs. normal stress and shear displacement |
| Per Additional Point | | |
| Direct Shear (Residual Strength) | T236 | |
| Triaxial Compression/Shear | T234 | Tests will include plots of Mohr circle with failure envelope and stress vs. strain, and a sketch of the failure |
| Unconsolidated undrained | D2850 | |
| Consolidated undrained | D4767 | |
| Consolidated undrained test with pore pressure measurement | D4767 | |
| Consolidated drained | D7181 | |

| Permeability | Test Method | Test Notes |
|---|---|---|
| Constant Head | D2434, T215 | Coarse Material, k > 1x10-5 cm/sec |
| Flex Wall Permeability | D5084 | Falling head rising tail water, Fine Material, k < 1x10-5 cm/sec |

| Corrosivity | Test Method | Test Notes |
|---|---|---|
| Minimum Resistivity | T288 | |
| pH (Soil) | T289 | |
| Chloride (Soil) | T290 | |
| Sulfate (Soil) | T291 | |
| pH (Water) | D1293 | |
| Sulfate (Water) | D516 | |
| Chloride (Water) | D512 | |
| Conductivity (Water) | D1125 | |

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## ROCK TESTING

| Classification and Index Properties | Test Method | Test Notes |
|---|---|---|
| Visual Description | | |
| Slake Durability | D4644 | |
| Simple Slake Durability | Industry Standard | |

| Density and Moisture | Test Method | Test Notes |
|---|---|---|
| Moisture Content | D2216 | |
| Chunk Moist Density | | |

| Strength | Test Method | Test Notes |
|---|---|---|
| Unconfined Compression | D7012 (Method C) | Includes unit weight |
| Point Load Test (1 point) | D5731 | |
| Point Load Test (10 points) | D5731 | |
| Mohs Hardness of Rock | | |
| Elastic Moduli with Unconfined Compression | D7012 | Test results include plot of axial stress vs. strain |
| Add for Poisson's Ratio | | |

| Miscellaneous Rock | Test Method | Test Notes |
|---|---|---|
| Specimen Preservation | D5079 | |
| Potential for Expansive Sulfides (Sulfide Indicator) | Industry Standard | |
| Percent Pyritic Sulfur | D2492 | |
| Total Forms of Sulfur | D4239 | |

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## Concrete, Grout, Mortar, Asphalt, and Field Testing

| Concrete, Grout, Mortar, CMU Strength | Test Method | Test Notes |
|---|---|---|
| Unconfined Compression - Cylinder | C39 | Each molded specimen, tested or not tested |
| 2" to 6" Diameter UCS with Unit Weight | C39 | |
| Beams | C78 | 20" minimum length |
| 2" x 2" Cube (mortar/grout) | C109 | |
| 4"x8" Prisms | C1019 | |
| CMU Strength - Sets of Three | C140 | Absorption Required for Net Strength |

| Asphalt Laboratory Testing | Test Method | Test Notes |
|---|---|---|
| Asphalt Content & Gradation | PTM 757A | |
| Bulk Specific Gravity of Asphalt Core | D2726 | |

| Concrete, Grout, Mortar Field Testing | Test Method | Test Notes |
|---|---|---|
| Slump | C143 | |
| Slump Flow | C1611 | |
| Air Content (Pressure Meter) | C231 | |
| Air Content (Volumetric Meter) | C173 | |
| Fresh Concrete Unit Weight | C138 | |
| Mold Cylinders, Cubes, Specimens | C31 | cyl: 6"x12", 4"x8", 3"x6"; cubes: 2"x2"; other |
| Temperature | C1064 | |
| Flow Cone | C939 | |

| Density Testing | Test Method | Test Notes |
|---|---|---|
| Soil Field Density | D6938 | Troxler Nuclear Gauge |
| Asphalt Field Density | D2950 | Troxler Nuclear Gauge |
| Concrete/Asphalt Pavement Coring | | 1.5" to 8" |
| Dynamic Cone Penetrometer | D6951 | |

| Special Inspections | Test Method | Test Notes |
|---|---|---|
| Foundation Inspection - Bearing and Reinforcement | | |
| Soils | | |
| Deep Foundations | | |
| Concrete Construction | | |
| Masonry Construction | | |
| Steel Construction | | Visual Weld/Bolt Connections |
| Fire- Resistant Materials | | |
| Other Available Upon Request | | |